HIGHLIGHTS

REVISION NO. 33 Jun 01/10

Pages which have been revised are outlined below, together with the Highlights of the Revision

CH/SE/SU C PAGES	REASON FOR CHANGE	EFFECTIVITY
CHAPTER 28		
L.E.P. 1-17	Revised to Reflect this revision indicating new,revised, and/or deleted pages	
T. OF C. 1, 4-21	Revised to reflect this revision	
28-00-00 1, 35-68	Effectivity updated at the bottom of the page Minor additions and amplification **PARA.5.A - (TYPES OF FUEL) - FUEL TYPE 01-009 ADDED TO LIST.**	
28-00-00 302- 304	Minor additions and amplification **PARA 2.A. STEP (12)- AMENDED TO READ "IN THE WORK AREA YOU MUST NOT: USE FOOTWEAR WHICH HAS METAL STUDS OR 'EXPOSED' STEEL TOE CAPS.**	
28-00-00 801, 803	Minor additions and amplification **PARA 1.A. REASON FOR THE JOB REVISED TO INCLUDE THE STATEMENT: "THIS PROCEDURE IS ONLY FOR ALUMINIUM-ALLOY PIPES. FOR THE REPAIR PROCEDURE OF CORROSION-RESISTANT STEEL PIPES, YOU MUST REFER TO (REF. 20-28-11, P. BLOCK 1)."**	
28-11-00 701- 702	New Topic/New Configuration Mod.0001X0007 incorporated **TECHNICAL PUBLICATIONS-BASIC MODIFICATION - MODIFY DESIGN.** Mod.0001X0567 incorporated **TECHNICAL PUBLICATION-BASIC MODIFICATION.** Mod.4801H5078 incorporated **FUEL - INSTALL TRIM TANK SYSTEM**	
28-11-29 401- 406, 408- 409	Minor additions and amplification **REPLACED MATERIAL NO. 09-011 WITH MATERIAL NO. 09-001 AND MATERIAL NO. 09-002.**	
28-11-33	Minor additions and amplification	

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CH/SE/SU C PAGES	REASON FOR CHANGE	EFFECTIVITY
401- 404	RO3: AMEND CIRCUIT BREAKERS LOCATION	
28-11-36 448- 449, 451- 462, 464, 466- 480, 482- 493	Minor additions and amplification SENTENCES ADDED TO MAKE SURE THAT NO UNWANTED MATERIALS ARE LEFT IN THE TANK	
28-11-36 601- 603, 605- 606, 615	Minor additions and amplification PARA 1 AMENDED TO READ 'REASON FOR THE JOB' AND PARA 2 TO 'EQUIPMENT AND MATERIALS'.	
28-11-37 409- 410	Minor additions and amplification SENTENCES ADDED TO MAKE SURE THAT NO UNWANTED MATERIALS ARE LEFT IN THE TANK	
28-11-38 601- 608	Minor additions and amplification SENTENCES ADDED TO MAKE SURE THAT NO UNWANTED MATERIALS ARE LEFT IN THE TANK	
28-11-39 416	Minor additions and amplification SENTENCES ADDED TO MAKE SURE THAT NO UNWANTED MATERIALS ARE LEFT IN THE TANK	
28-11-41 501- 528	Minor additions and amplification PARA. 2. REFERENCED PROCEDURES TABLE REVISED TO INCLUDE 'TSM 28-11'.	
28-12-00 601- 603, 607- 609, 611, 615- 618	Minor additions and amplification NEW PARA. HEADING '2. TANK VENTING SYSTEM' INTRODUCED AND ADDED TO THE 'TABLE OF CONTENTS' PAGE. 'EQUIPMENT AND MATERIALS' AMENDED TO PARA.A. PARA.'3. PROCEDURE' AMENDED TO 'B. PROCEDURE' Layout improved	
28-12-18 407- 408	Minor additions and amplification SENTENCES ADDED TO MAKE SURE THAT NO UNWANTED MATERIALS ARE LEFT IN THE TANK	
28-12-32 601- 602	New Topic/New Configuration Mod.4801H5078 incorporated FUEL - INSTALL TRIM TANK SYSTEM	
28-13-00 601, 603-	Minor additions and amplification PARA 3.B. STEP (1)(A) THE INSTRUCTION TO DO	

CH/SE/SU C PAGES	REASON FOR CHANGE	EFFECTIVITY
604	THE FUEL-BARRIER SEALANT COATING INSPECTION NOW SPECIFIES THE LOCATION AS 'THE FORWARD AND UPPER SURFACES OF THE TRIM TANK'.	
28-18-00 501- 502, 507- 510, 513- 515, 518- 523	Effectivity updated at the bottom of the page Minor additions and amplification PARA .1. 'VAPOUR' AMENDED TO 'VAPOR' IN TITLE A. MPD REFERENCE 281800-04-1 NOW APPEARS AS A NOTE.	
28-18-00 601, 603- 612, 614- 615, 617- 618, 620- 631, 633- 634, 636	Mod.3874H0686 incorporated REMOVE REMAINING AHRS ITEMS IN THE WING. Mod.4803S5726 incorporated EQUIPMENT/FURNISHINGS - FLIGHT COMPARTMENT - MODIFY DESIGN Minor, non technical corrections PARA. 1.A. MPD REFERENCE 281800-05-3 NOW APPEARS AS A NOTE. Minor additions and amplification PARA.7. - TITLE AMENDED INLINE WITH THE MPD. Layout improved	
28-21-00 546- 553, 555- 560	Minor, non technical corrections PARA. 5.D. STEP (1)(C) NOMENCLATURE IMPROVED. Minor additions and amplification PARA. 5. REASON FOR THE JOB AMENDED. ACCESS PLATFORMS, STOP WATCH, INSPECTION LAMP AND LINT FREE CLOTHS ADDED TO EQUIPMENT/MATERIALS LIST. REF. PROCEDURES 28-10-00, P.BLK, 301,28-11-22 28-11-24, 28-11-29, 28-12-21, P. BLK 401, ADDED TO THE REFERENCED PROCEDURES LIST.	
28-21-36 601- 607	Effectivity updated at the bottom of the page Effectivity updated in the text	
28-21-51 502	SB 00-2022 11 incorporated GENERAL - CONVERSION - CONVERSION OF US MEASUREMENT TO METRIC	
28-24-00 501- 506, 508- 513	Minor additions and amplification PARA .1.A. MPD REFERENCE 282400-02 AMENDED TO 282400-02-1 AND NOW APPEARS AS A NOTE.	
28-25-00 341, 345- A300	Effectivity updated at the bottom of the page Mod.8340D8612 incorporated X Minor, non technical corrections	

CH/SE/SU C PAGES	REASON FOR CHANGE	EFFECTIVITY
	PARA. 8. NOMENCLATURE OF TITLE REVISED. (IF FITTED) AMENDED TO READ (IF INSTALLED). Minor additions and amplification PARA. 8.C.(1) - TITLE AMENDED. TEXT IMPROVED. NEW NOTE ADDED TO CLARIFY THE FUEL TRANSFER PROCESS. Layout improved Effectivity updated in the text	
28-25-00 530- 533	Layout Improved or Effectivity Updated	
28-26-15 407	Minor additions and amplification TEST TITLE AMENDED.	
28-28-25 424- 425	Minor additions and amplification SENTENCES ADDED TO MAKE SURE THAT NO UNWANTED MATERIALS ARE LEFT IN THE TANK	
28-42-00 42- 48	Effectivity updated at the bottom of the page SB 00-2022 11 incorporated GENERAL - CONVERSION - CONVERSION OF US MEASUREMENT TO METRIC Effectivity updated in the text	
28-42-00 502- 506, 508- 562	Effectivity updated at the bottom of the page Mod.6957H1055 incorporated FUEL - UNITS OF MEASUREMENT - USE POUNDS INSTEAD OF KILOS ON A/C WITH TTS AND ACT SB 00-2022 11 incorporated GENERAL - CONVERSION - CONVERSION OF US MEASUREMENT TO METRIC Minor additions and amplification PARA. 1.C. STEP (2)(A) REVISED. INSTRUCTION AMENDED TO READ '...DO TEST STEPS 1. THRU 7.' STEP (2)(B) INSTRUCTION AMENDED FROM '...ONLY DO STEPS 6. AND 7.' TO NOW READ '...ONLY DO TEST STEPS 1., 6. AND 7.'	
28-42-51 401, 403, 407	Minor additions and amplification PARA 2.A.(3) - CB 1QL LOCATION 325/K52 AMENDED TO 325/K53. Layout improved	
28-42-52 402, 405	Minor additions and amplification R01: AMEND CIRCUIT BREAKERS	
28-46-00	Minor, non technical corrections	

CH/SE/SU C PAGES	REASON FOR CHANGE	EFFECTIVITY
514, 518, 522, 524-529, 531-537	WORKSTEP RENUMBERED, CIRCUIT BREAKER TABLE REVISED - LAYOUT AMENDED. Minor additions and amplification SUB PARA. (10) INSTRUCTION TO ENERGIZE THE AIRCRAFT ELECTRICAL NETWORK, MOVED TO STEP (A). Layout improved	
28-46-21 403	Minor additions and amplification PARA. 2. FIGURE "TRIM TANK FUEL LEVEL SENSORS - INSTALLATION" REVISED. MANHOLE COVER 343GB AMENDED TO 343FB.	
28-46-23 403	Minor additions and amplification PARA 2.D. STEP (1) REVISED. OPERATIONAL TESTS ARE NOW CLARIFIED AS: - OUTER TANK LOW LEVEL SENSOR TEST WITH FUEL - TRIM TANK HIGH LEVEL SENSORS TEST WITH FUEL	
28-46-30 401	Minor additions and amplification R01: CORRECTED 'EQUIPMENT AND MATERIALS' TABLE.	

CHAPTER 28

FUEL

LIST OF EFFECTIVE PAGES

N, R or D indicates pages which are New, Revised or Deleted respectively
Remove and insert the affected pages and complete the Record of Revisions and the Record of Temporary Revisions as necessary

CH/SE/SU	C	PAGE	DATE	CH/SE/SU	C	PAGE	DATE	CH/SE/SU	C	PAGE	DATE
RECORD				28-00-00		16	Jun01/06	28-00-00	R	58	Jun01/10
OF TEMP.				28-00-00		17	Jun01/06	28-00-00	R	59	Jun01/10
REVISION				28-00-00		18	Jun01/06	28-00-00	R	60	Jun01/10
				28-00-00		19	Jun01/06	28-00-00	R	61	Jun01/10
L.E.P.	R	1-17	Jun01/10	28-00-00		20	Jun01/06	28-00-00	R	62	Jun01/10
T. of C.	R	1	Jun01/10	28-00-00		21	Jun01/06	28-00-00	R	63	Jun01/10
T. of C.		2	Jun01/08	28-00-00		22	Jun01/06	28-00-00	R	64	Jun01/10
T. of C.		3	Jun01/09	28-00-00		23	Jun01/06	28-00-00	R	65	Jun01/10
T. of C.	R	4	Jun01/10	28-00-00		24	Jun01/09	28-00-00	R	66	Jun01/10
T. of C.	R	5	Jun01/10	28-00-00		25	Jun01/06	28-00-00	R	67	Jun01/10
T. of C.	R	6	Jun01/10	28-00-00		26	Jun01/06	28-00-00	R	68	Jun01/10
T. of C.	R	7	Jun01/10	28-00-00		27	Jun01/09	28-00-00	D	69	
T. of C.	R	8	Jun01/10	28-00-00		28	Jun01/06	28-00-00	D	70	
T. of C.	R	9	Jun01/10	28-00-00		29	Jun01/06	28-00-00		301	Jun01/09
T. of C.	R	10	Jun01/10	28-00-00		30	Jun01/06	28-00-00	R	302	Jun01/10
T. of C.	R	11	Jun01/10	28-00-00		31	Jun01/06	28-00-00	R	303	Jun01/10
T. of C.	R	12	Jun01/10	28-00-00		32	Jun01/06	28-00-00	R	304	Jun01/10
T. of C.	R	13	Jun01/10	28-00-00		33	Jun01/09	28-00-00		305	Jun01/94
T. of C.	R	14	Jun01/10	28-00-00		34	Jun01/09	28-00-00		401	Jun01/08
T. of C.	R	15	Jun01/10	28-00-00	R	35	Jun01/10	28-00-00		402	Jun01/08
T. of C.	R	16	Jun01/10	28-00-00	R	36	Jun01/10	28-00-00		403	Dec01/97
T. of C.	R	17	Jun01/10	28-00-00	R	37	Jun01/10	28-00-00		404	Jun01/08
T. of C.	R	18	Jun01/10	28-00-00	R	38	Jun01/10	28-00-00		405	Jun01/08
T. of C.	R	19	Jun01/10	28-00-00	R	39	Jun01/10	28-00-00		406	Jun01/08
T. of C.	R	20	Jun01/10	28-00-00	R	40	Jun01/10	28-00-00		407	Jun01/08
T. of C.	N	21	Jun01/10	28-00-00	R	41	Jun01/10	28-00-00		601	Jun01/04
				28-00-00	R	42	Jun01/10	28-00-00		602	Jun01/04
28-00-00	R	1	Jun01/10	28-00-00	R	43	Jun01/10	28-00-00		603	Jun01/04
28-00-00		2	Jun01/06	28-00-00	R	44	Jun01/10	28-00-00		604	Jun01/04
28-00-00		3	Jun01/06	28-00-00	R	45	Jun01/10	28-00-00		605	Jun01/04
28-00-00		4	Jun01/06	28-00-00	R	46	Jun01/10	28-00-00		606	Jun01/04
28-00-00		5	Jun01/06	28-00-00	R	47	Jun01/10	28-00-00		607	Jun01/04
28-00-00		6	Jun01/09	28-00-00	R	48	Jun01/10	28-00-00		608	Jun01/04
28-00-00		7	Jun01/06	28-00-00	R	49	Jun01/10	28-00-00		609	Jun01/04
28-00-00		8	Jun01/06	28-00-00	R	50	Jun01/10	28-00-00		610	Jun01/04
28-00-00		9	Jun01/04	28-00-00	R	51	Jun01/10	28-00-00		611	Jun01/04
28-00-00		10	Jun01/04	28-00-00	R	52	Jun01/10	28-00-00		612	Jun01/04
28-00-00		11	Jun01/04	28-00-00	R	53	Jun01/10	28-00-00		613	Jun01/04
28-00-00		12	Jun01/04	28-00-00	R	54	Jun01/10	28-00-00		614	Jun01/04
28-00-00		13	Jun01/06	28-00-00	R	55	Jun01/10	28-00-00		615	Jun01/04
28-00-00		14	Jun01/09	28-00-00	R	56	Jun01/10	28-00-00		616	Jun01/04
28-00-00		15	Jun01/06	28-00-00	R	57	Jun01/10	28-00-00		617	Jun01/04

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28-00-00		618	Jun01/04	28-00-00		669	Jun01/04	28-00-00		A620	Jun01/04
28-00-00		619	Jun01/04	28-00-00		670	Jun01/04	28-00-00		A621	Jun01/04
28-00-00		620	Jun01/04	28-00-00		671	Jun01/04	28-00-00		A622	Jun01/04
28-00-00		621	Jun01/04	28-00-00		672	Jun01/04	28-00-00		A623	Jun01/04
28-00-00		622	Jun01/04	28-00-00		673	Jun01/04	28-00-00		A624	Jun01/04
28-00-00		623	Jun01/04	28-00-00		674	Jun01/04	28-00-00		A625	Jun01/04
28-00-00		624	Jun01/04	28-00-00		675	Jun01/04	28-00-00		A626	Jun01/04
28-00-00		625	Jun01/04	28-00-00		676	Jun01/04	28-00-00		A627	Jun01/04
28-00-00		626	Jun01/04	28-00-00		677	Jun01/04	28-00-00		A628	Jun01/04
28-00-00		627	Jun01/04	28-00-00		678	Jun01/04	28-00-00		A629	Jun01/04
28-00-00		628	Jun01/04	28-00-00		679	Jun01/04	28-00-00		A630	Jun01/04
28-00-00		629	Jun01/04	28-00-00		680	Jun01/04	28-00-00		A631	Jun01/04
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28-00-00		631	Jun01/04	28-00-00		682	Jun01/04	28-00-00		A633	Jun01/04
28-00-00		632	Jun01/04	28-00-00		683	Jun01/04	28-00-00		A634	Jun01/04
28-00-00		633	Jun01/04	28-00-00		684	Jun01/04	28-00-00		A635	Jun01/04
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28-00-00		635	Jun01/04	28-00-00		686	Jun01/04	28-00-00		A637	Jun01/04
28-00-00		636	Jun01/04	28-00-00		687	Jun01/04	28-00-00	R	801	Jun01/10
28-00-00		637	Jun01/04	28-00-00		688	Jun01/04	28-00-00		802	Dec01/90
28-00-00		638	Jun01/04	28-00-00		689	Jun01/04	28-00-00	R	803	Jun01/10
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28-00-00		646	Jun01/04	28-00-00		697	Jun01/04	28-10-00		305	Jun01/92
28-00-00		647	Jun01/04	28-00-00		698	Jun01/04	28-10-00		306	Jun01/09
28-00-00		648	Jun01/04	28-00-00		699	Jun01/04	28-10-00		307	Jun01/04
28-00-00		649	Jun01/04	28-00-00		A600	Jun01/04	28-10-00		308	Jun01/09
28-00-00		650	Jun01/04	28-00-00		A601	Jun01/04	28-10-00		309	Jun01/04
28-00-00		651	Jun01/04	28-00-00		A602	Jun01/04	28-10-00		310	Jun01/04
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28-00-00		655	Jun01/04	28-00-00		A606	Jun01/04	28-10-00		314	Jun01/04
28-00-00		656	Jun01/04	28-00-00		A607	Jun01/04	28-10-00		315	Jun01/09
28-00-00		657	Jun01/04	28-00-00		A608	Jun01/04	28-10-00		316	Jun01/09
28-00-00		658	Jun01/04	28-00-00		A609	Jun01/04	28-10-00		317	Jun01/09
28-00-00		659	Jun01/04	28-00-00		A610	Jun01/04	28-10-00		318	Jun01/09
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28-00-00		663	Jun01/04	28-00-00		A614	Jun01/04	28-11-00		3	Jun01/04
28-00-00		664	Jun01/04	28-00-00		A615	Jun01/04	28-11-00		4	Jun01/04
28-00-00		665	Jun01/04	28-00-00		A616	Jun01/04	28-11-00		5	Jun01/04
28-00-00		666	Jun01/04	28-00-00		A617	Jun01/04	28-11-00		6	Jun01/04
28-00-00		667	Jun01/04	28-00-00		A618	Jun01/04	28-11-00		7	Jun01/04
28-00-00		668	Jun01/04	28-00-00		A619	Jun01/04	28-11-00		8	Jun01/09

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28-11-00		9	Jun01/04	28-11-00		515	Jun01/04	28-11-00		647	Jun01/09
28-11-00		10	Jun01/04	28-11-00		516	Jun01/04	28-11-00		648	Jun01/09
28-11-00		11	Jun01/04	28-11-00		517	Jun01/04	28-11-00		649	Jun01/09
28-11-00		12	Jun01/04	28-11-00		518	Jun01/04	28-11-00		650	Jun01/09
28-11-00		13	Jun01/04	28-11-00		519	Jun01/04	28-11-00		651	Jun01/09
28-11-00		14	Jun01/04	28-11-00		601	Jun01/09	28-11-00		652	Jun01/09
28-11-00		15	Jun01/04	28-11-00		602	Jun01/09	28-11-00		653	Jun01/09
28-11-00		16	Jun01/04	28-11-00		603	Jun01/09	28-11-00		654	Jun01/09
28-11-00		17	Jun01/04	28-11-00		604	Jun01/09	28-11-00	N	701	Jun01/10
28-11-00		18	Jun01/04	28-11-00		605	Jun01/09	28-11-00	N	702	Jun01/10
28-11-00		19	Jun01/04	28-11-00		606	Jun01/09	28-11-00		801	Jun01/02
28-11-00		20	Jun01/04	28-11-00		607	Jun01/09	28-11-00		802	Jun01/02
28-11-00		21	Jun01/04	28-11-00		608	Jun01/09	28-11-00		803	Jun01/02
28-11-00		22	Jun01/04	28-11-00		609	Jun01/09	28-11-00		804	Jun01/02
28-11-00		23	Jun01/05	28-11-00		610	Jun01/09	28-11-00		901	Dec01/06
28-11-00		24	Jun01/04	28-11-00		611	Jun01/09	28-11-00		902	Dec01/94
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28-11-00		26	Jun01/04	28-11-00		613	Jun01/09	28-11-21		401	Jun01/09
28-11-00		301	Dec01/06	28-11-00		614	Jun01/09	28-11-21		402	Dec01/90
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28-11-00		303	Jun01/08	28-11-00		616	Jun01/09	28-11-21		404	Jun01/09
28-11-00		304	Jun01/08	28-11-00		617	Jun01/09	28-11-21		405	Dec01/06
28-11-00		305	Jun01/08	28-11-00		618	Jun01/09	28-11-21		406	Jun01/09
28-11-00		306	Jun01/08	28-11-00		619	Jun01/09	28-11-21		407	Jun01/04
28-11-00		307	Jun01/08	28-11-00		620	Jun01/09	28-11-21		408	Jun01/09
28-11-00		308	Jun01/08	28-11-00		621	Jun01/09	28-11-21		409	Jun01/09
28-11-00		309	Jun01/08	28-11-00		622	Jun01/09	28-11-21		410	Jun01/09
28-11-00		310	Jun01/08	28-11-00		623	Jun01/09	28-11-22		401	Jun01/06
28-11-00		311	Jun01/08	28-11-00		624	Jun01/09	28-11-22		402	Jun01/06
28-11-00		312	Jun01/08	28-11-00		625	Jun01/09	28-11-22		403	Jun01/06
28-11-00		313	Jun01/08	28-11-00		626	Jun01/09	28-11-22		404	Jun01/05
28-11-00		314	Jun01/08	28-11-00		627	Jun01/09	28-11-22		405	Jun01/04
28-11-00		315	Jun01/08	28-11-00		628	Jun01/09	28-11-22		406	Jun01/06
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Monitoring (ECAM)				
Types of Fuel (Ref. 20-31-00)			46	ALL
The use of Dyed Fuels			46	ALL
Limits of Operation			47	ALL
Refueling/Defueling			47	ALL
Fuel Transfer			47	ALL
Normal Operation of			47	ALL
Engine Supply System				
Automatic Fuel Supply Sequence			48	001-100,
Automatic Fuel Supply Sequence			48	101-200,
Automatic Fuel Supply Sequence			49	101-103,105-200,
Manual Control			53	ALL
Operation of Engine Fuel Supply			53	ALL
System (Conditional)				
Power Supply			54	ALL
Electrical Power			65	ALL
General			301	ALL
Safety Precautions			301	ALL
Removal/Installation			401	ALL
Pipes/Rib Connectors and Joints,			401	ALL
For Refueling, Feed and Vent Pipes				
Pylon Pipes: Ref. 28-20-00,			401	ALL
P. Block 401				
Trim Tank Pipes			401	ALL
Ref. 28-12-37, P. Block 401.				
Inspection/Check			601	ALL
Wing Tank Bonding Straps			603	ALL
Center Tank Bonding Straps			669	ALL

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	SUBJECT	CH/SE/SU	C	PAGE	EFFECTIVITY
	Additional Center Tanks(s) (ACT) Bonding Straps			A608	101-200,
	Trim-Tank Bonding Straps			A619	ALL
	Approved Repairs			801	ALL
	Bonding Lead Attachment Repair.			801	ALL
	FUEL STORAGE	28-10-00			
	Description and Operation			1	ALL
	Servicing			301	ALL
	Safety Precautions			302	ALL
	Fuel Tank Access and Working Areas			303	ALL
	Fuel Tank Draining, Venting and Entry			310	ALL
R	Safety Procedures When You			316	ALL
R	Do Work in a Dry Fuel Tank				
	Use of Combustible Gas Indicator			318	ALL
	FUEL TANKS	28-11-00			
	Description and Operation			1	ALL
	General			1	ALL
	Component Location			2	ALL
	Description and Operation			9	ALL
	Tank Location			9	ALL
	Tank Contents			10	ALL
	Water Drain Valves			11	ALL
	Water Scavenge System - Center Tank			17	ALL
	Water Scavenge System - Inner Tanks			17	ALL
	Water Scavenge System - Trim Tank			19	ALL
	Flap Valves			21	ALL
	Water Scavenge System Power Supplies			21	ALL
	Servicing			301	ALL
	Biobor Biocidal Shock Treatment for Moderate Contamination - Metered Injection Rig Method			301	ALL
	Biobor Biocidal Shock Treatment for Moderate Contamination - Fuel Premixed with Biobor			303	ALL
	Biobor Biocidal Shock Treatment for Heavy Contamination - Metered Injection Rig Method			305	ALL
	Biobor Biocidal Shock Treatment for Heavy Contamination - Fuel Premixed with Biobor			307	ALL
	Biobor Biocidal Preventative Treatment for Aircraft in Long-term Storage Metered Injection Rig Method			308	ALL
	Biobor Biocidal Preventative Treatment for Aircraft in			309	ALL

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	SUBJECT	CH/SE/SU	C	PAGE	EFFECTIVITY
	Long-term Storage - Fuel Premixed with Biobor Kathon Biocidal Shock Treatment			310	ALL
	for Moderate Contamination - Metered Injection Rig Method			310	ALL
	Kathon Biocidal Shock Treatment for Moderate Contamination - Fuel Premixed with Kathon			312	ALL
	Kathon Biocidal Shock Treatment for Heavy Contamination - Metered Injection Rig Method			313	ALL
	Kathon Biocidal Shock Treatment for Heavy Contamination - Fuel Premixed with Kathon			315	ALL
	Kathon Biocidal Preventative Treatment for Aircraft in Long-term Storage - Metered Injection Rig Method			316	ALL
	Kathon Biocidal Preventative Treatment for Aircraft in Long-term Storage - Fuel Premixed with Kathon			317	ALL
	Removal of Microbiological Particles			318	ALL
	Adjustment/Test			501	ALL
	Leak test tanks			501	ALL
	Leak test - Trim Tank			506	ALL
	Leak Test - Trim Tank Vent (Surge) Tank			508	ALL
	Functional Test - Center Tank			508	ALL
	Water Scavenge System			508	ALL
	Functional Test - Inner Tank			512	ALL
	Water Scavenge System			512	ALL
	Functional Test - Trim Tank			516	ALL
	Water Scavenge System			516	ALL
	Inspection/Check			601	ALL
R	Structural Fuel Tank Leaks - General Information			601	ALL
R	Structural Fuel Leaks - Analysis of the Route, Location of the Source and Identification of Applicable Leak Tests			610	ALL
R	Internal Inspection of Fuel Tanks			613	ALL
R	Locating Leaks			613	ALL
R	Wing and Trim Tanks Talcum Powder Method			613	ALL
	Wing and Trim Tanks Local Blowing Method			614	ALL
	Wing and Trim Tanks - Vacuum and Dye Method			615	ALL
	Wing and Center Tanks -			620	ALL

SUBJECT	CH/SE/SU	C	PAGE	EFFECTIVITY
Positive Pressure Method				
Trim Tank - Positive Pressure Method			630	ALL
Wing, Center and Trim Tanks - Helium Method			637	ALL
Wing, Center and Trim Tanks - Air/Helium Positive Pressure Method			640	ALL
Center Tank - Vacuum and Dye Method			651	ALL
Cleaning of the Fuel Tanks			701	ALL
Cleaning of the Fuel Tanks			701	ALL
Approved Repairs			801	ALL
Temporary External Repair			801	ALL
Temporary Internal Local Repair			803	ALL
Fillet Repair			803	ALL
Deactivation/Reactivation			901	ALL
Deactivation of the Trim Tank			901	ALL
Reactivation of the Trim Tank			903	ALL
WATER DRAIN VALVES	28-11-21			
Removal/Installation			401	ALL
Water Drain Valves - Primary Poppet Valve Assembly			401	ALL
Water Drain Valves - Center Tank			404	ALL
Water Drain Valves - Inner Tanks			406	ALL
Water Drain Valves - Outer Tank and Vent Tank			408	ALL
MANHOLE COVERS (WINGS)	28-11-22			
Removal/Installation			401	ALL
Inspection/Check			601	ALL
MANHOLE COVER - BOOSTER PUMP	28-11-24			
Removal/Installation			401	ALL
Inspection/Check			601	ALL
FLAP VALVES - RIB 2	28-11-25			
Removal/Installation			401	ALL
FLAP VALVES RIB 15	28-11-26			
Removal/Installation			401	ALL
OVERWING REFUEL ADAPTOR	28-11-28			
Removal/Installation			401	ALL
CENTER TANK MANHOLE COVER (147AZ, 148AZ)	28-11-29			
Removal/Installation			401	ALL
CENTER TANK JET PUMP (280399), (280400), (280401), (280402)	28-11-31			
Removal/Installation			401	ALL
TRIM TANK - WATER DRAIN VALVES	28-11-32			
Removal/Installation			401	ALL
Primary Poppet Valve Assembly			401	ALL
Water Drain Valves - Trim Tank			402	ALL
Water Drain Valve - Vent Tank			410	ALL
Water Drain Valve - Vent Tank			411	ALL
TRIM TANK MANHOLE COVERS	28-11-33			

SUBJECT	CH/SE/SU	C	PAGE	EFFECTIVITY
Removal/Installation.			401	ALL
Inspection/Check.			601	ALL
Approved Repairs			801	ALL
FLAP VALVE - TRIM TANK	28-11-34			
Removal/Installation			401	ALL
VAPOR SEAL	28-11-35			
Removal/Installation			401	ALL
Inspection/Check			601	ALL
Approved Repairs			801	ALL
ADDITIONAL CENTER TANK	28-11-36			
Removal/Installation			401	101-200,
Removal of the Aft ACT			410	101-200,
Preparation for Operation with the Fwd ACT only after Removal of the Aft ACT			433	101-200,
Removal of the Fwd ACT			439	101-200,
Preparation for Operation After Removal of the Fwd and the Aft ACT.			449	101-200,
Preparation for Installation of the Fwd ACT Only			457	101-200,
Preparation for Installation of the Aft ACT, After Operation With the Fwd ACT Only			460	101-200,
Preparation for Installation of the Fwd ACT and the Aft ACT			462	101-200,
Installation of the Fwd ACT			466	101-200,
Installation of the Aft ACT			480	101-200,
Test			489	101-200,
Close-Up			490	101-200,
Test			491	101-200,
Close-Up			492	101-200,
Inspection/Check			601	101-200,
MANHOLE COVER - ADDITIONAL CENTER TANK	28-11-37			
Removal/Installation			401	101-200,
Adjustment/Test			501	101-200,
BLADDER TANK, ADD CTR TANK	28-11-38			
Inspection/Check			601	101-200,
WATER DRAIN VALVE, ADDITIONAL ADDITIONAL CENTER TANK	28-11-39			
Removal/Installation			401	101-200,
Removal of the Outer Valve Assembly			409	101-200,
Removal of the Outer Valve Assembly			409	101-200,
Removal of the Water Drain Valve Complete			409	101-200,
Removal of the Water Drain Valve Complete			409	101-200,
Preparation of the Outer Valve Assembly			413	101-200,

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SUBJECT	CH/SE/SU	C	PAGE	EFFECTIVITY
Preparation of the Water Drain Valve Complete			413	101-200,
Installation of the Outer Valve Assembly			415	101-200,
Installation of the Water Drain Complete			416	101-200,
Test.			417	101-200,
SCAVENGE FUEL PUMP	28-11-41			
Removal/Installation			401	ALL
Inner-Tank Scavenge Fuel-Pump			401	ALL
Removal/Installation.			401	ALL
Trim-Tank Scavenge Fuel-Pump			406	004-200,
Removal/Installation.			406	004-200,
Trim-Tank Scavenge Fuel-Pump			406	ALL
Removal/Installation.			406	ALL
Adjustment/Test			501	ALL
Operational Test of Trim Tank and Inner Tanks Scavenge System			505	ALL
Operational Test of Trim Tank and Inner Tanks Scavenge Fuel Pumps			525	ALL
JET PUMP	28-11-43			
Removal/Installation			401	ALL
Inner Tank Jet Pump			401	ALL
Removal/Installation			401	ALL
Trim Tank Jet Pump			405	ALL
Removal/Installation			405	ALL
TANK VENTING SYSTEM	28-12-00			
Description and Operation			1	ALL
Adjustment/Test			501	ALL
Inspection/Check			601	ALL
R Tank Venting System			601	001-100,
R Tank Venting System			602	101-200,
CHECK VALVE, VENTING AIR	28-12-12			
Removal/Installation			401	ALL
OVERPRESSURE PROTECTOR, VENT SURGE TANK	28-12-15			
Removal/Installation			401	ALL
Inspection/Check			601	ALL
Inspection of Safety Disc			601	ALL
OVERPRESSURE PROTECTOR INNER TANK	28-12-16			
Removal/Installation			401	ALL
CENTER TANK OVERPRESSURE PROTECTOR (280052), (280053)	28-12-17			
Removal/Installation			401	ALL
CHECK VALVE - VENT DUCT ADDITIONAL CENTER TANK	28-12-18			
Removal/Installation			401	101-200,
NACA INTAKE AND VENT PROTECTOR	28-12-21			
Removal/Installation			401	ALL
Inspection/Check			601	ALL
Wing Tank NACA Intake			601	ALL

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SUBJECT	CH/SE/SU	C	PAGE	EFFECTIVITY
Trim Tank NACA Intake			601	ALL
FLOAT OPERATED VENT VALVES	28-12-22			
Removal/Installation			401	ALL
CHECK VALVE, VENTING AIR (TRIM TANK)	28-12-31			
Removal/Installation			401	ALL
TRIM TANK OVERPRESSURE PROTECTOR	28-12-32			
Removal/Installation			401	ALL
Inspection/Check			601	ALL
Inspection of the Safety Disc			601	ALL
TRIM TANK NACA INTAKE AND VENT PROTECTOR	28-12-33			
Removal/Installation			401	ALL
Inspection/Check			601	ALL
VALVE - VENT FLOAT, TRIM TK (280451,280452,280453)	28-12-34			
Removal/Installation			401	ALL
ANTI SIPHON VALVE_VENT FLOAT (280454)	28-12-35			
Removal/Installation			401	ALL
TRIM TANK FUEL DRAIN CHECK VALVE	28-12-36			
Removal/Installation			401	ALL
TRIM TANK PIPES AND JOINTS	28-12-37			
Removal/Installation			401	ALL
VAPOR SEAL VENT AND DRAIN	28-12-38			
Removal/Installation			401	ALL
VENT VALVE AND ACTUATOR - ADDITIONAL CENTER TANK	28-12-42			
Removal/Installation			401	101-200,
Removal of the Vent Valve Actuator 280273			405	101-200,
Removal of the Actuator 280273 (280274)			405	101-200,
Removal of the Vent Valve 280268			405	101-200,
Removal of the Vent Valve 280268 (280269)			410	101-200,
Preparation for Installation of the Actuator 280273			412	101-200,
Preparation for Installation of the Actuator 280273 (280274).			412	101-200,
Preparation for Installation of the Vent Valve 280268			416	101-200,
Vent Valve 280268 (280269)			418	101-200,
Installation of the Actuator 280273			419	101-200,
Installation of the Actuator 280273 (280274)			419	101-200,
Installation of the Vent Valve 280268			419	101-200,
Installation of the Vent Valve 280268 (280269)			419	101-200,
Test			424	101-200,
Deactivation/Reactivation			901	101-200,
Ref: MMEL Sect 1-28, Item 49			901	101-200,

SUBJECT	CH/SE/SU	C	PAGE	EFFECTIVITY
VALVE-NON-RETURN	28-12-43			
ADDITIONAL CENTER TANK				
Removal/Installation			401	101-200,
Removal of the Non-Return Valve 280266			402	101-200,
Removal of the Non-Return Valve 280266 (280267)			403	101-200,
Removal of the Non-Return Valve 280277			408	101-200,
Removal of the Non-Return Valve 280276			410	101-200,
Removal of the Non-Return Valve 280276			410	101-200,
Removal of the Non-Return Valve 280277			413	101-200,
Preparation for Installation.			415	101-200,
Installation of the Non-Return Valve 280266			419	101-200,
Installation of the Non-Return Valve 280277			419	101-200,
Installation of the Non-Return Valve 280276			420	101-200,
Installation of the ACT Non-Return Valve 280266 (280267)			420	101-200,
Installation of the Non-Return Valve 280276			421	101-200,
Installation of the Non-Return Valve 280277			421	101-200,
Test			423	101-200,
Close-Up			424	101-200,
EXTERNAL VENTILATING SYSTEM	28-13-00			
Description and Operation			1	ALL
General			1	ALL
Description			1	ALL
Vapor Seal			5	ALL
Ventilation System			13	ALL
Drainage and Exhaust			13	ALL
Adjustment/Test			501	ALL
Functional Test - Center Tank System			501	ALL
Functional Test - Trim Tank System			512	ALL
Free Flow Test of Vent/Drain System and Vapor Seal.			513	ALL
Pressure Test of Vent/Drain System and Vapor Seal.			519	ALL
Leak Test of Vapor Seal Covers And Access Panels			521	ALL
Leak Test of O-ring seals			524	ALL
Trim Tank and ACT Combined Vent/ Drain System Leak Test			525	101-200,
Functional Test - ACT(s) System			527	101-200,

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SUBJECT	CH/SE/SU	C	PAGE	EFFECTIVITY
(With ACT(s) Installed)				
Procedure (ACT fitted)			528	101-200,
Procedure (ACT 1 fitted)			528	101-103,105-200,
Procedure (ACT 2 fitted)			536	101-200,
Procedure (ACT 1 and 2 fitted)			543	101-200,
Functional Test - ACT(s) System			550	101-200,
(ACT(s) removed)				
Procedure (ACT removed)			551	101-200,
Procedure (ACT 1 and 2 removed)			551	101-200,
Trim Tank Fuel Transfer Pipe - Shroud Pressure Test			556	ALL
Inspection/Check			601	ALL
CHECK VALVE	28-13-12			
Inspection/Check			601	ALL
Reason for the Job			601	ALL
Equipment and Materials			601	ALL
Procedure			601	ALL
VAPOR SEALS	28-13-21			
Removal/Installation			401	ALL
Horizontal Vapor Seal			401	ALL
Vertical Vapor Seal			407	ALL
Inspection/Check			601	ALL
Approved Repairs			801	ALL
DRAIN MAST	28-13-23			
Removal/Installation			401	ALL
Inspection/Check			601	ALL
DRAIN SHROUD (280484)	28-13-31			
Removal/Installation			401	ALL
Inspection/Check			601	ALL
IGNITION PREVENTION	28-18-00			
Adjustment/Test			501	ALL
Functional Check of Center Tank Vapor Seal		R	501	ALL
Operational Check of Fuel Quantity Indicating and Level Sensing for Electrical Continuity (With Test Set PN 722131)			514	001-100,
Operational Check of Fuel Quantity Indicating and Level Sensing for Electrical Continuity (With Test Set PN 722370)			514	101-200,
Operational Check of Fuel Quantity Indicating and Level Sensing for Electrical Continuity (With Test Set PN 722427)			515	101-200,
Inspection/Check			601	ALL
General Visual Inspection of the Center Tank Vapor Seal			601	ALL
Detailed Inspection of the Wing Tank Bonding Leads			604	ALL
Detailed Inspection of the Center			606	ALL

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	SUBJECT	CH/SE/SU	C	PAGE	EFFECTIVITY
	Tank Bonding Leads				
R	General Visual Inspection of Fuel			608	ALL
R	Pump Canisters - Inner Tank				
	General Visual Inspection of Fuel			609	ALL
	Pump Canisters - Outer Tank				
	General Visual Inspection of Fuel			610	ALL
	Pump Canisters - Center Tank				
R	General Visual Inspection of			612	ALL
R	Internal Wing Tank Wiring and				
R	Probe Attachments - Inner Tanks				
R	General Visual Inspection of			615	ALL
R	Internal Wing Tank Wiring and				
R	Probe Attachments - Outer Tanks				
R	General Visual Inspection of			618	ALL
R	Internal Wiring and Probe				
R	Attachments - Center Tank				
	General Visual Inspection of			621	ALL
	Wiring Harnesses above the				
	Center Tank				
R	General Visual Inspection of Wing			622	ALL
R	Leading Edge and Trailing Edge -				
R	Electrical Wiring and Connections				
	General Visual Inspection of Wing			624	ALL
	Fuel Pump Electrical Connections -				
	Underwing Electrical Supply Cable				
	General Visual Inspection of the			625	ALL
	Trim Tank Vapor Seal				
	Detailed Inspection of Trim			626	ALL
	Tank Bonding Leads				
R	General Visual Inspection of Trim			628	ALL
R	Tank Fuel Pump Canisters				
R	General Visual Inspection of			630	ALL
R	Internal Trim Tank Wiring				
R	and Probe Attachments				
R	General Visual Inspection of			633	ALL
R	Trim Tank External Electric				
R	Wiring and Connections				
	General Visual Inspection of			634	ALL
	Center-Tank Forward Cargo-				
	Bay Insulation Mats				
	Detailed Inspection of the			636	ALL
	Center Tank Vapor Seal				
	DISTRIBUTION	28-20-00			
	Description and Operation			1	ALL
	Removal/Installation			401	ALL
	Fuel Feed Line between LP Valve			401	ALL
	and Pylon Bulkhead				
	FUEL PUMP SYSTEM	28-21-00			
	Description and Operation			1	ALL
	General			1	ALL
	Component Location			3	ALL

	SUBJECT	CH/SE/SU	C	PAGE	EFFECTIVITY
	Description			6	ALL
	Component Description			10	ALL
	Fuel Pump Canister and Pump			10	ALL
	Pressure Switch			10	ALL
	Outer Tank Jet Pumps			13	ALL
	Sequence Valves			13	ALL
	Thermal Expansion Valves			13	ALL
	Air Bleed Valves			13	ALL
	Check Valves			13	ALL
	Operation			13	ALL
	Power Supplies			24	ALL
	Adjustment/Test			501	ALL
	Operational Test - Pumps and Pump-Low-Pressure Warning Systems			501	ALL
	Functional Test - Fuel-Pump Autofeed System			507	ALL
	Operational Test of Center and Inner Tank Pumps Automatic Control and Associated Warnings			525	ALL
	Operational Test - Outer-Tank Fuel Flow			538	ALL
	Functional Test			542	ALL
	Leak Test - Engine-Feed-System Pipeline			546	ALL
R	Procedure for Pipes/Connectors			546	ALL
R	in the Fuel Tanks				
	Procedure for Pipes/Connectors in the Fuel Tanks			547	ALL
	Procedure for Pipes in Pylon			553	ALL
	Operational Test - Check Valves in Engine Feed System			556	ALL
	Deactivation/Reactivation			901	ALL
	Ref. MMEL Sect.01-28 Item 11			901	ALL
	THERMAL EXPANSION VALVE	28-21-11			
	Removal/Installation			401	ALL
	PUMP - BOOSTER, INBOARD TANKS	28-21-12			
	Removal/Installation			401	ALL
	Adjustment/Test			501	ALL
	Operational Test			501	ALL
	CANISTER (INNER TANKS)	28-21-13			
	Removal/Installation			401	ALL
	Non-return Valve In-situ Removal			401	ALL
	Canister			406	ALL
	AIR BLEED VALVE	28-21-14			
	Removal/Installation			401	ALL
	CHECK VALVE (2 IN)	28-21-15			
	Removal/Installation			401	ALL
	BOOSTER PUMP (OUTER TANKS)	28-21-19			
	Removal/Installation			401	ALL
	Adjustment/Test			501	ALL
	Operational Test			501	ALL
	CANISTER (OUTER TANKS)	28-21-21			

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Removal/Installation			401	ALL
Check Valve In-situ Removal			401	ALL
Canister			404	ALL
SEQUENCE VALVE	28-21-22			
Removal/Installation			401	ALL
CHECK VALVE (1.25IN)	28-21-23			
Removal/Installation			401	ALL
Center Tank Booster Pump	28-21-36			
Removal/Installation			401	ALL
Fuel Pump System			401	ALL
Inspection/Check			601	002-002,101-101,104-104, 107-200,
Fuel Pump System			601	002-002,101-101,104-104, 107-200,
CENTER TANK BOOSTER PUMP CANISTER (280022), (280023)	28-21-37			
Removal/Installation			401	ALL
JET PUMP	28-21-51			
Removal/Installation			401	ALL
Adjustment/Test			501	ALL
Functional Test			501	ALL
PRESSURE SWITCH	28-21-52			
Maintenance Practices			201	ALL
Purge the Pressure Switch Feed Line			201	ALL
Removal/Installation			401	ALL
TANK ISOLATION SYSTEM	28-22-00			
Description and Operation			1	ALL
Adjustment/Test			501	ALL
Operational Test			501	ALL
ISOLATION VALVE	28-22-51			
Removal/Installation			401	ALL
Adjustment/Test			501	ALL
Leak Test - Valve Connections			501	ALL
Deactivation/Reactivation			901	ALL
Ref: MMEL Section 1-28, Item 8			901	ALL
ACTUATOR - ISOLATION VALVE	28-22-52			
Removal/Installation			401	ALL
TRIM TANK ISOLATION VALVE (280507)	28-22-54			
Removal/Installation			401	ALL
Deactivation/Reactivation			901	ALL
Ref: MMEL Sect. 1-28, Item 37			901	ALL
TRIM TANK ISOLATION VALVE ACTUATOR	28-22-55			
Removal/Installation			401	ALL
TRIM TANK ISOLATION VALVE OFFSET DRIVE UNIT (280509)	28-22-56			
Removal/Installation			401	ALL
CROSSFEED SYSTEM	28-23-00			
Description and Operation			1	ALL
Adjustment/Test			501	ALL

SUBJECT	CH/SE/SU	C	PAGE	EFFECTIVITY
Operational Test			501	ALL
Test Valve Operation and Indication			502	ALL
Test Valve for Fuel Flow			506	ALL
CROSSFEED VALVE	28-23-11			
Removal/Installation			401	ALL
Deactivation Procedure (Flow bar)			901	ALL
Ref. MMEL Sect. 1-28, Item 9			901	ALL
CROSSFEED VALVE ACTUATOR	28-23-12			
Removal/Installation			401	ALL
LP FUEL FIRE SHUT OFF CONTROL	28-24-00			
Description and Operation			1	ALL
Adjustment/Test			501	ALL
Operational Test - LP Valve			501	ALL
Operational Test - LP Valve Indication			506	ALL
Operational Test - Leakage (Engine Removed)			508	ALL
Operational Test- Leakage (Engine Installed)			511	ALL
LP VALVE	28-24-31			
Removal/Installation			401	ALL
Inspection/Check			601	ALL
REFUEL/DEFUEL SYSTEM	28-25-00			
Description and Operation			1	ALL
Servicing			301	ALL
Suction Defueling with Aircraft Electrical Network Energized			301	ALL
Suction Defueling with Aircraft Electrical Network De-energized			312	ALL
Pressure Defueling- Wing and Center Tanks.			320	001-100,
Pressure Defueling- Wing and Center Tanks.			320	101-200,
Pressure Defueling - Trim Tank			329	ALL
Drainage of Residual Fuel			334	ALL
Manual Fuel Transfer - Trim Tank			357	ALL
Rearward Transfer to Trim Tank For Water Drainage			391	ALL
Refuel of Trim Tank to Test The Trim Tank Naca Vent Seal			394	ALL
Adjustment Test			501	ALL
Functional Test - Refueling			501	ALL
Not Applicable			521	ALL
Functional Test - Suction Defueling			521	ALL
System Leak Test			526	ALL
ACT Refuel/transfer Pipe Leak Test With ACT(s) Removed			534	101-200,
Inspection/Check			601	ALL
Trim Tank Fuel Pipe - Pressure Test			604	ALL

SUBJECT	CH/SE/SU	C	PAGE	EFFECTIVITY
REFUEL/DEFUEL COUPLING	28-25-11			
Removal/Installation			401	ALL
Inspection/Check			601	ALL
Ref. CDL Sect. 28, Item 1			601	ALL
REFUEL/DEFUEL VALVE	28-25-12			
Removal/Installation			401	ALL
Deactivation/Reactivation			901	ALL
Ref: MMEL Sect. 1-28, Item 22			901	ALL
REFUEL/DEFUEL VALVE CANISTER	28-25-13			
Removal/Installation			401	ALL
CHECK VALVE 2 IN	28-25-14			
Removal/Installation			401	ALL
DIFFUSER	28-25-15			
Removal/Installation			401	ALL
TRANSFER VALVE	28-25-16			
Removal/Installation			401	ALL
Deactivation/Reactivation			901	ALL
Ref: MMEL Section 1-28, Item 23			901	ALL
TRANSFER VALVE ACTUATOR	28-25-17			
Removal/Installation			401	ALL
FUEL DRAIN VALVE	28-25-18			
Removal/Installation			401	ALL
AIR VENT VALVE	28-25-19			
Removal/Installation			401	ALL
REFUELING DOOR MICROSWITCH - (23QU)	28-25-20			
Removal/Installation			401	ALL
Adjustment/Test			501	ALL
DIFFUSER-TRIM TANK	28-25-22			
Removal/Installation			401	ALL
TRIM TANK REFUEL/TRANSFER VALVE	28-25-23			
Removal/Installation			401	ALL
Deactivation/Reactivation			901	ALL
Ref. MMEL Sect 1-28, Item 42			901	ALL
Deactivation			901	ALL
Reactivation			905	ALL
Refuel Procedure (Valve Deactivated)			909	ALL
TRIM TANK REFUEL/TRANSFER VALVE CANISTER	28-25-24			
Removal/Installation			401	ALL
AUXILIARY TANK REFUEL/DEFUEL VALVE (69QU)	28-25-25			
Removal/Installation			401	101-200,
REFUEL/DEFUEL VALVE CANISTER (280438)	28-25-26			
Removal/Installation			401	101-200,
FUEL TRANSFER (CG) CONTROL SYSTEM	28-26-00			
Description and Operation			1	ALL
Adjustment/Test			501	ALL
Operational Test - Manual Forward Transfer Control			501	ALL
Excess Aft CG Warning Test			503	ALL

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SUBJECT	CH/SE/SU	C	PAGE	EFFECTIVITY
Deactivation/Reactivation			901	ALL
Ref. MMEL Sect. 1-28, Item 43			901	ALL
TRANSFER (CG) CONTROL VALVE (280442)	28-26-11			
Removal/Installation			401	ALL
Deactivation/Reactivation			901	ALL
Ref: MMEL Sect. 1-28, Item 35			901	ALL
TRANSFER (CG) CONTROL VALVE ACTUATOR	28-26-12			
Removal/Installation			401	ALL
AUXILIARY TRANSFER (CG) VALVE	28-26-13			
Removal/Installation			401	ALL
Deactivation/Reactivation			901	ALL
Ref: MMEL Sect. 1-28, Item 35			901	ALL
AUXILIARY TRANSFER (CG) VALVE ACTUATOR	28-26-14			
Removal/Installation			401	ALL
TRIM TANK FUEL TRANSFER LINE	28-26-15			
Removal/Installation			401	ALL
Repair			801	ALL
SHROUDED FLEXIBLE HOSE (2 IN.)	28-26-16			
Removal/Installation			401	ALL
AFT TRANSFER VALVE(S) ACTUATOR (17QL, 18QL)	28-26-17			
Removal/Installation			401	ALL
AFT TRANSFER VALVE(S) (280440, 280443)	28-26-18			
Removal/Installation			401	ALL
Deactivation/Reactivation			901	ALL
Ref: MMEL Sect. 1-28, Item 36.			901	ALL
CHECK VALVE 2 IN (FUEL TRANSFER) CENTER TANK	28-26-19			
Removal/Installation			401	ALL
THERMAL EXPANSION VALVE - TRIM TANK	28-26-20			
Removal/Installation			401	ALL
FUEL TRANSFER (CG) PUMP SYSTEM	28-27-00			
Description and Operation			1	ALL
Adjustment/Test			501	ALL
Operation Test of the Trim Tank Pumps			501	ALL
TRANSFER PUMP (TRIM TANK) (280430, 280431)	28-27-11			
Removal/Installation			401	ALL
CANISTER-TRANSFER PUMP (TRIM TANK)	28-27-12			
Removal/Installation			401	ALL
PRESSURE SWITCH (TRIM TANK)	28-27-14			
Maintenance Practices			201	ALL
Purge the Pressure Switch Feed Line			201	ALL
Removal/Installation			401	ALL

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SUBJECT	CH/SE/SU	C	PAGE	EFFECTIVITY
ADDITIONAL CENTER TANK TRANSFER SYSTEM	28-28-00			
Description and Operation			1	101-200,
Adjustment/Test			501	101-200,
Operational Test - Manual (FWD) Transfer and Automatic Transfer Mode			501	101-200,
Functional Test Pressurization-System			533	101-200,
Functional Test Pressurization-System			538	101-200,
Operational Test - Auxiliary Fuel Transfer Fault Warning System			546	101-200,
Operational Test-Integrity of ACT(s) Fuel Transfer Fault Warning Circuit			548	101-200,
Operational Test - ACT(s) Fuel Transfer Fault Warning Function By Low Level Test Switch With ACT(s) Installed			551	101-200,
Operational Test - ACT(s) Fuel Transfer Fault Warning Function By Low Level Test Switch Without ACT(s) Fitted			553	101-200,
Leak Pressure Test (ACT System Provisions)			554	101-200,
Leakage Test of the (ACT System Provisions)			555	101-200,
Operational Test - Vent Valve Actuator 280273			560	101-200,
Operational Test - Vent Valve Actuators 280273 and 280274			560	101-200,
Functional Test - Inward Relief Valve 280251			568	101-200,
Functional Test - Inward Relief Valve 280251			569	101-200,
ADDITIONAL CENTER TANK PUMP 14QH	28-28-13			
Removal/Installation			401	101-200,
ADDITIONAL CENTER TANK PUMP MOUNTING (280232)	28-28-14			
Removal/Installation			401	101-200,
ACT PUMP PRESSURE SWITCH 15QH	28-28-15			
Removal/Installation			401	101-200,
ACT TRANSFER VALVE (280238)	28-28-16			
Removal/Installation			401	101-200,
Deactivation/Reactivation			901	101-200,
ACT TRANSFER VALVE ACTUATOR (21QH)	28-28-17			
Removal/Installation			401	101-200,
PRESSURE REDUCING VALVE 280261	28-28-18			
Removal/Installation			401	101-200,
AIR SHUT-OFF VALVE	28-28-19			
Removal/Installation			401	101-200,

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SUBJECT	CH/SE/SU	C	PAGE	EFFECTIVITY
Removal/Installation			402	101-200,
Removal of the Actuator 280272			404	101-200,
Removal of the Shut-Off Valve 280260			404	101-200,
Preparation for Installation			407	101-200,
Installation of the Shut-Off Valve 280260			409	101-200,
Installation of the Actuator 280272			410	101-200,
Test			410	101-200,
Test			411	101-200,
Deactivation/Reactivation			901	101-200,
Ref: MMEL Sect 1-28, Item 47			901	101-200,
FILTER AIR	28-28-24			
Removal/Installation			401	101-200,
Removal of the Air Filter Cartridge			401	101-200,
Removal/Installation			401	101-200,
Removal of the Air Filter Cartridge			402	101-200,
Removal of the Air Filter Assembly			405	101-200,
Preparation for Installation			405	101-200,
Installation of the Air Filter Cartridge			408	101-200,
Installation of the Air Filter Cartridge			408	101-200,
Installation of the Air Filter Assembly			408	101-200,
FUEL INLET VALVE AND ACTUATOR - ADDITIONAL CENTER TANK	28-28-25			
Removal/Installation			401	101-200,
Removal of the Fuel Inlet Valve Actuator 280290			406	101-200,
Removal of the Actuator 280290 (280298)			406	101-200,
Removal of the Fuel Inlet Valve 280288			406	101-200,
Removal of the Fuel Inlet Valve 280288 (280296)			412	101-200,
Preparation for Installation of the Actuator 280290			414	101-200,
Preparation for Installation of the Actuator 280290 (280298).			414	101-200,
Preparation for Installation of the Fuel Inlet Valve 280288			418	101-200,
Fuel Inlet Valve 280288 (280296)			420	101-200,
Installation of the Actuator 280290			421	101-200,
Installation of the Actuator 280290 (280298)			421	101-200,
Installation of the Fuel Inlet Valve 280288			421	101-200,
Installation of the Fuel Inlet Valve 280288 (280296)			421	101-200,
Test			425	101-200,
Deactivation/Reactivation			901	101-200,

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SUBJECT	CH/SE/SU	C	PAGE	EFFECTIVITY
Ref: MMEL Sect 1-28, Item 51 (52)			901	101-200,
INDICATING	28-40-00			
Description and Operation			1	ALL
FUEL QUANTITY INDICATING SYSTEM	28-42-00			
Description and Operation			1	ALL
Probes			17	ALL
Adjustment/Test			501	ALL
Operational (BITE) Test			501	ALL
Functional Test			508	ALL
Using Gull Test Set				
Capacitance Measurement - Input to Computer			510	001-100,
Capacitance Measurement - Input to Computer			510	101-200,
Outer, Inner, Center Tank Total Compensator/Probe Capacitance Measurement - Tank Wall			519	ALL
Trim- Tank Total Compensator/ Probe Capacitance Measurement - Tank Wall			524	ALL
Outer, Inner, Center Tank Individual Compensator/Probe Capacitance Measurement - Tank Wall			527	ALL
Trim Tank Individual Compensator /Probe Capacitance Measurement - Tank Wall			530	ALL
ACT Individual Compensator/ Probe Capacitance Measurement - FQI Probes			534	101-200,
ACT 1 and 2 Individual Compensator/Probe Capacitance Measurement - FQI Probes			534	101-200,
Outer, Inner, Center Tank Insulation Resistance Measurement - Tank Probe Set			543	ALL
Trim Tank Insulation Resistance Measurement - Tank Probe Set			546	ALL
Outer, Inner, Center Tank Insulation Resistance Measurement - Individual Probes			548	ALL
Trim Tank Insulation Resistance Measurement - Individual Probes			551	ALL
ACT Insulation Resistance Measurement - Individual Probes			555	101-200,
ACT Insulation Resistance Measurement - Individual Probes			559	101-200,
Calibration Check			601	ALL
Deactivation/Reactivation			901	ALL
Ref. MMEL Section 1-28, items 16 and 17			901	ALL

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SUBJECT	CH/SE/SU	C	PAGE	EFFECTIVITY
Ref. MMEL Section 1-28,			911	ALL
items 12, 14 and 15			911	ALL
INNER TANK SENSOR HARNESS	28-42-23			
Removal/Installation			401	ALL
OUTER TANK SENSOR PROBE HARNESS	28-42-24			
Removal/Installation			401	ALL
CENTER-TANK GAGING-HARNESS	28-42-25			
Removal/Installation			401	ALL
Replacement of the Center-Tank Probe Harness			401	ALL
Replacement of the Center-Tank Level-Sensor Harness			405	ALL
FUEL QUANTITY PROBES - CENTER TANK	28-42-31			
Removal/Installation			401	ALL
FUEL QUANTITY PROBES - INNER TANK	28-42-32			
Removal/Installation			401	ALL
Fuel Quantity Probes - Outer Tank	28-42-33			
Removal/Installation			401	ALL
INNER TANK PROBE HARNESS	28-42-35			
Removal/Installation			401	ALL
OUTER TANK PROBE HARNESS	28-42-36			
Removal/Installation			401	ALL
HARNESS ADAPTER PLUG	28-42-37			
Removal/Installation			401	ALL
FUEL QUANTITY COMPUTER 15QT	28-42-38			
Removal/Installation			401	ALL
Adjustment/Test			501	ALL
Operational Test			501	ALL
Functional Test			507	ALL
FUEL QUANTITY PRESELECTOR (9QT, 11QT)	28-42-39			
Removal/Installation			401	ALL
FUEL QUANTITY INDICATOR (6QT), (7QT)	28-42-41			
Removal/Installation			401	ALL
FUEL QUANTITY ATTITUDE SENSOR 5QT	28-42-43			
Removal/Installation			401	ALL
CADENSICON SENSOR (10QT)	28-42-44			
Removal/Installation			401	ALL
CADENSICON SENSOR MOUNTING ADAPTER	28-42-45			
Removal/Installation			401	ALL
FUEL QUANTITY PROBES (TRIM TANK)	28-42-51			
Removal/Installation			401	ALL
FUEL QUANTITY HARNESS 52QT (53QT), TRIM TANK	28-42-52			
Removal/Installation			401	ALL
FUEL LEVEL SENSING HARNESS 6015VC,TRIM TANK	28-42-53			
Removal/Installation			401	ALL
PROBE - FUEL QUANTITY - ADDITIONAL CENTER TANK	28-42-61			
Removal/Installation			401	101-200,
Removal/Installation			401	101-200,

SUBJECT	CH/SE/SU	C	PAGE	EFFECTIVITY
Adjustment/Test			501	101-200,
Adjustment/test			501	101-200,
MAGNETIC LEVEL INDICATORS	28-43-00			
Description and Operation			1	ALL
MAGNETIC LEVEL INDICATORS	28-43-21			
Removal/Installation			401	ALL
Magnetic Level Indicators (complete)			401	ALL
Graduated Tube, Magnet and Bush Assembly			408	ALL
TANK LEVEL WARNING SYSTEM	28-46-00			
Description and Operation			1	ALL
Adjustment/Test			501	ALL
Operational Test			501	ALL
Outer Tank Low Level Warning and Underfull Test			503	001-100,
Outer Tank Low Level Warning Test			506	101-200,
High Level and Overflow Warning Test			508	ALL
Outer Tank Underfull and Low Level Sensor Test With Fuel			508	001-100,
Outer Tank Low Level Sensor Test With Fuel			508	101-200,
Inner and Center Tank Low Level Test			510	ALL
Trim Tank Low Level Sensor Test			524	001-100,
Trim Tank Low Level Sensor Test			524	101-200,
Trim Tank Low Level Sensor Test			525	101-200,
Trim Tank High Level Sensors Test With Fuel			526	ALL
Trim Tank Overflow Sensor Test With Fuel			529	ALL
High level and overflow sensor test			535	ALL
Functional Test - With Test Set (PN 722131)			538	001-100,
Functional Test - With Test Set (PN 722131)			539	101-200,
Functional Test - With Test Set (PN 722370)			548	ALL
Functional Test - With Test Set (PN722427)			566	101-200,
FUEL LEVEL SENSORS HIGH AND LOW	28-46-21			
Removal/Installation			401	ALL
OVERFLOW SENSOR	28-46-22			
Removal/Installation			401	ALL
FUEL LEVEL AMPLIFIER	28-46-23			
Removal/Installation			401	ALL
FUEL CALIBRATION SENSORS INNER & CENTER TANKS	28-46-28			

SUBJECT	CH/SE/SU	C	PAGE	EFFECTIVITY
Removal/Installation			401	ALL
CALIBRATION SENSOR 88QJ	28-46-29			
Removal/Installation			401	ALL
FUEL LEVEL SENSORS 81QJ, 82QJ, 85QJ	28-46-30			
Removal/Installation			401	ALL
OVERFLOW SENSOR 83QJ	28-46-31			
Removal/Installation			401	ALL
TEMPERATURE SENSOR, FUEL (1QR)	28-49-11			
Removal/Installation			401	101-200,

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FUEL - GENERAL - DESCRIPTION AND OPERATION

1. General

A. Description

The aircraft fuel system holds and supplies fuel to the engines, it also supplies fuel to the auxiliary power unit (APU) (Ref. 49-00-00, P. Block 1). The system includes the electrical circuits, the controls and the displays necessary to control the system and monitor its operation.

**ON A/C 101-200,

The fuel system:
- controls and supplies fuel in the correct tank order and quantity when the six tanks and the ACT(s) (if installed) are filled

**ON A/C 001-100,

The fuel system:
- controls and supplies fuel in the correct tank order and quantity when the six tanks are filled

**ON A/C ALL

- shows the quantity of fuel in each tank and the total quantity of fuel onboard
- supplies the fuel as necessary to the main engines and the APU for all conditions that the aircraft operates in
- moves fuel from and to the trim tank to keep the nominal center of gravity (CG) within given limits
- shows to the crew the normal operation of the system
- shows to the crew any fault which could cause a situation to start which is not normal

**ON A/C ALL

Post SB 28-2049 For A/C 001-003,

- supplies an automatic water-scavenge system

**ON A/C ALL

2. Component Location

(Ref. Fig. 001)

**ON A/C 001-100,

(Ref. Fig. 002)

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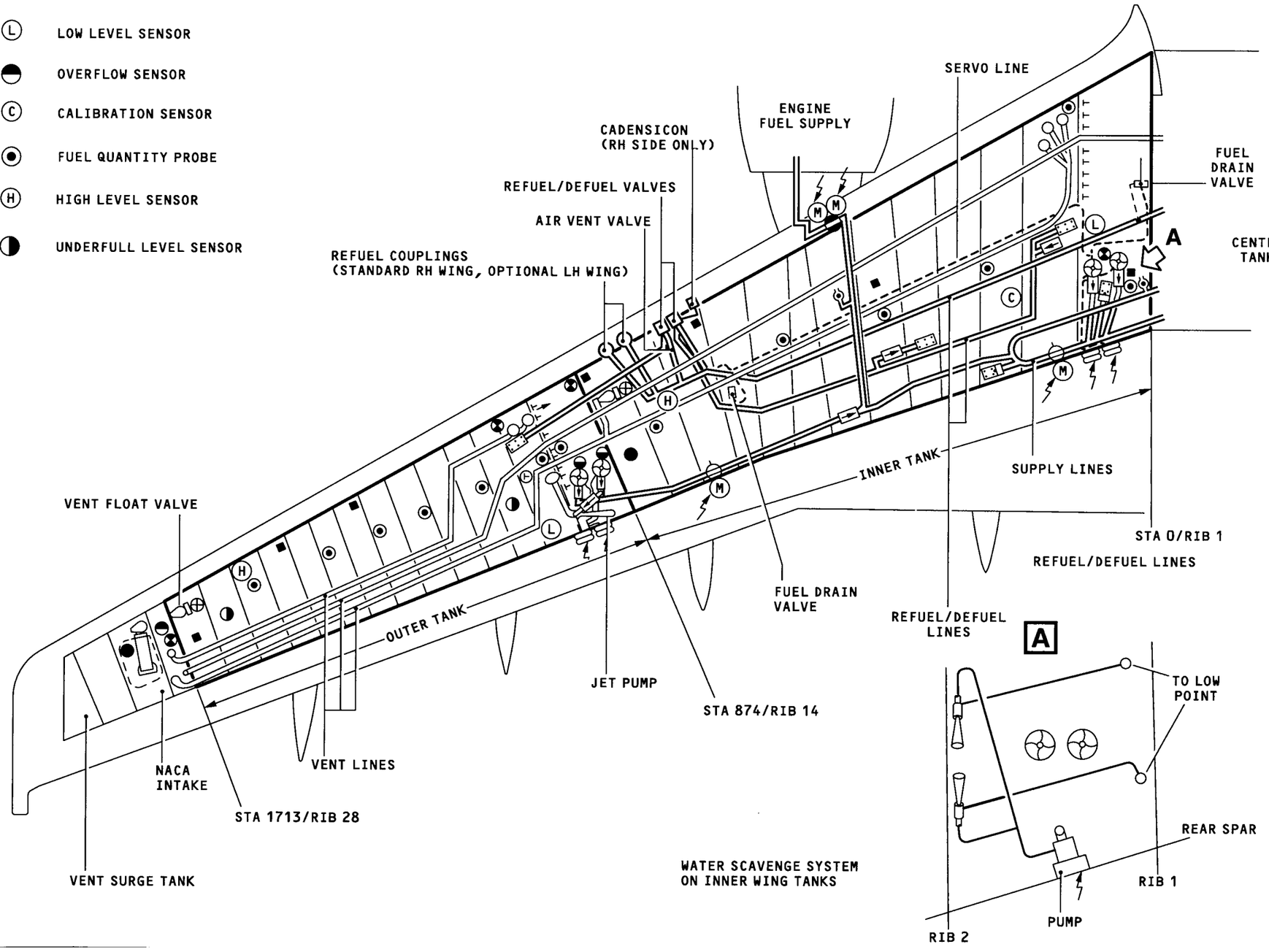
KEY

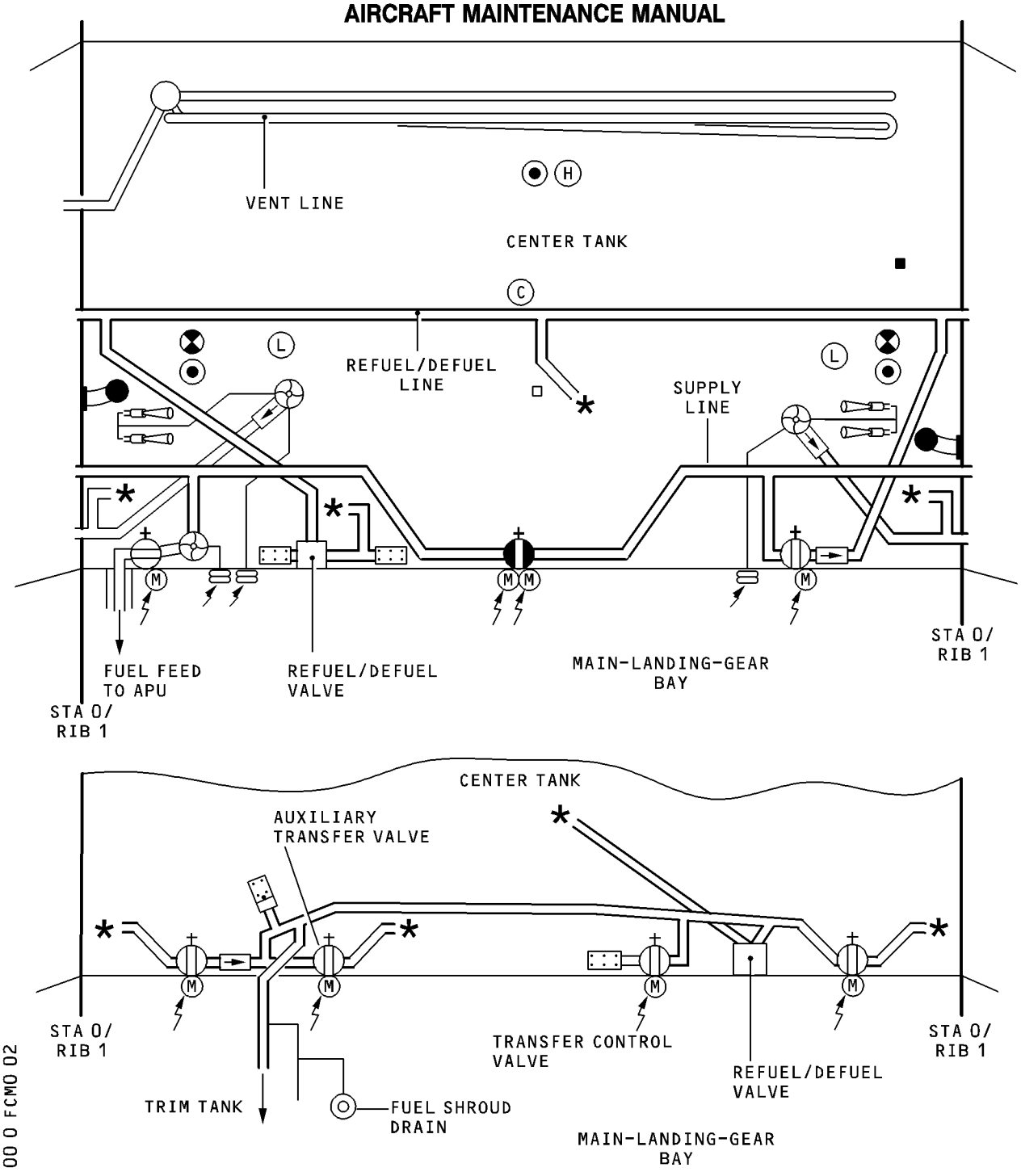
- AIR BLEED VALVE
- ENGINE LP VALVE
- ISOLATION VALVE
- CROSSFEED VALVE
- TRANSFER VALVE
- DIFFUSER
- (M) MOTOR (ACTUATOR)
- SEQUENCE VALVE
- OVERPRESSURE PROTECTOR
- MAGNETIC LEVEL INDICATOR
- FLAP VALVE (→DIRECTION OF FLOW)
- FUEL PUMP
- CHECK VALVE
- THERMAL RELIEF VALVE
- PRESSURE SWITCH
- WATER DRAIN VALVE
- JET PUMP
- OVER WING REFUELLING CAP
- (L) LOW LEVEL SENSOR
- OVERFLOW SENSOR
- (C) CALIBRATION SENSOR
- FUEL QUANTITY PROBE
- (H) HIGH LEVEL SENSOR
- UNDERFULL LEVEL SENSOR



NOTE : LEFT WING SHOWN
RIGHT WING SIMILAR

BM8 28 00 00 0 AAQ0 02

Fuel System Schematic - Wing Tanks
Figure 001



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NOTE : * FUEL SUPPLY OR REFUEL/DEFUEL LINE INTERFACE WITH TRIM-TANK TRANSFER-LINE, REFER TO WING-TANK FUEL-SYSTEM SCHEMATIC FOR KEY TO SYMBOLS.

Fuel System Schematic - Center Tank
Figure 002

**ON A/C 101-200,

(Ref. Fig. 003)

**ON A/C 001-003,

(Ref. Fig. 004)

**ON A/C ALL

Post SB 28-2049 For A/C 001-003,

(Ref. Fig. 005)

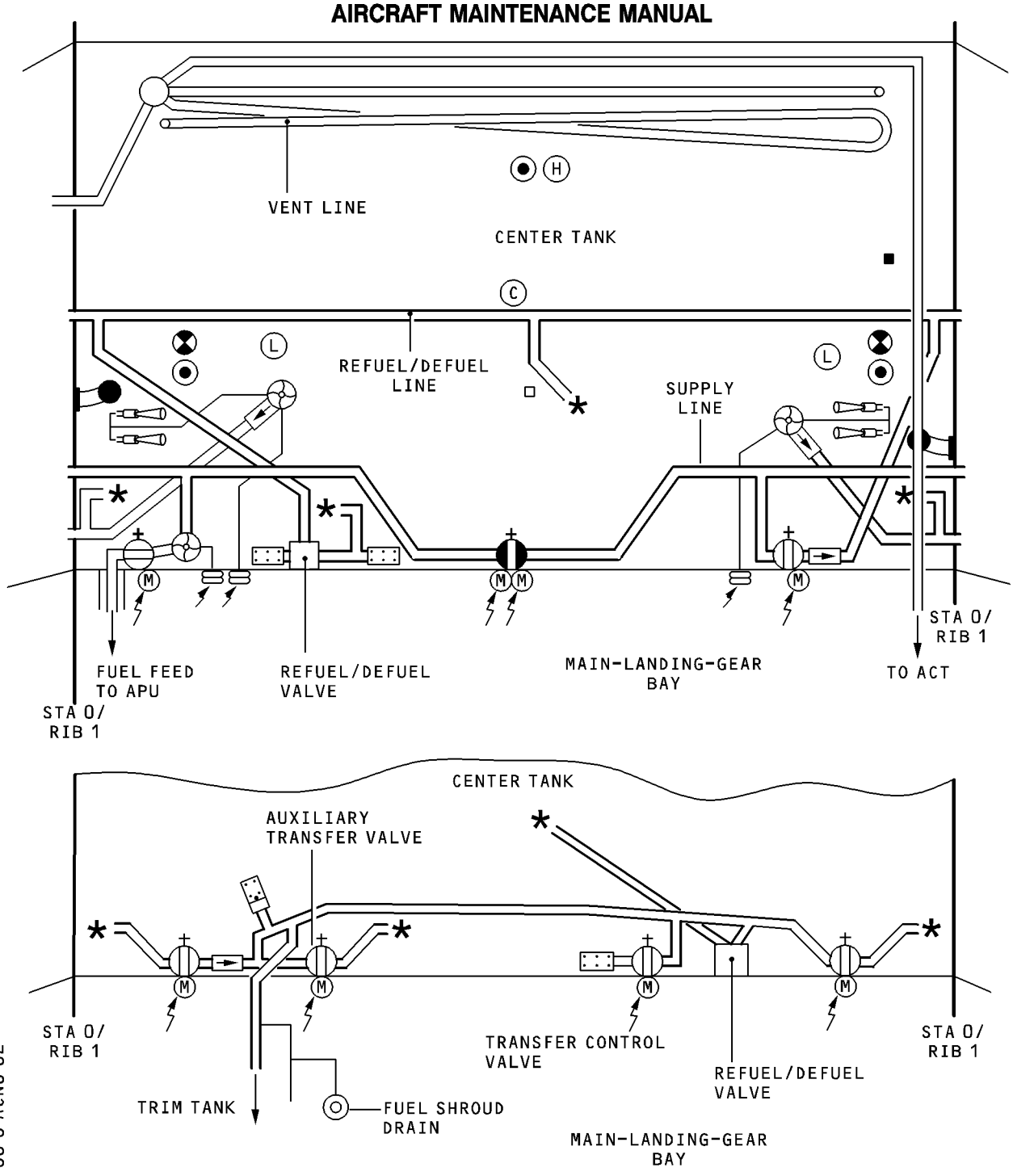
**ON A/C 101-200,

(Ref. Fig. 006)

R **ON A/C 101-103, 105-200,

R Post SB 28-2105 For A/C 101-103,105-200,

(Ref. Fig. 007)



BM8 28 00 00 0 ACN0 02

NOTE : * FUEL SUPPLY OR REFUEL/DEFUEL LINE INTERFACE WITH TRIM-TANK TRANSFER-LINE AND ACT, REFER TO WING-TANK FUEL-SYSTEM SCHEMATIC FOR KEY TO SYMBOLS.

Fuel System Schematic - Center Tank
Figure 003

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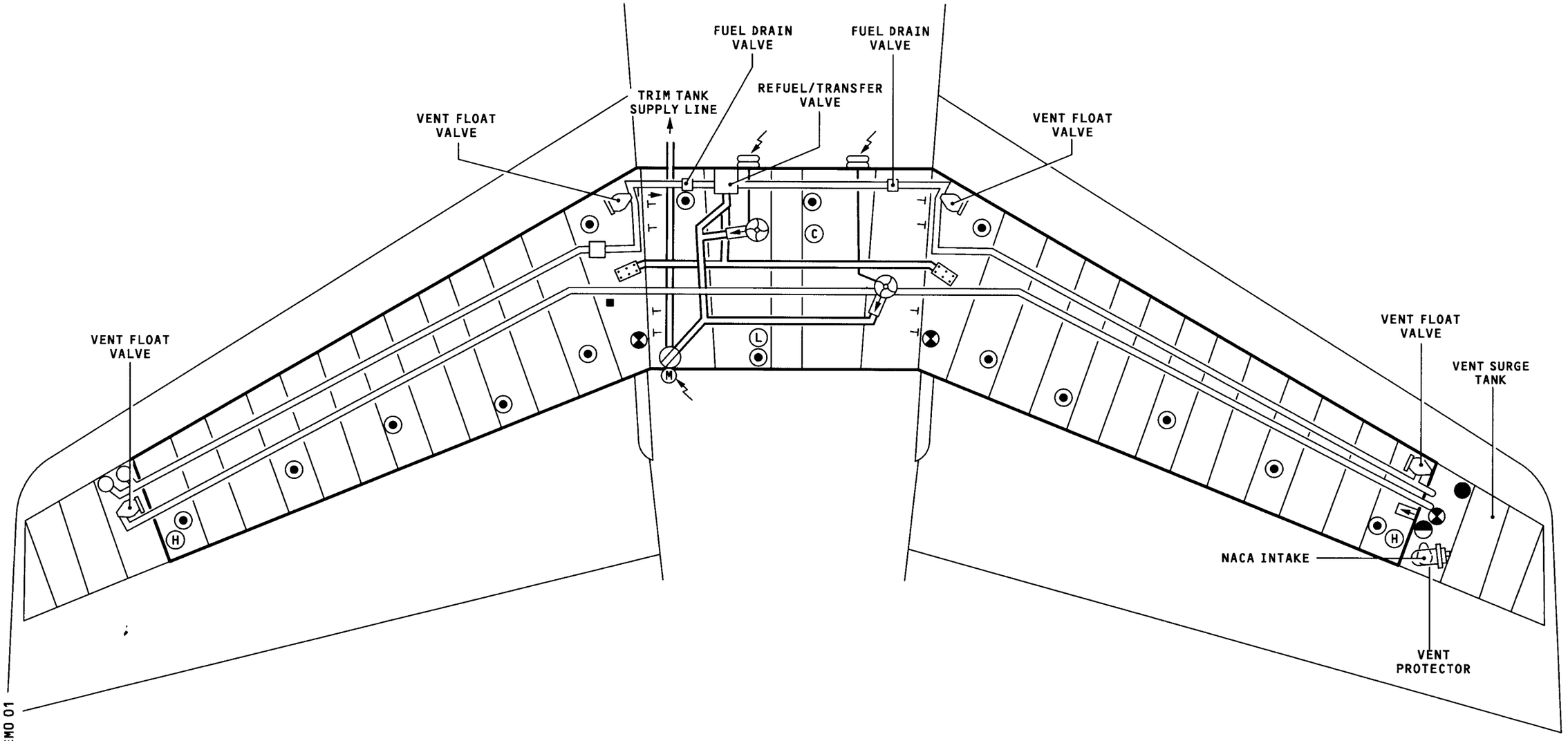

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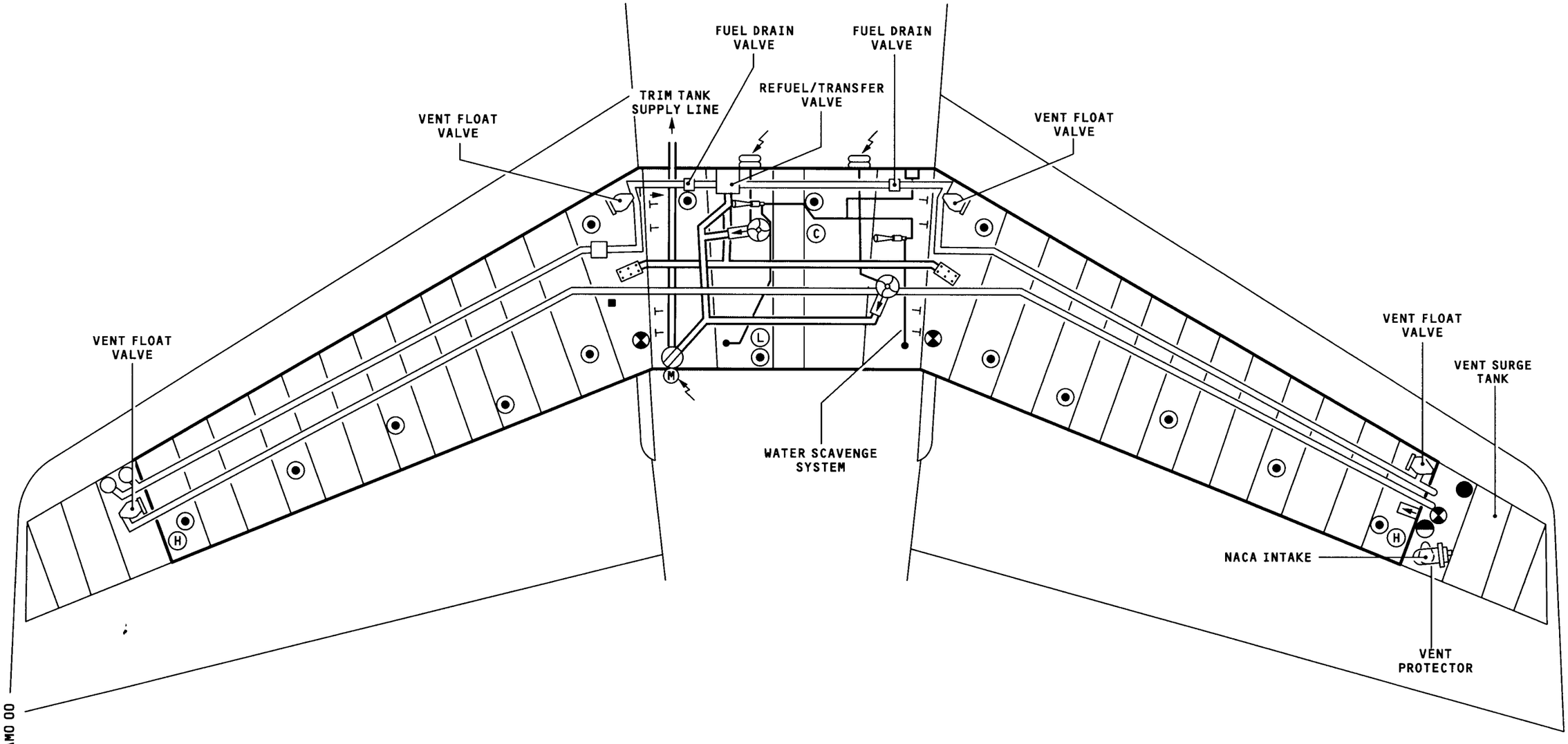
NOTE : REFER TO WING-TANK FUEL-SYSTEM SCHEMATIC FOR KEY TO SYMBOLS

Fuel System Schematic - Trim Tank
Figure 004



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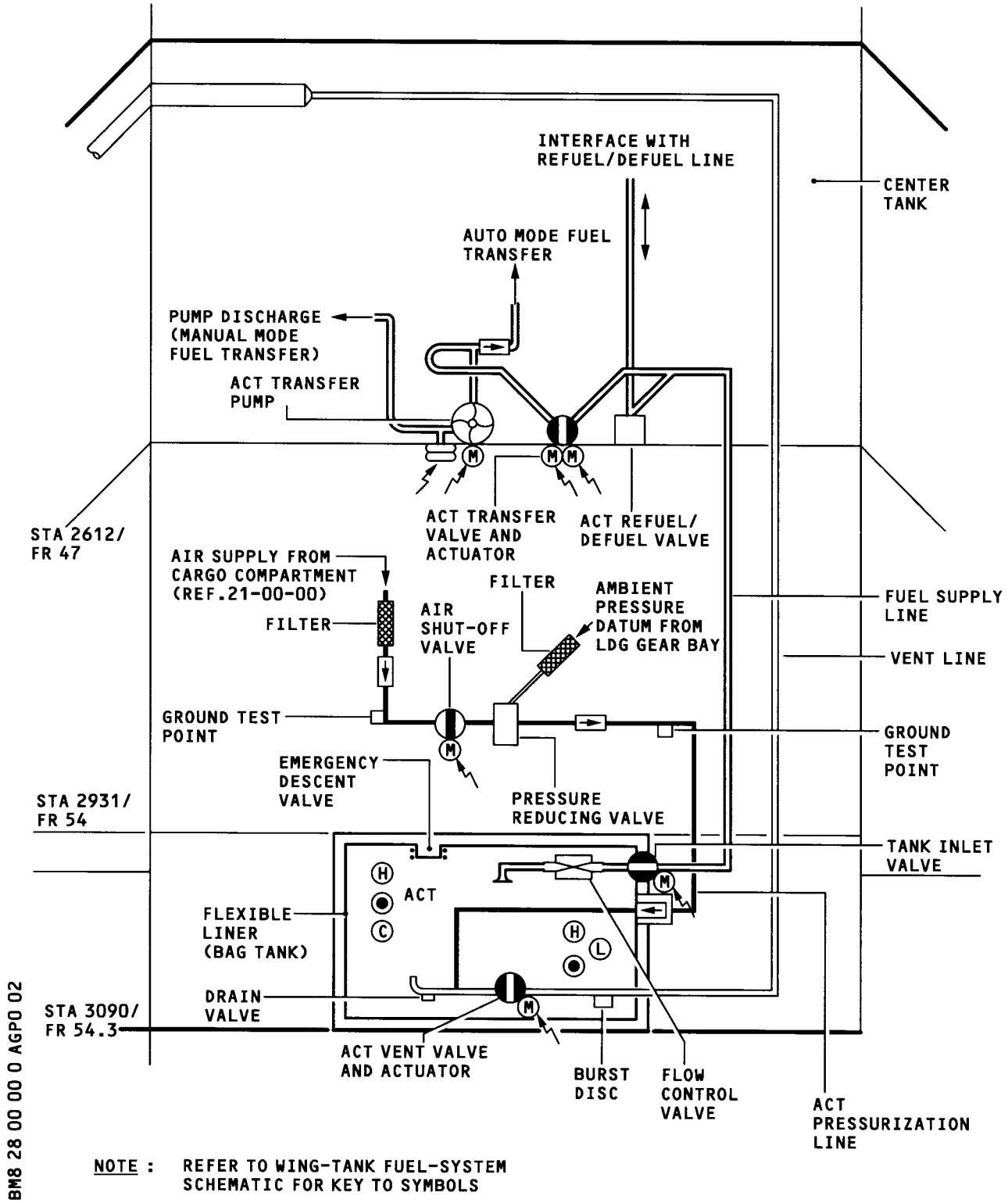
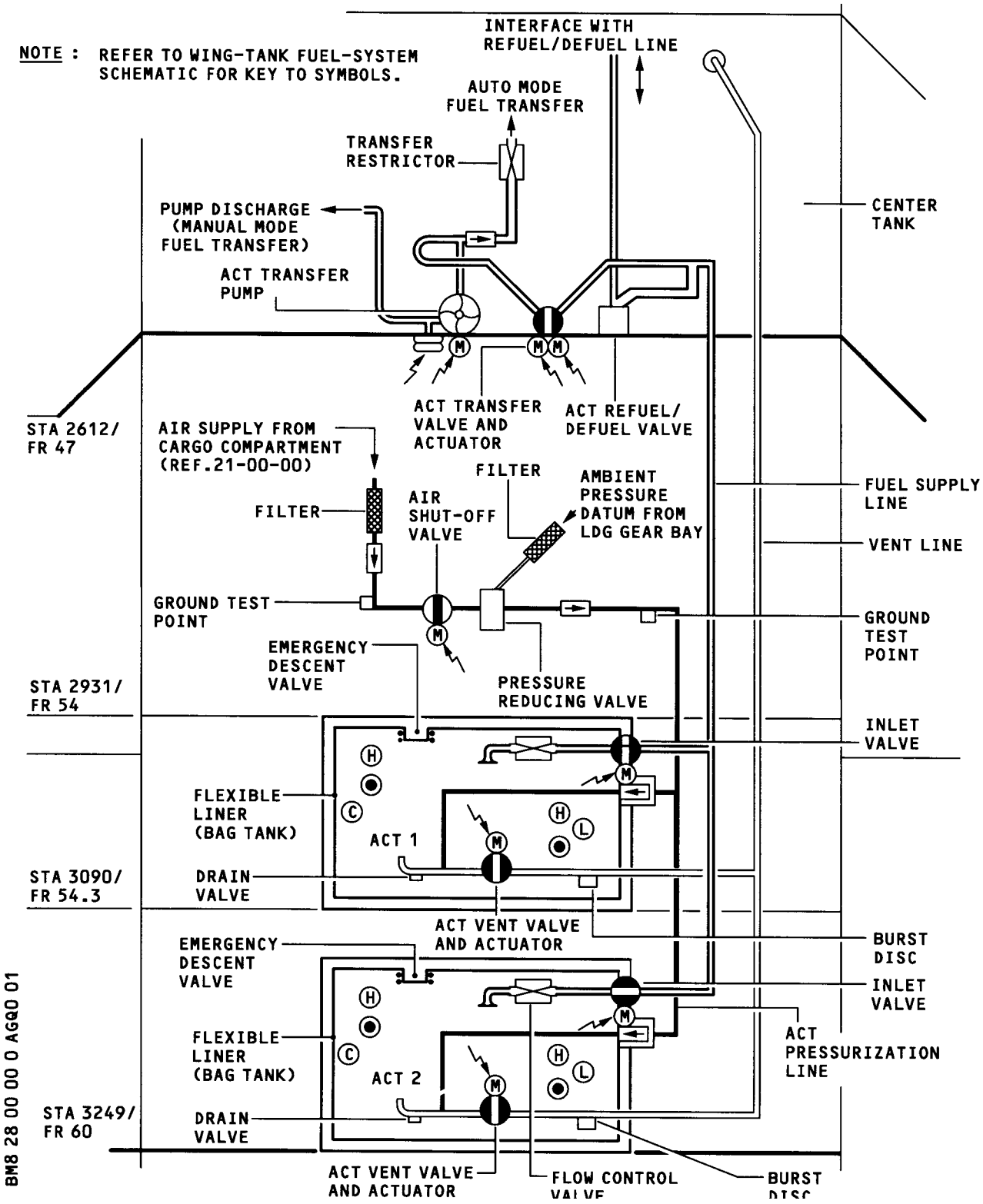
NOTE : REFER TO WING-TANK FUEL-SYSTEM SCHEMATIC FOR KEY TO SYMBOLS

Fuel System Schematic - Trim Tank
Figure 005



Fuel System Schematic - ACT
Figure 006



Fuel System Schematic - ACTs
Figure 007

**ON A/C ALL

3. Description

A. Fuel Storage (Ref. 28-10-00)

The fuel is kept in tanks (Ref. 28-11-00, P. Block 1) which are a part of:
- the L and R outer wing
- the L and R inner wing
- the center section
- the Trimmable Horizontal Stabilizer (THS) (trim tank).

**ON A/C 101-200,

You can increase the aircrafts fuel capacity if you install one ACT or two ACTs in the aft cargo compartment.

**ON A/C ALL

When the tanks are filled to capacity, space is available to let the fuel expand without loss through a vent system. A small quantity of the total fuel system capacity cannot be used (Ref. 12-11-28, P. Block 301). Each tank has a water drain valve that can be operated from outside the aircraft.

Vent surge tanks are installed outboard of each outer tank and at the RH side of the trim tank. The capacity of these surge tanks make sure that fuel leakage does not occur during:
- aircraft movement on the ground
- aircraft rotation at take off.

If fuel does enter these surge tanks it drains back to the related wing tank as that tanks fuel is used.

An automatic water-scavenge system is installed in the applicable tank/s to:
- keep the water in suspension
- prevent the accumulation of water at the low point in the tank.

Each fuel tank is connected to a vent system (Ref. 28-12-00, P. Block 1). The system prevents a large difference between the ambient air pressure and the air pressure in the tank. This large difference could occur during the refuel/defuel procedure or when the aircraft climbs or decends during flight. If a blockage occurs in the system, an over pressure protector installed in each vent surge tank will operate to keep the pressure difference to a safe limit. A protector installed in each vent tank gives the vent system protection from ground fires.

B. Fuel Distribution (Ref. 28-20-00)

The fuel distribution system makes sure that the fuel:
- is correctly distributed for flight during the refuel procedure
- is supplied to the two engines during all flight conditions
- is supplied to the APU
- can be isolated from an engine or the APU when necessary
- can be automatically moved forward or rearward during flight to get the correct CG.

There are two pumps in each of the wing tanks and the center tank (Ref. 28-21-00, P. Block 1). A control panel (430VU) in the flight compartment supplies the necessary P/BSWs to operate the pumps in an auto or manual mode of control. The pumps in the left and right inner tanks supply their related engine, the left and right pump in the center tank do the same. The left side pumps also supply the APU.

In the auto mode of control a hard-wired logic circuit makes sure that the inner and center tank pumps only operate when the necessary conditions occur. The pumps in the outer tanks operate continuously. Their output pressure is reduced to less than the other pumps to make sure that they only supply their related engines when necessary.

Isolation valves are installed in the fuel lines that connect the individual tanks (Ref. 28-22-00, P. Block 1). The valves are installed downstream of the fuel pumps and open to connect the pump supply to the engine supply line.

A fuel line goes through the center tank to connect the engine supply line in one wing to the supply line in the other wing (Ref. 28-23-00, P. Block 1).
A shut off valve (known as the crossfeed valve) keeps the supply line in the left wing isolated from the supply line in the right wing.

A fire protection system supplies a low-pressure shut-off valve in each engine supply line (Ref. 28-24-00, P. Block 1). The operation of these valves is manually controlled from the flight compartment.

The refuel/defuel system controls the flow of fuel into or out of the aircraft (Ref. 12-11-28 and 28-25-00, P. Block 301). Its operation is controlled from the refuel/defuel panel (110VU) which is located in the cooling-air intake fairing below the fuselage (Ref. 28-25-00, P. Block 1).

There are two fuel couplings located near the leading edge of the RH wing, two more couplings may be installed on the LH wing (Ref. 28-25-00, P. Block 1). These supply the interface between the refuel/defuel system and the external fuel supply. Fuel delivered to the couplings can be automatically or manually controlled to supply fuel in the correct quantities to the individual tanks. The fuel supply line to each tank includes a shut off valve (known as the refuel/defuel valve).

The refuel/defuel valves operate when applicable to keep the fuel quantity in the related tank to the necessary limit. These valves will also open to let you defuel the aircraft. The fuel pumps or an external suction source can be used to defuel the aircraft.

Fuel moves to and from the trim tank during specified flight phases. Forward fuel transfers always occur between the trim tank and the center tank. Aft transfers can be from the active tanks, inner or center. Shut off valves installed in the center tank (Ref. 28-26-00, P. Block 1) let the CGCC control the fuel transfer when necessary to keep the aircrafts CG correct. These valves can control the direction of fuel flow and the rate of fuel transfer. A manual override facility is available for forward fuel transfer should auto system failures occur.

Sealed fuel caps are installed on the top side of the wings. They give access to the inner and outer tanks and are available for a gravity refuel (Ref. 12-11-28, P. Block 301).

Two fuel pumps in the trim tank supply fuel to the center tank when necessary through a fuel line that has an outer shroud (Ref. 28-13-00, P. Block 1). Usually the CGCC operates these pumps in an auto mode but a manual mode of operation is available (Ref. 28-27-00, P. Block 1).

**ON A/C 101-200,

The air pressure in the aft cargo compartment is used to pressurize the ACT/s during flight. This pressurized air comes from the passenger compartment. When necessary the applicable shut off valves open to let the fuel go through to the center tank (Ref. 28-28-00, P. Block 1). A pump installed in the center tank can be used to move fuel forward when the flight conditions are not correct for auto fuel transfer.

**ON A/C ALL

C. Quantity Indicating (Ref. 28-40-00)

The indicating systems include:
- a fuel-quantity indicating system which shows the total fuel quantity on board and the quantity in each tank
- a set of MLIs which gives a secondary fuel-quantity indicating system
- a tank-level warning system which gives warnings when specified fuel levels occur.

**ON A/C 005-005, 101-200,

- a temperature indicating system which shows continuous fuel temperature at the ECAM.

**ON A/C ALL

The fuel-quantity indicating system (Ref. 28-42-00, P. Block 1) includes:
- a computer which is installed in the avionics compartment
- a quantity of (capacitance) probes that are installed in each of the fuel tanks
- a cadensicon (measures specific gravity of the fuel) installed in the right inner wing
- an aircraft attitude sensor installed in the trim tank
- a fuel quantity indicator installed on the overhead fuel panel in the flight compartment.

- a fuel quantity indicator installed in the refuel/defuel panel (110VU).

The computer (FQIC) uses the inputs it gets from the related probes and sensors to calculate the fuel quantity. It sends this data in a digital form to the fuel quantity indicators and other systems in the aircraft.

The MLIs are a secondary direct-reading system used to calculate the fuel quantity when the aircraft is on the ground (Ref. 28-43-00, P. Block 1). It is not necessary to have electrical power to use the indicators. You can calculate the fuel quantities in the outer, inner and the center tanks only. Tabular data (Ref. 12-11-28, P. Block 301) must be used with the MLI indications to calculate the fuel quantity.

The tank-level warning system includes a fuel level amplifier and a quantity of sensors in each of the fuel tanks and the surge tanks (Ref. 28-46-00, P. Block 1). The amplifier makes the necessary outputs when the sensors signal fuel levels are low, high, underfull, overflow and at calibration level. These outputs:
- control the operation of the fuel pumps and related shut off valves
- supply indications to the refuel/defuel panel
- cause the ECAM to show warnings when specified fuel levels occur
- give discrete inputs to the CGCC.

**ON A/C 005-005, 101-200,

The temperature sensor is installed in the left outer fuel-tank and supplies its output to the SDAC. This sends the data to the ECAM MEMO page which shows a real time display of the fuel temperature.

**ON A/C ALL

4. Panel Locations and Descriptions

**ON A/C 001-100,

R (Ref. Fig. 008)

**ON A/C 101-200,

(Ref. Fig. 009)

**ON A/C 101-200,

Post SB 28-2108 For A/C 101-200,

(Ref. Fig. 010)

**ON A/C ALL

(Ref. Fig. 011)

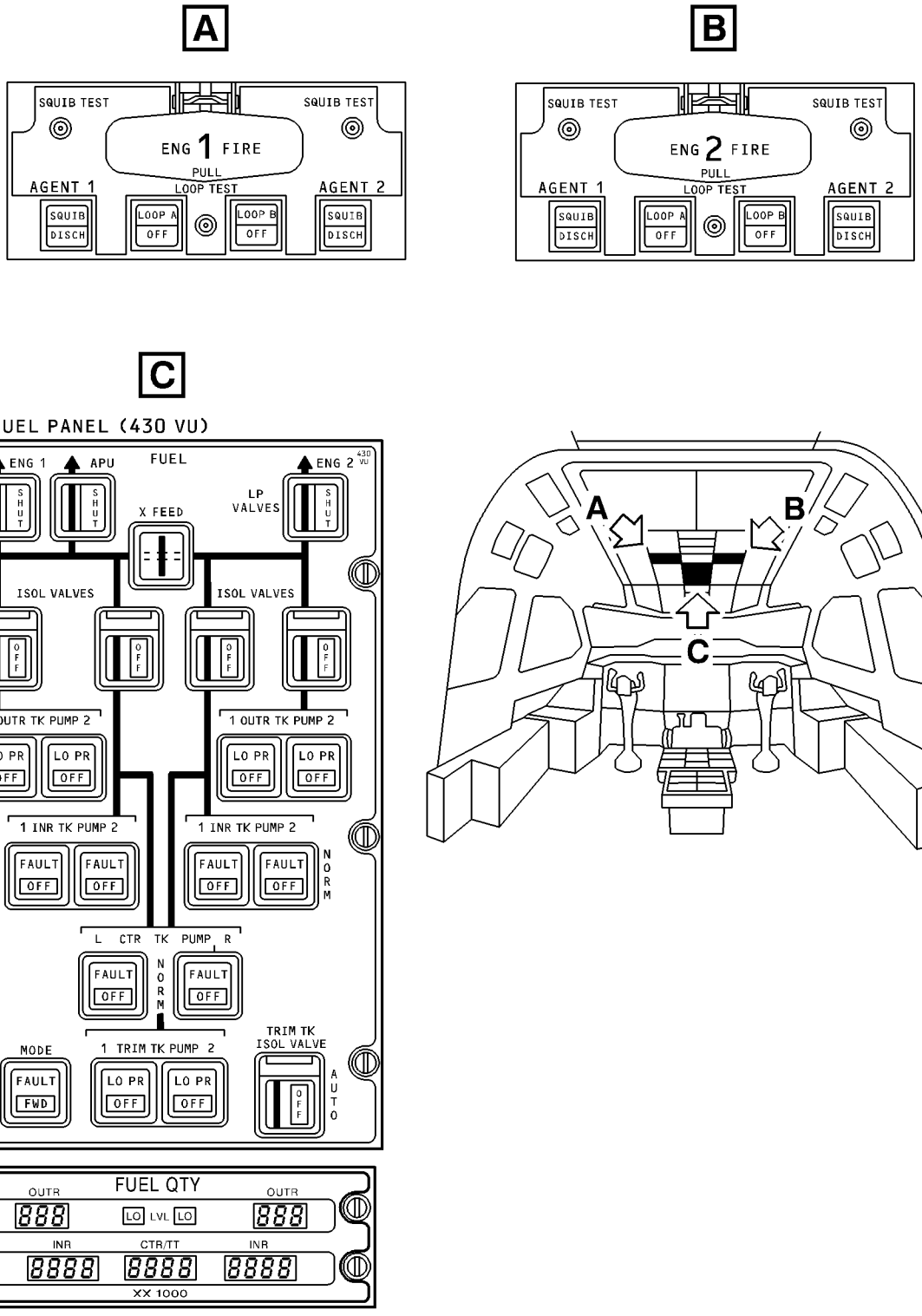
A. General

P/BSWs that include annunciators are available in the flight compartment on the overhead (FUEL) panel 430VU. These let you control and monitor the operation of the fuel system (Ref. Para. B.). The right ECAM CRT will show a schematic diagram of the fuel system (FUEL page) when you set this display at the ECAM MCDU (Ref. 31-50-00). This display shows the operation of the fuel pumps and the valves in the system. The flow lines between the fuel tanks and the engines/APU only show when the related fuel lines are in use.

A digital fuel quantity indicator on the overhead panel shows the fuel quantity in each tank. It can also show code numbers when faults occur in the system (Ref. Para. D.) and (TSM 28-42-00).

A related panel, 436VU, includes switches (6LP, 157LP and 158LP) (Ref. 33-14-00, P. Block 1) that let you:
- test the FUEL panel annunciator lights
- set the annunciator lights to dim or bright
- do an automatic test of the overhead panel lights and digital displays
- reset the automatic test after a defective light is found.

A maintenance panel 472VU, is installed on the RH side of the flight compartment behind the First Officer. This panel includes the necessary controls/annunciators that let you monitor/test the component parts of the system (Ref. Para. E.)



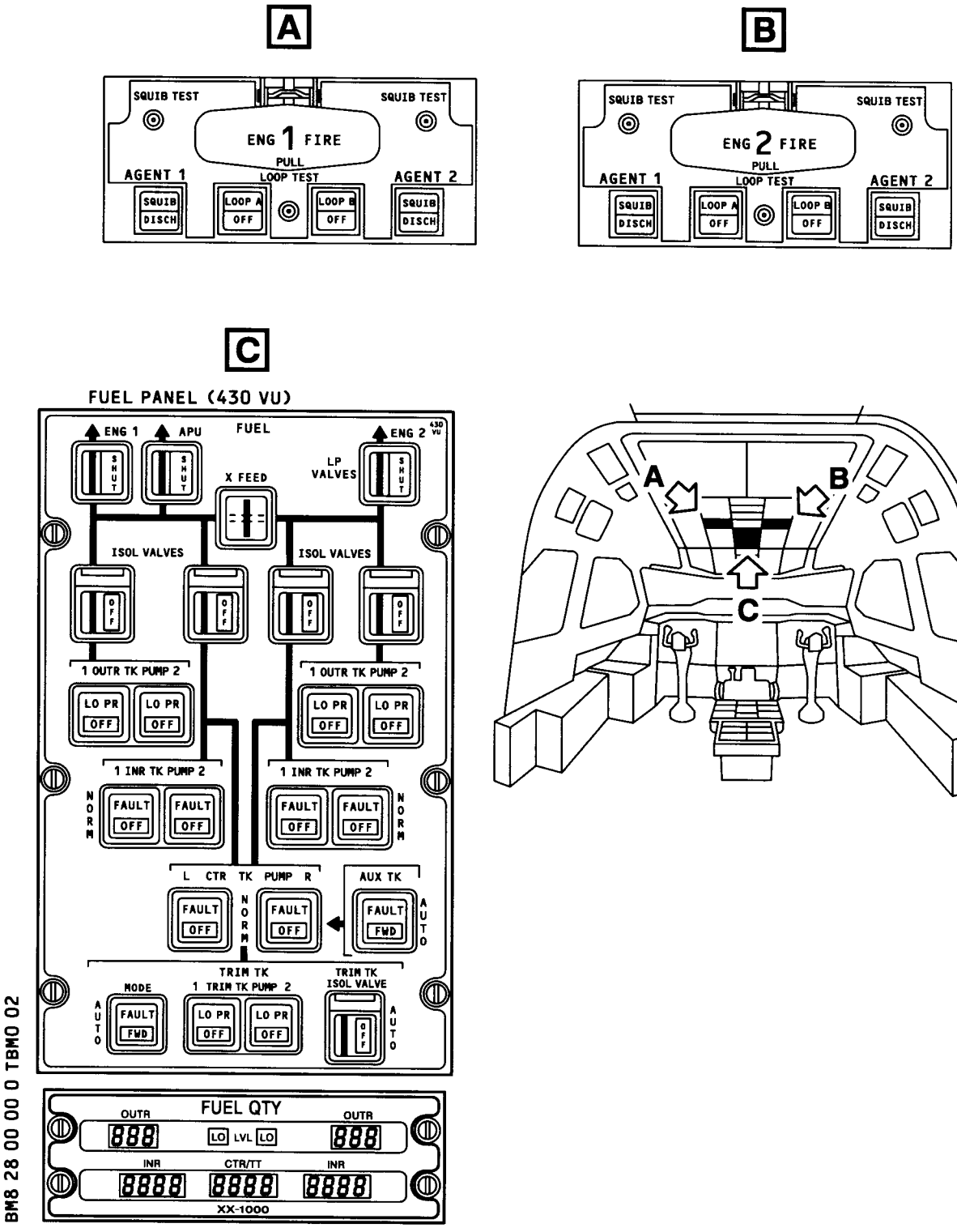
BM8 28 00 00 O MCMO 02

Fuel System Controls
Figure 008

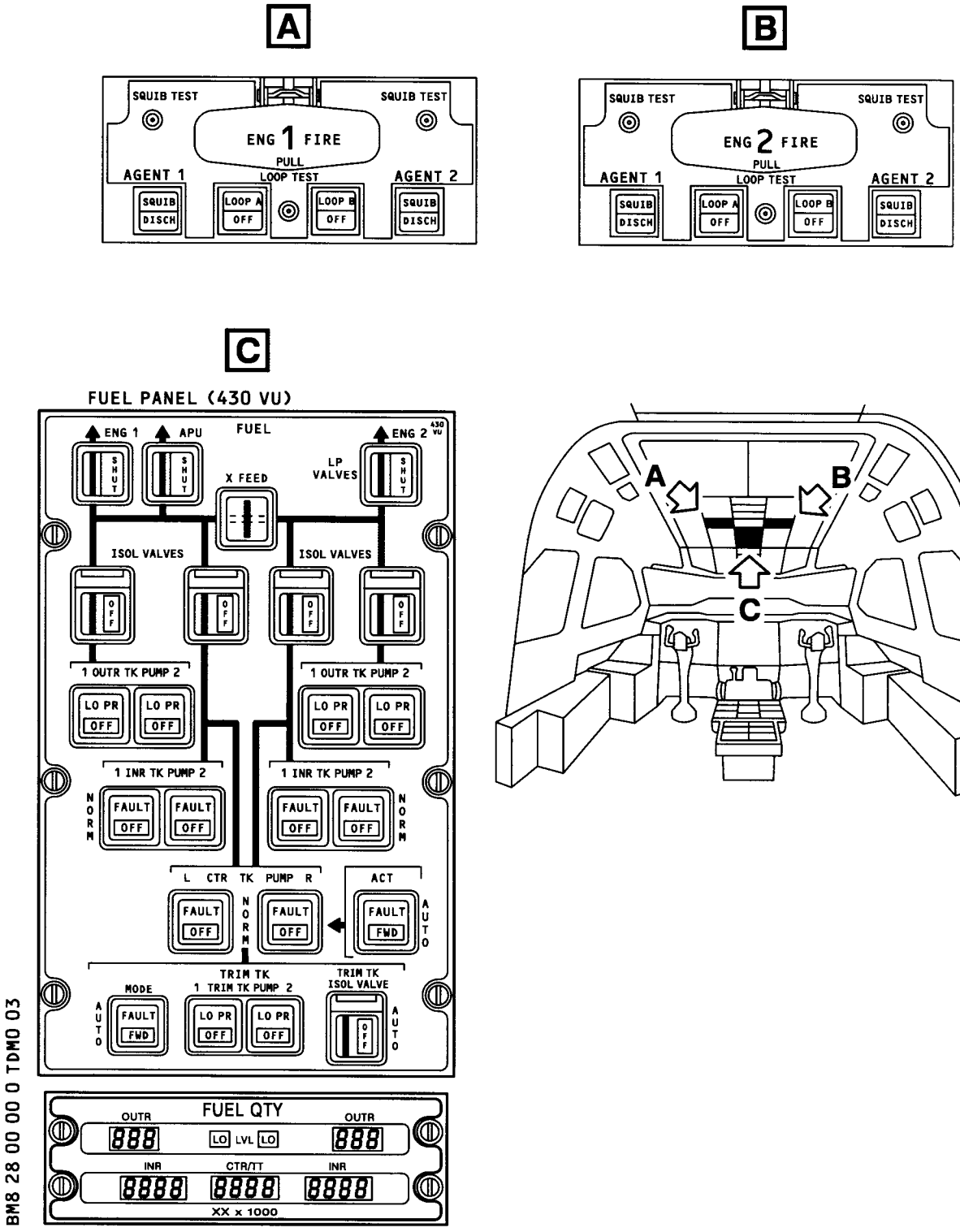
R

R EFFECTIVITY: 001-100,

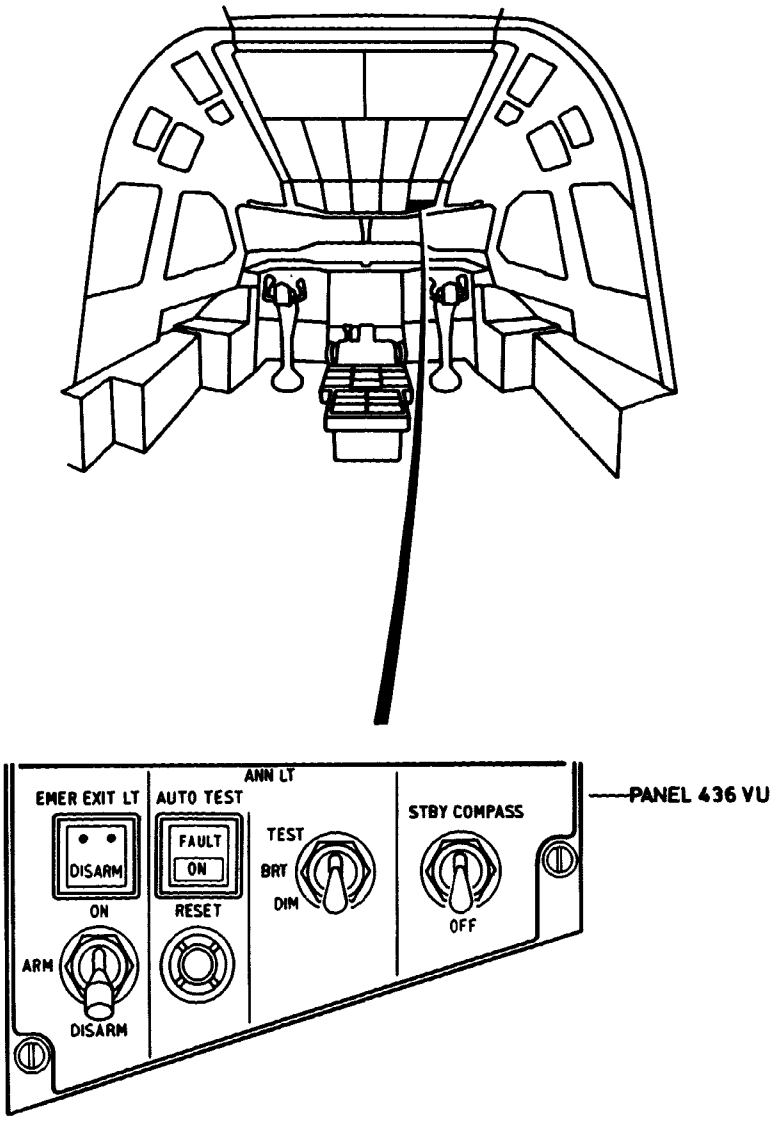
PIA



Fuel System Controls
Figure 009



Fuel System Controls
Figure 010



BM7 28 00 00 0 MEMO/11

Panel Lights Control Panel 436VU
Figure 011

An external panel 110VU, is located in the cooling-air intake fairing below the fuselage (Ref. Para. F.). This includes the controls and annunciators that are used during the refuel/defuel procedures.

B. Fuel Panel and ECAM System Display

**ON A/C 001-100,

(Ref. Fig. 012)

**ON A/C 102-200,

(Ref. Fig. 013)

R **ON A/C 101-103, 105-200,

R Post SB 28-2108 For A/C 102-103,105-200,

(Ref. Fig. 014)

**ON A/C ALL

The overhead panel 430VU, provides a schematic diagram of the fuel feed system and can be related to the component parts of the system. The P/BSWs and annunciators are set below captions and function as follows:

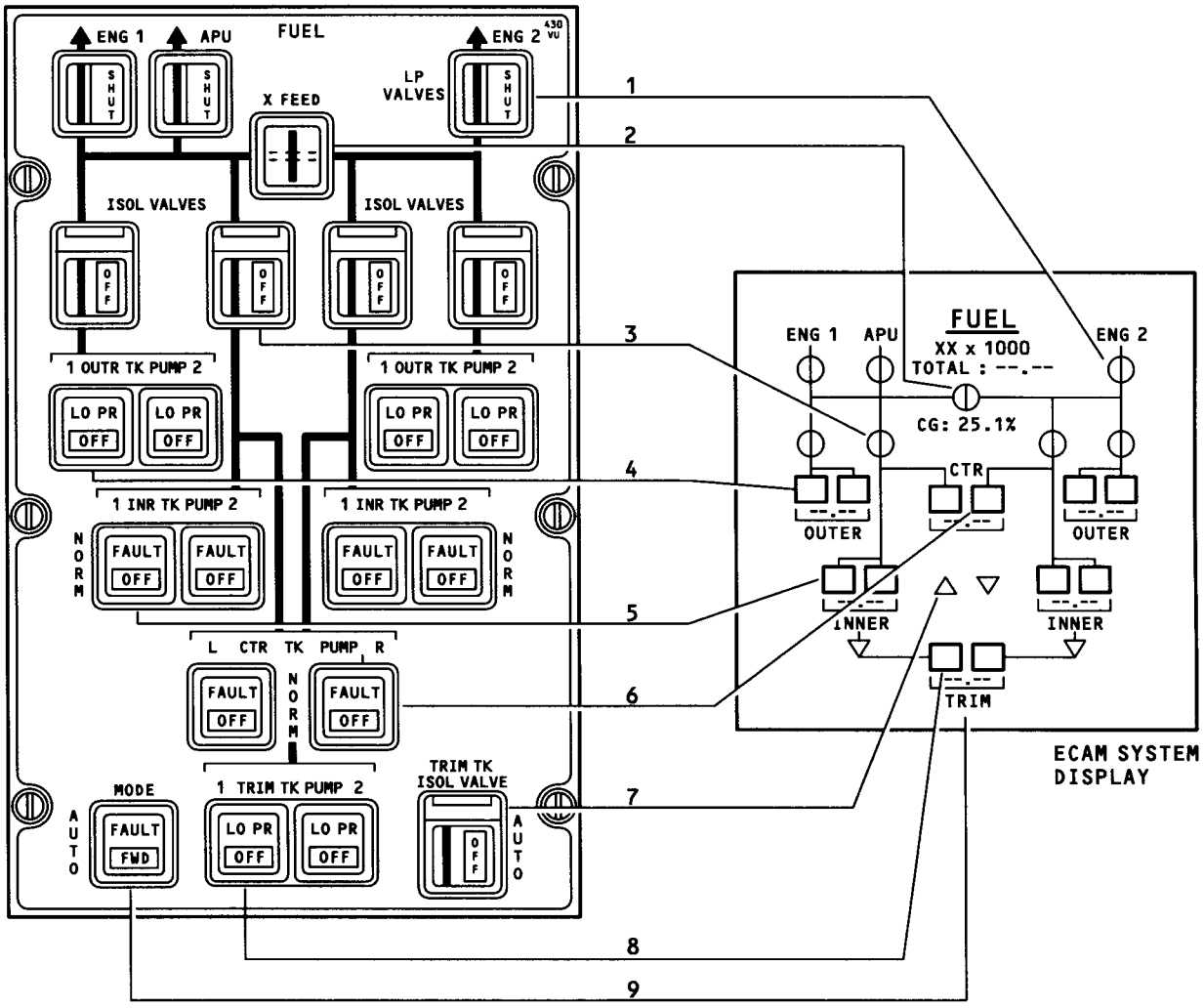
(1)ENG LP VALVE annunciators.
These annunciators show the position of the LP valves. When a fire handle is in the normal position:
- the related valve is open
- the green flowbar in the related ENG LP VALVE annunciator comes on steady
- the ECAM FUEL page shows the valve open symbol.

When a fire handle is pulled:
- the related ENG LP VALVE annunciator is blank during valve operation
- the amber SHUT legend comes on when the valve is fully closed
- the ECAM FUEL page shows the valve closed symbol.

(2)X FEED P/BSW.
This P/BSW controls the position of the crossfeed valve. When the P/BSW is released (out):
- the valve closes
- the green flowbars in the P/BSW go off during valve operation
- the cross line flowbar comes on when valve is fully closed
- the ECAM FUEL page shows the valve closed symbol.

When the P/BSW is pushed (in):
- the valve opens
- the green flowbars in the P/BSW go off during valve operation
- the in line flowbar comes on when the valve is fully open

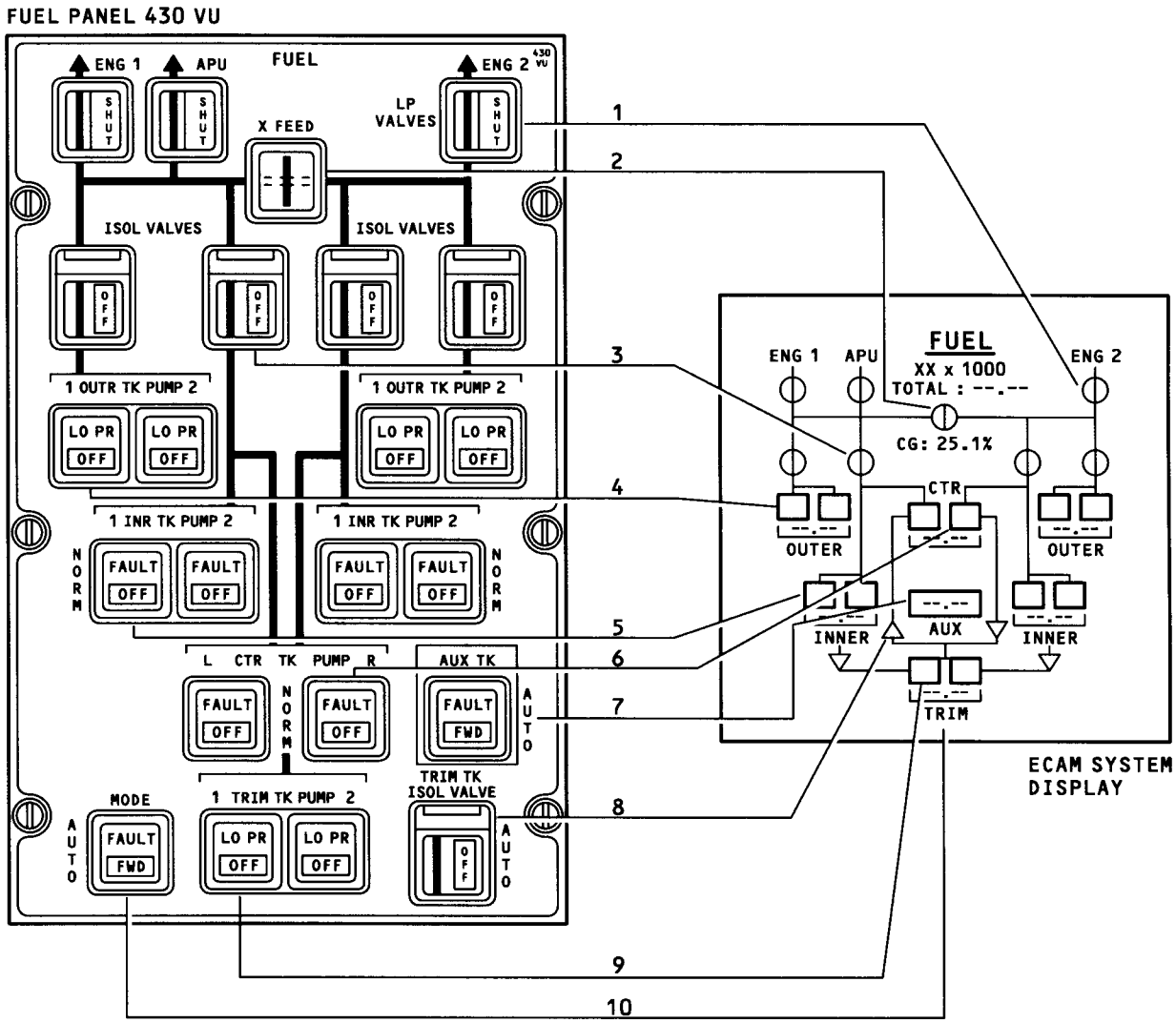
FUEL PANEL 430 VU



NOTE: 1. THE ECAM SYSTEM DISPLAY SHOWS A TYPICAL FUEL PAGE.
2. XX SHOWN ON FUEL PAGE = UNIT OF WEIGHT.
3. --.-- SHOWN ON FUEL PAGE = QUANTITY OF FUEL.

BM8 28 00 00 0 MGM0 01

Fuel Panel 430VU and ECAM System Display
Figure 012

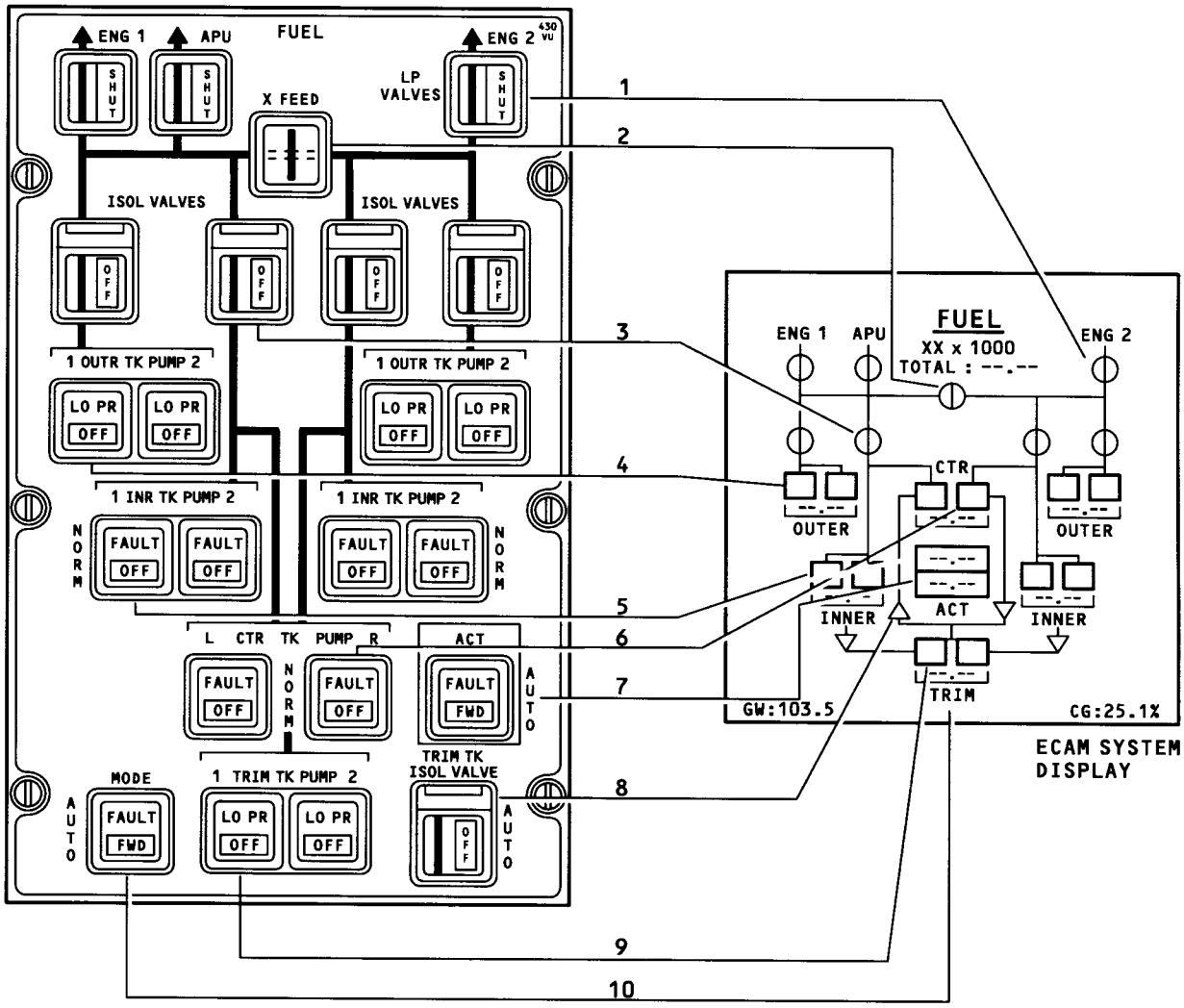


NOTE: 1. THE ECAM SYSTEM DISPLAY SHOWS A TYPICAL FUEL PAGE.
2. XX SHOWN ON FUEL PAGE = UNIT OF WEIGHT.
3. --.-- SHOWN ON FUEL PAGE = QUANTITY OF FUEL.

BM8 28 00 00 O TGFO 01

Fuel Panel 430VU and ECAM System Display
Figure 013

FUEL PANEL 430 VU



NOTE: 1. THE ECAM SYSTEM DISPLAY SHOWS A TYPICAL FUEL PAGE.
2. XX SHOWN ON FUEL PAGE = UNIT OF WEIGHT.
3. --.-- SHOWN ON FUEL PAGE = QUANTITY OF FUEL.

BM8 28 00 00 0 THRO 01

Fuel Panel 430VU and ECAM System Display
Figure 014

- the ECAM FUEL page shows the valve open symbol.

**ON A/C ALL

Post SB 24-2041 For A/C 001-003,

The cross feed valve can also operate automatically. With the X FEED P/BSW released out the valve will open automatically when:
- the OVLD SUPPLY P/BSW (on panel 424VU) is pushed in
- the in line flow bar in the X FEED P/BSW comes on.

**ON A/C ALL

(3)Wing tank ISOL VALVES P/BSW.
There is a P/BSW for each wing-tank isolation valve. Each of these P/BSWs has a guard to stop accidental operation.
When a P/BSW is released (out):
- the white OFF legend in the P/BSW comes on
- the green flowbar in the P/BSW flashes during valve operation
- the flowbar goes off when the valve is fully shut
- the ECAM FUEL page shows the valve-closed symbol.

When a P/BSW is pushed (in):
- the white OFF legend in the P/BSW goes off
- the green flowbar flashes during valve operation
- the flowbar becomes steady when the valve is fully open
- the ECAM FUEL page shows the valve open symbol.

NOTE : The ECAM FUEL page will show each tank ISOL VALVE closed unless the valve is fully open.

(4)OUTR TK PUMP P/BSW.
There is a P/BSW for each outer tank pump.
When a P/BSW is released (out):
- the white OFF legend in the P/BSW comes on
- the applicable pump stops
- the ECAM FUEL page shows the pump off symbol.

When a P/BSW is pushed (in):
- the white OFF legend in the P/BSW goes off
- the applicable pump is given a signal to operate
- the amber LO PR legend in the P/BSW comes on for a short time then goes off as the pump operates
- if the pump operates correctly, the ECAM FUEL page shows the pump in line symbol
- if the pump does not give the correct pressure, the amber LO PR legend in the P/BSW stays on
- the ECAM FUEL page shows the pump-LO symbol.

(5)INR TK PUMP P/BSW.
There is a P/BSW for each inner tank pump.
When a P/BSW is released (out):
- the white OFF legend in the P/BSW comes on
- the applicable pump stops
- the ECAM FUEL page shows the pump off symbol.

When a P/BSW is pushed (in):
- the white OFF legend in the P/BSW goes off
- the applicable pump is given a signal to operate
- the amber LO PR legend in the P/BSW comes on for a short time then goes off as the pump operates
- if the pump operates correctly, the ECAM FUEL page shows the pump in line symbol
- if the pump does not give the correct pressure, the amber FAULT legend in the P/BSW stays on
- the ECAM FUEL page shows the pump-LO symbol
- the amber FAULT legend in the P/BSW will come on to indicate a fault in the automatic fuel-feed system.

(6)CTR TK PUMP P/BSW.
There is a P/BSW for each center tank pump. When a P/BSW is released (out):
- the white OFF legend in the P/BSW comes on
- the applicable pump stops
- the ECAM FUEL page shows the pump-off symbol.

When a P/BSW is pushed (in):
- the white OFF legend in the P/BSW goes off
- the applicable pump is given a signal to operate
- the amber LO PR legend comes on for a short time then goes off as the pump operates
- if the pump operates correctly, the ECAM FUEL page shows the pump in line symbol
- if the pump does not give the correct pressure, the amber FAULT legend in the P/BSW stays on
- the ECAM system display shows the pump-LO symbol
- the amber FAULT legend in the P/BSW will come on to indicate a fault in the automatic fuel-feed system.

**ON A/C 101-200,

(7)AUX TK AUTO P/BSW.
This P/BSW sets the ACT fuel transfer system to automatic or manual mode control as necessary.

The ACT system is usually set to automatic control, with the P/BSW released (out) and the FAULT and FWD legends off. In this control mode pressurized air automatically moves fuel from the ACT to the center tank when necessary.

NOTE : Below 10,000 ft the pressurization system does not have the

correct effect and the transfer pump must be used to transfer fuel (Manual Mode).

The FAULT legend in the P/BSW comes on when:
- the center-tank calibration sensor is dry and the ACT calibration sensor is wet
- the ACT low-level sensor is dry and the ACT calibration sensor is wet.

When the ACT system is set to manual mode control, with the P/BSW pushed (in):
- the FAULT legend goes off
- the FWD legend in the P/BSW comes on
- the transfer valve is shown open on the ECAM FUEL page
- the transfer pump operates.

NOTE : To get the correct pump performance it may be necessary to reduce the altitude of the aircraft to or below 27,000 ft.

In flight the pump FAULT legend in the P/BSW will come on ten minutes after the FQIC signals the ACT empty (this shows a low pressure output from the pump).
On the ground the FAULT legend in the P/BSW will come on immediately the FQIC signals the ACT empty.

When the P/BSW is again released (out):
- the pump stops
- the FWD and FAULT legends in the P/BSW go off.

NOTE : When the FAULT legend comes on (in Auto or Manual mode) the left ECAM CRT will show the related warning message.

(8)TRIM TK ISOL VALVE.
This P/BSW has a guard to stop accidental operation. The P/BSW overrides the CGCC control of the isolation valve operation.
When the P/BSW is released (out):
- the white OFF legend in the P/BSW comes on
- the valve closes
- the green flowbar in the P/BSW flashes when the valve operates and goes off when the valve is fully closed
- the ECAM FUEL page shows the amber transfer flow-symbols.

When the P/BSW is pushed (in):
- the white OFF legend in the P/BSW goes off
- the valve opens
- the green flowbar in the P/BSW flashes when the valve operates and is on when the valve is fully open
- the ECAM FUEL page shows the transfer flow condition.

(9)TRIM TK PUMP P/BSW.
There is a P/BSW for each trim tank pump. When a P/BSW is released (out):
- the white OFF legend in the P/BSW comes on

- the applicable pump stops
- the ECAM FUEL page shows the pump-off symbol.

When a pump P/BSW is pushed (in):
- the white OFF legend in the P/BSW goes off
- the applicable pump is given a signal to operate
- the amber LO PR legend in the P/BSW comes on for a short time then goes off as the pump operates
- if the pump operates correctly, the ECAM FUEL page shows the pump in line symbol
- if the pump does not give the correct pressure the amber LO PR legend in the P/BSW stays on
- the ECAM shows the pump-LO symbol.

(10)TRIM TK AUTO MODE P/BSW.

This P/BSW operates with the TRIM TK PUMP P/BSWs to set the mode of operation for the valves in the trim-tank transfer system (Ref. 28-26-00, P. Block 1). When the P/BSW is released (out) (FWD legend not on) auto mode is set if one trim tank pump is also set to on (pump P/BSW pushed in).

In this mode of control the CGCC can, when necessary:
- open the forward transfer valve (and let the pumps operate) to give forward fuel transfer
- open the two forward transfer valves (and let the pumps operate) to give fast forward transfer (this occurs when the aircraft descends to less than FL200)
- open one or the two aft transfer valves to give aft fuel transfer from the center or the inner tanks
- open the two aft transfer valves to inhibit a gravity forward transfer if the forward transfer valves do not close when necessary.

When the P/BSW is pushed (in) the FWD legend in the P/BSW comes on and the manual mode is set. In this mode:
- the two forward valves open to give fast forward transfer or gravity feed to the center tank (Ref. 28-26-00, P. Block 1).

**ON A/C 001-100,

(7)TRIM TK ISOL VALVE

This P/BSW has a guard to stop accidental operation. The P/BSW sets the valves mode of control.

When the P/BSW is released (out):
- the white OFF legend in the P/BSW comes on
- the valve closes
- the green flowbar in the P/BSW flashes when the valve operates and goes off when the valve is fully closed
- the ECAM FUEL page shows the amber transfer flow-symbol.

When the switch is pushed (in):
- the white OFF legend in the P/BSW goes off
- the valve opens (if the necessary conditions are available)
- the green flowbar in the P/BSW flashes when the valve operates and comes on when the valve is fully open
- the ECAM FUEL page shows the transfer flow condition.

(8)TRIM TK PUMP P/BSW PUMP 1 and P/BSW PUMP 2

When a P/BSW is released (out):
- the white OFF legend in the P/BSW comes on
- the applicable pump stops
- the ECAM FUEL page shows the pump cross-line symbol.

When the P/BSW is pushed (in):
- the white OFF legend in the P/BSW goes off
- the applicable pump operates if manual mode is set or operates in response to CGCC outputs when auto mode is set
- the amber LO PR legend comes on for a short time then goes off as the pump operates
- if the pump operates correctly, the ECAM FUEL page shows the pump in-line symbol
- if the pump does not give the correct pressure the amber LO PR legend in the P/BSW stays on
- the ECAM FUEL page shows the pump LO symbol.

(9)TRIM TK AUTO MODE P/BSW

This P/BSW operates with the TRIM TK PUMP P/BSWs to set the mode of operation for the valves in the trim-tank transfer system (Ref. 28-26-00, P. Block 1).

When the P/BSW is released (out) (FWD legend not on) auto mode is set if one trim tank pump is also set to on (pump P/BSW pushed in).

In this mode of control the CGCC can, when necessary:
- open the forward transfer valve (and let the pumps operate) to give forward fuel transfer
- open the two forward transfer valves (and let the pumps operate) to give fast forward transfer (this occurs when the aircraft descends to less than FL200).
- open one or the two aft transfer valves (if the SPEED BRK is not set) to give aft fuel transfer from the center or the inner tanks
- open the two aft transfer valves to inhibit a gravity forward transfer if the forward transfer valves do not close when necessary.

NOTE : When auto mode is set, the amber FAULT legend will come on when there is a failure with the CGCC system (Ref. 31-46-00 P. Block 1).

When the P/BSW is pushed (in) the FWD legend in the P/BSW comes on and the manual mode is set. In this mode:
- the two forward valves open to give fast forward transfer or gravity feed to the center tank (Ref. 28-26-00, P. Block 1).

R **ON A/C 101-103, 105-200,

R Post SB 28-2105 For A/C 101-103,105-200,

(7)ACT TK AUTO P/BSW
This P/BSW sets the ACT fuel transfer system to automatic or manual mode control as necessary.

The ACT system is usually set to automatic control, with the P/BSW released (out) and the FAULT and FWD legends in the P/BSW off. In this control mode pressurized air automatically moves fuel from the ACTs to the center tank as necessary.

NOTE : Below 10,000 ft the pressurization system does not have the correct effect and the transfer pump must be used to transfer fuel (Manual Mode).

The FAULT legend in the P/BSW comes on when:
- the ACT 1 low level sensor shows dry while the ACT 1 calibration sensor shows wet, and the ACT 2 low level sensor shows dry
- the center-tank calibration sensor shows dry and the ACT 1 calibration sensor shows wet
- the transfer valve is open, the ACT 2 inlet valve is shut and the ACT 2 low level sensor shows wet.

When the ACT system is set to manual control, with the P/BSW pushed (in):
- the FAULT legend goes off
- the FWD legend in the P/BSW comes on
- the transfer valve is shown open on the ECAM FUEL page
- the transfer pump operates.

NOTE : To get the correct pump performance it may be necessary to reduce the altitude of the aircraft to or below 27,000ft.

In flight the pump FAULT legend in the P/BSW comes on ten minutes after the FQIC signals the ACT 1 empty (this shows a low pressure output from the pump). On the ground the FAULT legend in the P/BSW comes on immediately the FQIC signals the ACT 1 empty.
When the P/BSW is again released (out):
- the pump stops
- the FWD legend in the P/BSW goes off.

NOTE : When the FAULT legend in the P/BSW comes on (in Auto or Manual mode) the left ECAM CRT will show the related warning message.

(8)TRIM TK ISOL VALVE
This P/BSW has a guard to stop accidental operation. The P/BSW overrides the CGCC control of the isolation valve operation.
When the P/BSW is released (out):

- the white OFF legend in the P/BSW comes on
- the valve closes
- the green flowbar in the P/BSW flashes when the valve operates and goes off when the valve is fully closed
- the ECAM FUEL page shows amber transfer flow symbols.

When the P/BSW is pushed (in):
- the white OFF legend in the P/BSW goes off
- the valve opens
- the green flowbar in the P/BSW flashes when the valve operates and comes on when the valve is fully open
- the ECAM FUEL page shows the transfer flow symbol.

(9)TRIM TK PUMP P/BSW.

There is a P/BSW for each trim tank pump. When a P/BSW is released (out):
- the white OFF legend in the P/BSW comes on
- the applicable pump stops
- the ECAM FUEL page shows the pump off symbol.

When a pump P/BSW is pushed (in):
- the white OFF legend in the P/BSW goes off
- the applicable pump is given a signal to operate
- the amber LO PR legend in the P/BSW comes on for a short time then goes off as the pump operates
- if the pump operates correctly, the ECAM FUEL page shows the pump in line symbol
- if the pump does not give the correct pressure the amber LO PR legend in the P/BSW stays on
- the ECAM FUEL page shows the pump-LO symbol.

(10)TRIM TK AUTO MODE P/BSW

This P/BSW operates with the TRIM TK PUMP P/BSWs to set the mode of operation for the valves in the trim-tank transfer system (Ref. 28-26-00, P. Block 1). When the P/BSW is released (out) (FWD legend not on) auto mode is set if one trim tank pump is also set to on (pump P/BSW pushed in).

In this mode of control the CGCC can, when necessary:
- open the forward transfer valve (and let the pumps operate) to give forward fuel transfer
- open the two forward transfer valves (and let the pumps operate) to give fast forward transfer (this occurs when the aircraft descends to less than FL200).
- open one or the two aft transfer valves to give aft fuel transfer from the center or the inner tanks
- open the two aft transfer valves to inhibit a gravity forward transfer if the forward transfer valves do not close when necessary.

When the P/BSW is pushed (in) the FWD legend in the P/BSW comes on and the manual mode is set. In this mode:
- the two forward valves open to give fast forward transfer or gravity feed to the center tank (Ref. 28-26-00, P. Block 1).

**ON A/C ALL

C. Not Applicable

D. Fuel Quantity Indicator.

The fuel quantity indicator is located on the overhead panel immediately below the fuel panel 430VU, (Ref. 28-42-00, P. Block 1). A second fuel quantity indicator is located on the refuel/defuel panel 110VU, (Ref. 28-25-00, P. Block 1). The fuel quantity indicator on panel 110VU, shows the same data as the indicator below the panel 430VU.
Their function is to:
- show the fuel quantity in each tank
- show a warning when low fuel levels occur in the outer tanks
- show the necessary code numbers when faults occur in the fuel quantity indicating system.

E. Fuel-System Maintenance Panel 472VU.

**ON A/C 001-003,

(Ref. Fig. 015)

**ON A/C 001-100,

Post SB 28-2049 For A/C 001-003,

(Ref. Fig. 016)

**ON A/C 101-200,

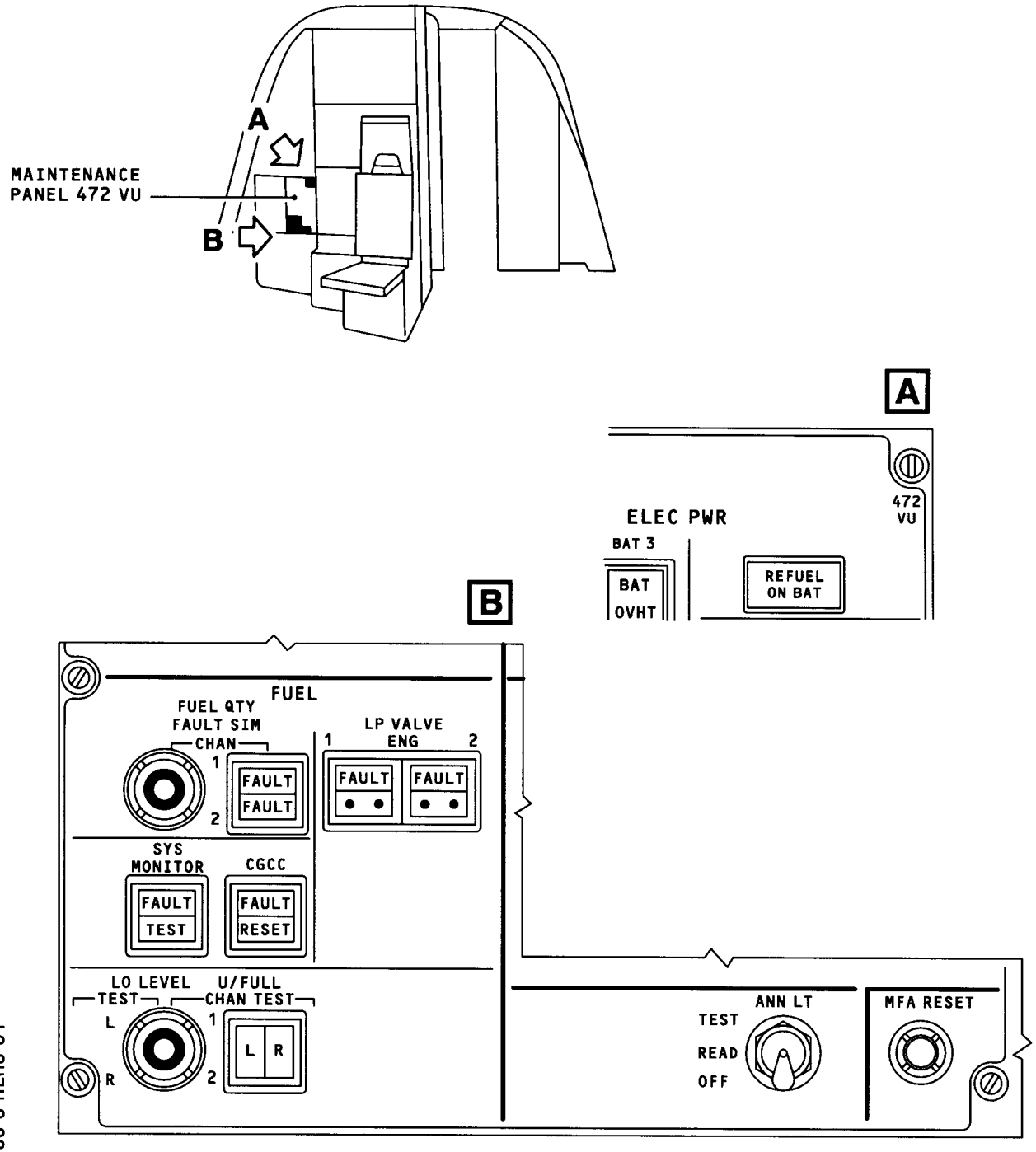
(Ref. Fig. 017)

**ON A/C ALL

There are control switches and annunciators on the maintenance panel 472VU. These let you test or reset component parts of the system and identify when faults occur in the fuel system or related systems.

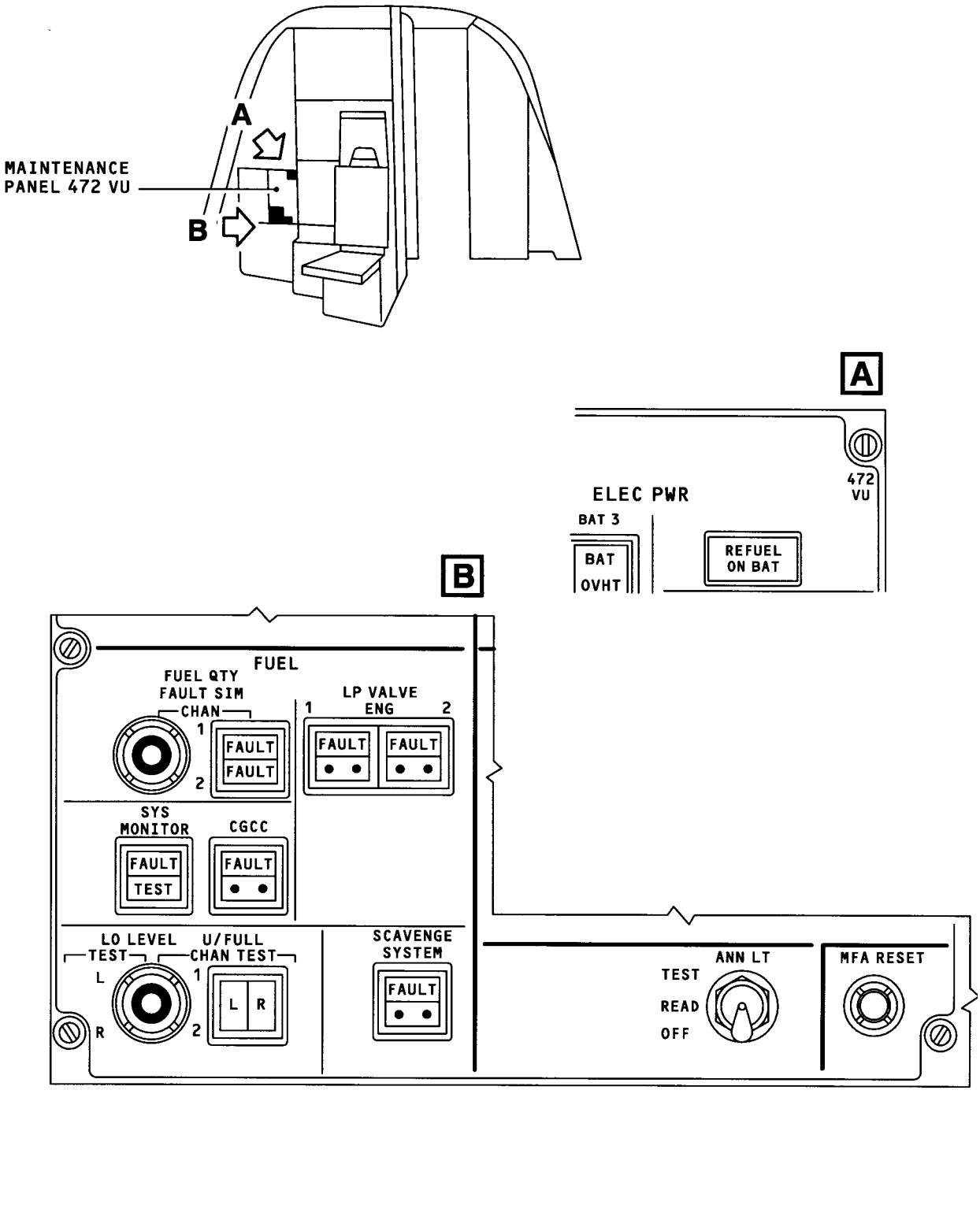
The control switches and annunciators are set below captions and function as follows:

ANN LT switch (2WB)

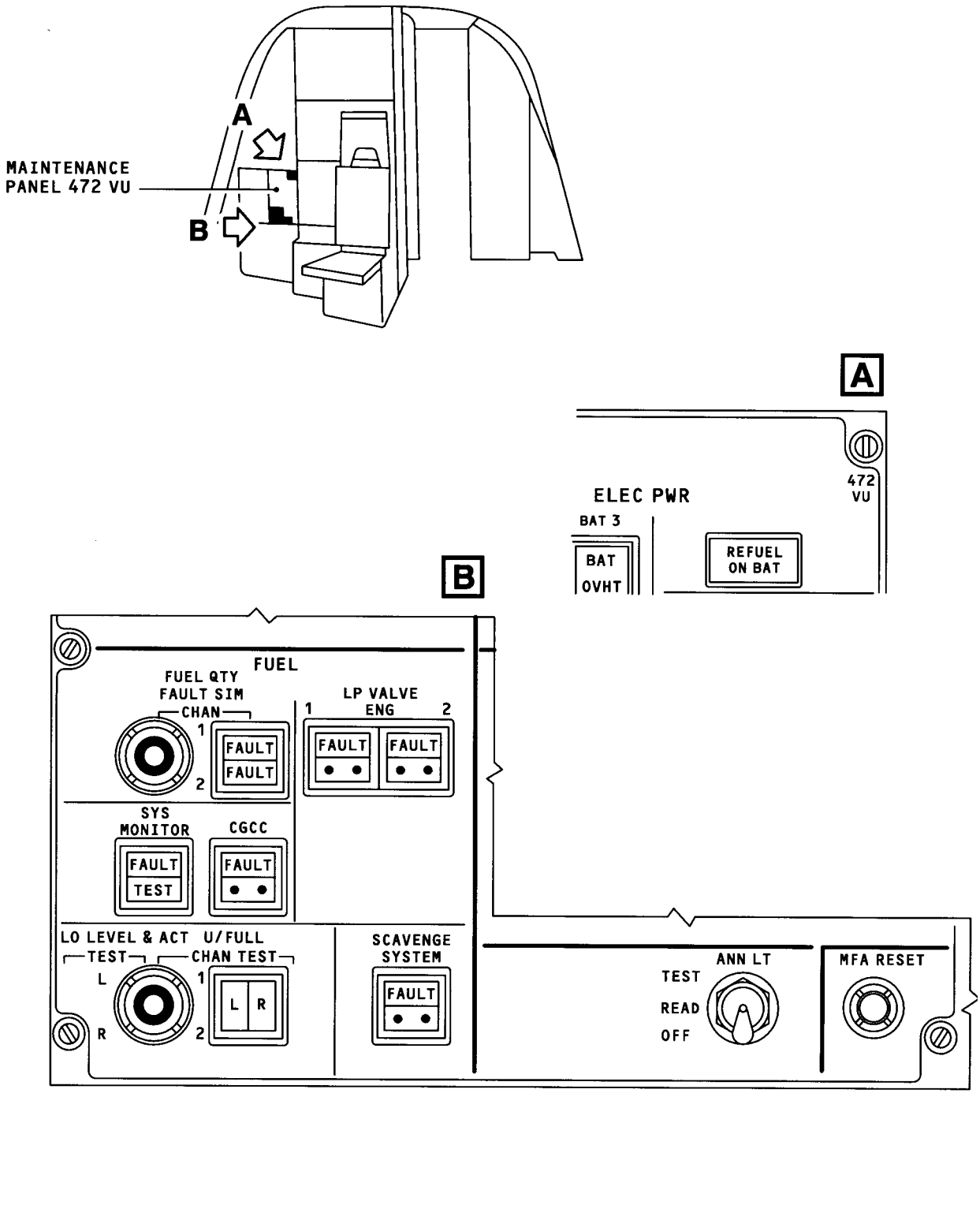


BM8 28 00 00 0 MLM0 01

Fuel-System Maintenance-Panel 472VU
Figure 015



Fuel-System Maintenance Panel 472VU
Figure 016



Fuel-System Maintenance Panel 472VU
Figure 017

This two position toggle switch must be in the READ/TEST position to make the control switches and annunciators on the maintenance panel operate (Ref. 33-17-00, P. Block 1).

SYSTEM MONITOR P/BSW (13QT)
This P/BSW includes a FAULT and TEST annunciator. The FAULT light comes on (when 2WB is set to READ/TEST) to show a fault in the fuel-quantity indicating system. When the P/BSW is pushed in the TEST light comes on and the FQIC does a BITE test (Ref. 28-42-00, P. Block 1). If a fault is found the FAULT light comes on and the FQI shows the related fault code number.

**ON A/C ALL

CGCC FAULT INDICATOR (4GU)
The FAULT light comes on (when 2WB is set to READ/TEST) to show a fault in the CGCC (Ref. 31-46-00, P. Block 1).

**ON A/C ALL

FUEL QTY FAULT SIM switch (14QT)
This (center off) toggle switch lets you test the two channels of the FQIC. When the switch is set to CHAN 1 or 2 this causes the applicable adjacent FAULT light (12QT) to come on and the FQIC to change control channels. Each FAULT light will come on when 2WB is set to READ/TEST if the related FQIC channel has a fault (Ref. 28-42-00, P. Block 1).

**ON A/C 001-100,

LO LVL TEST-U/FULL CHAN TEST switch (51QJ)
When this (center off) toggle switch is set to L or R it makes the fuel level amplifier (8QJ) signal a dry condition for these sensors:
- the low level sensor in the related outer tank
- the underfull sensors in the related outer tank.

These outputs from the fuel level amplifier cause:
- the LO LVL fault annunciators to come on at the fuel quantity indicator (6QT)
- the adjacent underfull annunciators L or R (52QJ) to come on (Ref. 28-46-00, P. Block 1).
- the ECAM to show the applicable message.

**ON A/C 101-200,

LO LVL & AUX TEST-UNDERFULL CHAN TEST switch (51QJ)
When this (center off) toggle switch is set to L or R it makes the fuel level amplifier (8QJ) signal a dry condition for these sensors:
- the low level sensor in the related outer tank
- the underfull sensors in the related outer tank.

These outputs from the fuel level amplifier cause:
- the LO LVL fault annunciators to come on at the fuel quantity indicator (6QT)
- the adjacent underfull annunciators L or R (52QJ) to come on (Ref. 28-46-00, P. Block 1).

At the same time the switch (51QJ) causes these signals:
- set to L signals the ACT 1 low level sensor dry
- set to R signals the center-tank calibration sensor dry.

The FAULT light on the AUX AUTO P/BSW (panel 430VU) comes on to show that the test is correct.

**ON A/C 101-103, 105-200,

Post SB 28-2105 For A/C 101-103,105-200,

LO LVL & ACT TEST-UNDERFULL CHAN TEST switch (51QJ)
When this (center off) toggle switch is set to L or R it makes the fuel level amplifier (8QJ) signal a dry condition for these sensors:
- the low level sensor in the related outer tank
- the underfull sensors in the related outer tank.

These outputs from the fuel level amplifier cause:
- the LO LVL fault annunciators to come on at the fuel quantity indicator (6QT)
- the adjacent underfull annunciators L or R (52QJ) to come on (Ref. 28-46-00, P. Block 1).
- the ECAM to show the applicable message.

At the same time the switch (51QJ) causes these signals:
- set to L signals the ACT 1 low level sensor dry
- set to R signals the center-tank calibration sensor dry.

The FAULT light on the ACT AUTO P/BSW (panel 430VU) comes on to show that the test is correct.

**ON A/C ALL

The Memorized Fault Annunciator (MFA) lights come on when a fault occurs in the related system. They also come on when you set the switch 2WB to READ/TEST. A FAULT light will stay on until the fault is corrected and the annunciator is reset. An MFA P/BSW (20WB) on the panel lets you do the reset (Ref. 33-17-00, P. Block 1).

These MFA are available:
- LP VALVE ENG 1 or 2 (15QG/16QG).

These annunciators come on when the related LP valves are in the wrong condition (Ref. 28-24-00, P. Block 1).

**ON A/C ALL

Post SB 28-2049 For A/C 001-003,

SCAVENGE SYSTEM (17QQ)
This annunciator comes on when the current detectors find an unusual power supply at the left or right inner tank or trim-tank scavenge pump (Ref. 28-11-00, P. Block 1).

**ON A/C ALL

F. Refuel/Defuel Panel (110VU).
The indicators and controls for refueling and defueling are located on the refuel/defuel panel 110VU. This is installed in the cooling-air intake fairing which is below the fuselage.

When the refuel panel door is open the refuel panel is illuminated and the controls and annunciators are energized.

G. Not applicable

H. Electronic Centralized Aircraft Monitoring (ECAM)

**ON A/C 001-100,

(Ref. Fig. 018)

**ON A/C 101-200,

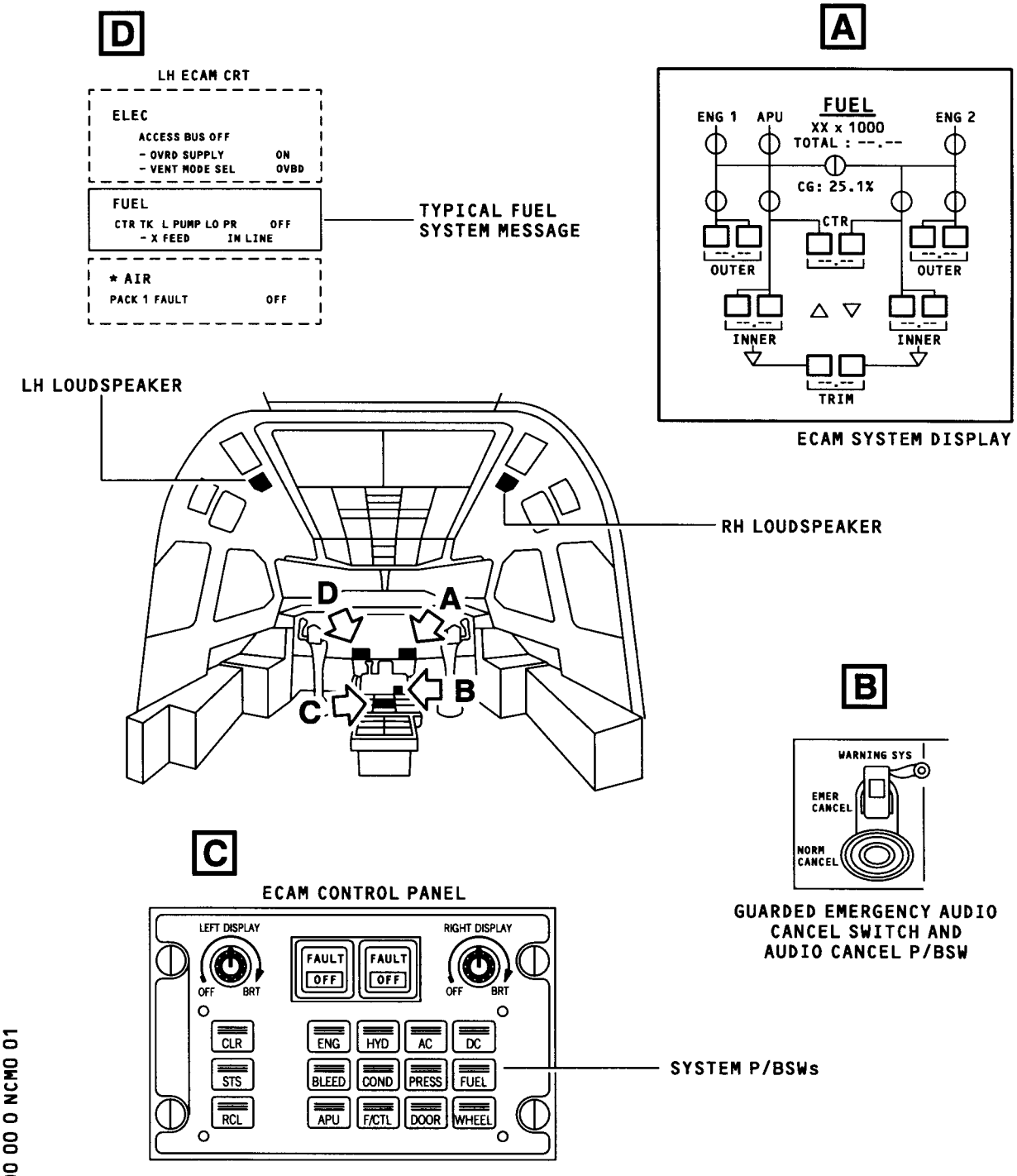
(Ref. Fig. 019)

**ON A/C 101-103, 105-200,

Post SB 28-2105 For A/C 101-103,105-200,

(Ref. Fig. 020)

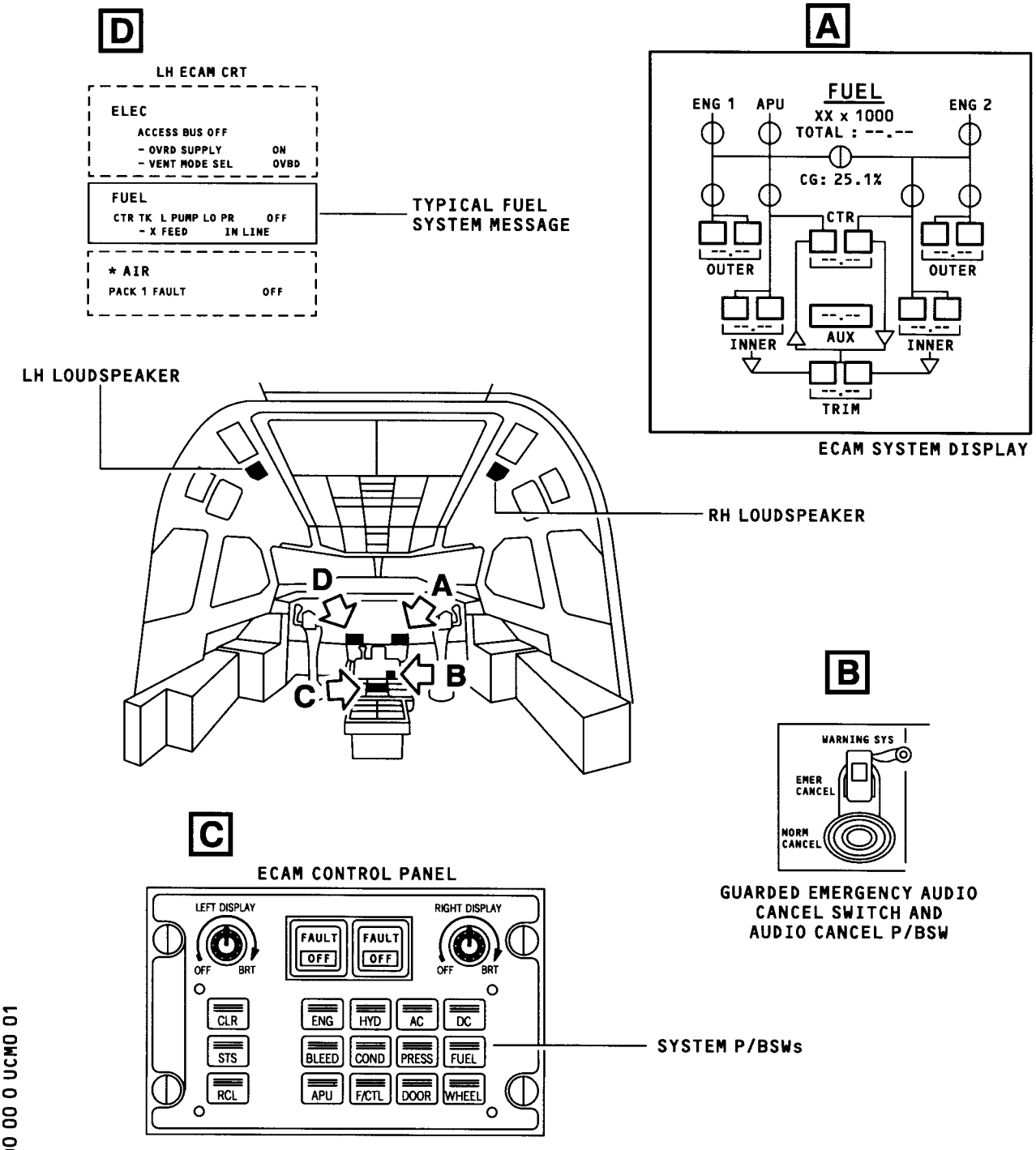
**ON A/C ALL



BM8 28 00 00 O NCMO 01

NOTE: 1. THE ECAM SYSTEM DISPLAY SHOWS A TYPICAL FUEL PAGE.
2. XX SHOWN ON FUEL PAGE = UNIT OF WEIGHT.
3. --.-- SHOWN ON FUEL PAGE = QUANTITY OF FUEL.

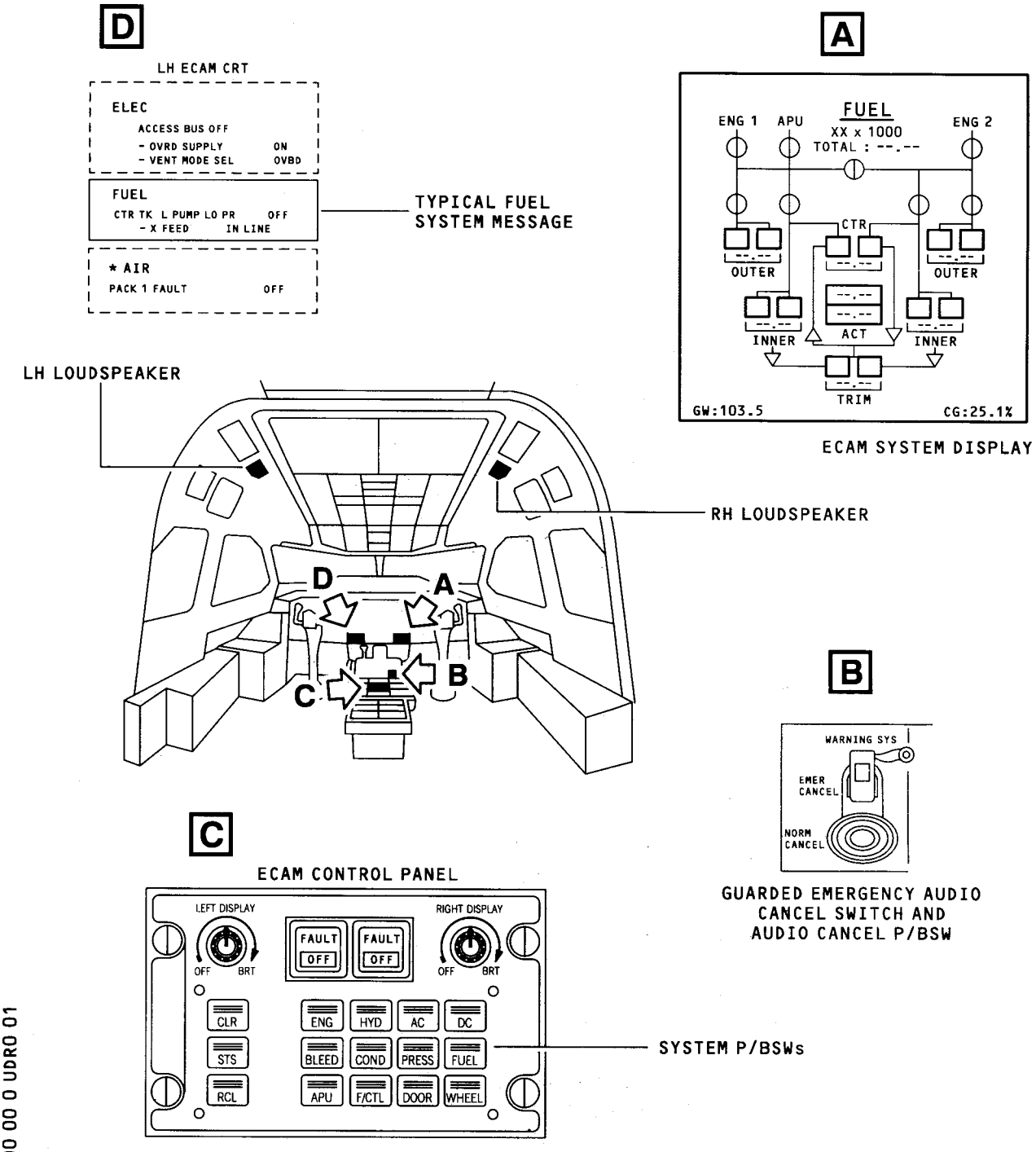
ECAM Control and Indication
Figure 018



BM8 28 00 00 0 UCM0 01

NOTE: 1. THE ECAM SYSTEM DISPLAY SHOWS A TYPICAL FUEL PAGE.
2. XX SHOWN ON FUEL PAGE = UNIT OF WEIGHT.
3. --.-- SHOWN ON FUEL PAGE = QUANTITY OF FUEL.

ECAM Control and Indication
Figure 019



BM8 28 00 00 0 UDR0 01

NOTE: 1. THE ECAM SYSTEM DISPLAY SHOWS A TYPICAL FUEL PAGE.
2. XX SHOWN ON FUEL PAGE = UNIT OF WEIGHT.
3. --.-- SHOWN ON FUEL PAGE = QUANTITY OF FUEL.

ECAM Control and Indication
Figure 020

The ECAM system lets the crew:
- know there is a system fault
- find the fault
- do the corrective action.

The ECAM system gets inputs from the fuel system. These inputs let the ECAM system monitor the condition of the fuel system. When the fuel system has a defect the ECAM gives a warning or an advisory message which is shown on the LH ECAM CRT (Ref. 31-51-00, P. Block 1). For some defects an audio warning is also given and a master CAUTION light comes on.

The messages are only shown during the necessary flight phases and are suppressed during others to avoid unnecessary alerts. The system title (FUEL) is shown in amber before the warning message. When an advisory message is given the abbreviation ADV is shown in white after the title.

The LH ECAM CRT can also show fuel system STATUS data and MEMO information.

The RH ECAM CRT can show a schematic diagram that uses symbols to show the component parts of the fuel system that supply the engines and APU (Ref. 31-51-00 P. Block 1). This is known as the FUEL page and lets the crew monitor the operation of the fuel system. The display is shown when specified faults occur in the system or when a manual request occurs at the ECAM control panel. It gives a real time presentation of individual tank and total fuel quantity, pump/valve condition and fuel transfer condition between tanks. It also gives aircraft gross weight and CG data.

5. Operation of Fuel System

A. Types of Fuel (Ref. 20-31-00):

- 01-001
- 01-001A
- 01-002
- 01-003
- 01-004
- 01-004A
- 01-005
- 01-006
R - 01-009

This list is for general reference only. All kerosene and wide-cut fuels that are made to these specifications and are approved in your Flight Manual, can be used in the fuel system.

The complete list of fuels and additives approved for your aircraft, is provided in your Flight Manual, Section 2.

B. The use of Dyed Fuels

The use of fuel that contains red dye additive (Solvent Red 164) must be kept to the minimum necessary and for emergencies only. There are limits to the number of uses and the permitted concentration of the additive.

If a refuel with the additive occurs, the fuel can be used at a maximum concentration of 0.41 milligrams to each liter of fuel. The concentration must be tested with the Petrospec JT-100 Analizer and must not be more than the maximum concentration given above.

There is also a limit of three refuels with fuel that contains the additive. If a fourth refuel occurs with fuel that contains the additive, you must tell the engine manufacturer. This is to get the correct maintenance action during the next 24 hours. The aircraft can continue in revenue service, but no more refuels are permitted with fuel that contains the additive.

You must tell the engine manufacturer each time the aircraft is refuelled with fuel that contains the additive. You must also keep samples of the fuel, in sufficient volume for laboratory analysis. This analysis must agree with **"THE CHARACTERISTICS TESTS STANDARD SPECIFICATION FOR AVIATION TURBINE FUELS".**

Tracer **'A'.**

Tracer **'A'** is a volatile chemical concentrate that is added to fuel storage tanks to trace leaks. Most of the additive evaporates during fueling and subsequent flights.

Tracer **'A'** is approved to be present to a maximum concentration of 1 ppm, without an effect on components and system.

C. Limits of Operation

For operating limitations, refer to the Flight Manual.

D. Refueling/Defueling

The operation to refuel/defuel the aircraft is controlled from the refuel/defuel panel (Ref. 28-25-00, P. Block 1). Refer to the applicable maintenance procedures as follows:
- for refuel, refer to 12-11-28, P. Block 301
- for defuel, refer to 28-25-00, P. Block 301.

E. Fuel Transfer
When the aircraft is on the ground the transfer valve can be set to open to connect the engine fuel-supply system to the refuel/defuel system. With the valve in this position you can transfer fuel between tanks.

F. Normal Operation of Engine Supply System
(1)Before engine start with fuel in all tanks.
(a)On the FUEL panel 430VU:
- all the PUMP and wing-tank ISOL VALVES P/BSWs pushed (in)
- the OUTR TK PUMP white OFF legends and amber LO PR legends are off
- the INR TK and CTR TK PUMP white OFF legends and amber FAULT legends are off
- the TRIM TK PUMP white OFF legends and amber FAULT legends are off
- the OUTR TK and INR TK ISOL VALVES green flowbars are on
- the X FEED green cross-line flowbar is on.

(b)With the ANN LT switch on the panel 436VU, set in the TEST position, the fuel quantity indicator on the panel 430VU, shows:
- the two LO legends on
- LA (only if lowered accuracy exists) for 4 seconds followed by all the 8's for 15 seconds followed by all 7's for 30 seconds if the system is satisfactory or blank for a fault condition.

NOTE : After one minute the fuel quantity display goes back to normal.

(c)ANN LT switch set to the BRT or DIM position as necessary.
(2)With fuel in all the tanks, in flight with the slats retracted:
- the inner and outer-tank ISOL VALVES green flowbars are on
- the center or inner tanks supply the fuel
- fuel may be transferred forward or aft (controlled by CGCC)
- the ECAM FUEL page (if set) is shown on the system display.

(3)In flight with fuel in the inner and outer tanks:
- the inner and outer tank ISOL VALVES green flowbars are on
- the inner tanks supply the fuel
- the fuel may be transferred forward or aft (controlled by CGCC)
- the ECAM FUEL page (if set) is shown on the system display.

(4)In flight until engine shut-down on the ground with fuel in the outer tanks:
- the inner tanks ISOL VALVES green flowbars are on

- the outer tanks supply the fuel
- the ECAM FUEL page (if set) is shown on the system display.

**ON A/C 001-100,

G. Automatic Fuel-Supply Sequence

NOTE : For a detailed description of the fuel supply sequence refer to (28-21-00, P. Block 1.)

With fuel in all the tanks, the slats extended and with the P/BSWs on the fuel panel 430VU, set as follows:
- the TRIM TK AUTO MODE P/BSW released (out)
- the TRIM TK PUMP P/BSWs pushed (in)
- the CTR TK PUMP P/BSWs pushed (in)
- the INR TK PUMP P/BSWs pushed (in)
- the OUTR TK PUMP P/BSWs pushed (in)
- the ISOL VALVES P/BSWs pushed (in).

The automatic fuel-feed sequence will be:
- the trim tank pumps are deactivated
- the LO PR legends for the trim tank pumps are inhibited
- the center tank pumps will operate
- the inner tank pumps are deactivated
- the FAULT legends for inner tank pumps are inhibited
- the outer tank pumps operate.

**ON A/C 101-200,

G. Automatic Fuel-Supply Sequence

NOTE : For a detailed description of the fuel supply sequence refer to (28-21-00, P. Block 1).

With fuel in all the tanks, the slats extended and with the P/BSWs on the overhead fuel panel 430VU, set as follows:
- the TRIM TK AUTO MODE P/BSW released (out)
- the TRIM TK PUMP P/BSWs pushed (in)
- the AUX TK AUTO P/BSW released (out)
- the CTR TK PUMP P/BSWs pushed (in)
- the INR TK PUMP P/BSWs pushed (in)
- the OUTR TK PUMP P/BSWs pushed (in)
- the ISOL VALVES P/BSW pushed (in).

The automatic fuel-feed sequence will be:
- trim tank pumps are deactivated
- the LO PR legends for the trim tank pumps are inhibited
- the center tank pumps will operate
- the inner tank pumps are deactivated

- the FAULT legends for the inner tank pumps are inhibited
- the outer tank pumps operate.

**ON A/C 101-103, 105-200,

Post SB 28-2105 For A/C 101-103,105-200,

G. Automatic Fuel-Supply Sequence

NOTE : For a detailed description of the fuel supply sequence refer to (28-21-00, P. Block 1).

With fuel in all the tanks, the slats extended and with the P/BSWs on the fuel panel 430VU, set as follows:
- the TRIM TANK AUTO MODE P/BSW released (out)
- the TRIM TK PUMP P/BSWs pushed (in)
- the ACT AUTO P/BSW released (out)
- the CTR TK PUMP P/BSWs pushed (in)
- the INR TK PUMP P/BSWs pushed (in)
- the OUTR TK PUMP P/BSWs pushed (in)
- the ISOL VALVES P/BSWs pushed (in).

The automatic fuel-feed sequence will be:
- trim tank pumps are deactivated
- the LO PR legends for the trim tank pumps are inhibited
- the center tank pumps will operate
- the inner tank pumps are deactivated
- the FAULT legends for the inner tank pumps are inhibited
- the outer tank pumps operate.

**ON A/C ALL

NOTE : The outer tank pumps operate continuously (pumps provide fuel at lower pressure than those in other tanks by action of the sequence valves).

(1)Engine start and take off
The center tank pumps supply the fuel for three minutes after the first ENG FUEL lever is set to ON at engine start.

After 3 minutes:
- the inner tank pumps operate
- the center tank pumps stop
- the FAULT legends for the center tank pumps are inhibited.

The inner tank pumps supply the fuel until after take off.

After take off when the slats retract:

- the center tank pumps operate
- the inner tank pumps stop.

(2)In flight.
The center tank pumps supply fuel until the center-tank calibration sensor becomes dry, then:
- the inner tank pumps operate
- the center tank pumps stop.

The inner tank pumps operate until the low level sensor(s) become(s) dry, then each set of inner tank pumps do a 3 minute scavenge, then:
- the inner tank pumps stop
- the center tank pumps run.

When the center-tank low-level sensor(s) has (have) been dry for 30 seconds:
- the center tank pumps stop
- the outer tank pumps supply the fuel.

**ON A/C 101-200,

Fuel transfers from the ACT(s) will always be into the center tank, controlled by the center-tank high-level sensors.

With an ACT installed.
Five minutes after take off, if the ACT low-level sensor is wet:
- the air shut-off valve will open
- the ACT vent valve will close and pressurization of the ACT will start.

When the center-tank high-level sensor has been dry for ten minutes, then:
- the tank inlet valve will open
- the ACT transfer valve will open
- fuel will transfer from the ACT into the center tank.

When the ACT low-level sensor has been dry for one minute:
- the ACT transfer valve will close
- the air shut-off valve will close
- the ACT vent valve will open
- the tank inlet valve will remain open until the aircraft lands.

If the center-tank high-level sensor becomes wet again in flight, transfer from the ACT will stop until the center-tank high-level sensor has been dry again for ten minutes.

**ON A/C 101-200,

Post SB 28-2105 For A/C 101-200,

With ACT(s) installed.

30 minutes after take off, if the ACT 1 low-level sensor is wet:
- the air shut-off valve will open
- the ACT(s) vent valve(s) will close and pressurization of the ACT(s) will start.

When the center-tank high-level sensor has been dry for 30 minutes, and the slats are retracted, then:
- the ACT(s) transfer valve will open
- if the ACT 2 low level sensors are wet, the ACT 2 inlet valve will open
- fuel will transfer from ACT 2 into the center tank.

When the ACT 2 low level and calibration sensors have been dry for one minute, the ACT 2 inlet valve will close.
If the ACT 1 low level sensors are wet, the ACT 1 inlet valve will open. Transfer of fuel from the ACT 1 to the center tank will start.

When the ACT 1 low-level sensor has been dry for one minute:
- the ACT(s) transfer valve will close
- the air shut-off valve will close
- the ACT(s) vent valve(s) will open
- the ACT 1 inlet valve will close.

If the center-tank high-level sensor becomes wet again during flight, transfer from the ACT(s) will stop until the center-tank high-level sensor has been dry again for 30 minutes.

**ON A/C ALL

The CGCC keeps the CG close to the cruise target by automatic fuel transfer from/to the trim tank (Ref. 28-26-00, P. Block 1).

NOTE : The fuel movement from the trim tank is always into the center tank and fuel movement into the trim tank is from the center or inner tanks.

During trim forward transfer the center tank pumps will operate when the center-tank calibration sensor or low level sensors become wet again, except during the first inner-tank-pump three-minute scavenge-period.

**ON A/C 001-100,

In flight, with the slats retracted, forward transfer will occur automatically, fuel transfer aft takes place at approximately 20,000 ft controlled by the CGCC.

The amount of fuel transferred aft will be determined by the CGCC until the inner tanks are empty. Then, fuel will be transferred forward into the center tank at first in 1000 kg (2200 lb) amounts and thereafter 500 kg (1100 lb) amounts until either the trim tank is empty or the aircraft altitude is less than 20,000 ft. At an altitude less than 20,000 ft fuel in the trim tank will automatically be transferred to the center tank.

If the fuel is transferred from the trim tank to the center tank when the center tank is empty, the fuel supply sequence will go back to the center tank pumps if the low level sensors become wet.

**ON A/C 101-200,

In flight, with the slats retracted, forward fuel transfer will occur automatically, fuel transfer aft occurs at approximately 20,000 ft, controlled by the CGCC.

The amount of fuel transferred aft will be determined by the CGCC until the inner tanks are empty. Then, fuel will be transferred forward into the center tank at first in 2200 lb (1000 kg) amounts and thereafter 1100 lb (500 kg) amounts until either the trim tank is empty or the aircraft altitude is less than 20,000 ft. At an altitude less than 20,000 ft any fuel in the trim tank will automatically be transferred to the center tank.

If fuel is transferred from the trim tank to the center tank when the center tank is empty, the fuel supply sequence will go back to the center tank pumps if the low level sensors become wet.

**ON A/C ALL

(4) On landing
On landing with fuel in the center tank and the center tank pumps active, three minutes after the slats extend:
- the center tank pumps stop
- the FAULT legends for center tank pumps are inhibited
- the outer tank pumps supply fuel.

On landing with fuel in the center and inner tanks, three minutes after the slats extend:
- the inner tank pumps operate
- the center tank pumps stop
- the FAULT legends for the center tank pumps are inhibited.

(5) Engine shutdown
At engine shutdown, with fuel in the center tank after a landing, the fuel supply sequence will go back to the center tank pumps.

H. Manual Control.

On the fuel panel 430VU:
- the outer tank pumps are set to on (the pumps supply fuel at a reduced pressure by the operation of the sequence valves)
- the pumps in the center and inner tanks are set in the necessary sequence to supply fuel from the applicable tank(s)
- if there is an operating conditions demand, the applicable **ISOL VALVES P/BSW** can be pushed (in) to close the tank isolation valves.

If a fuel transfer from the **TRIM TK** is necessary:
- push (in) the **TRIM TK AUTO MODE P/BSW**
- push (in) one or the two **TRIM TK PUMP P/BSWs** to set the trim tank pumps in operation.

NOTE : The **TRIM TK ISOL VALVES P/BSW** (when set to **OFF**) overrides the selection of the **AUTO MODE** switch and fuel will not transfer.

**ON A/C 101-200,

- the **ACT** pump is set in operation when the **AUX TK AUTO P/BSW** is pushed in.

NOTE : To make sure that pump performance is correct it may be necessary to descend to or below 27,000 ft.

**ON A/C 102-103, 105-200,

Post SB 28-2108 For A/C 102-103,105-200,

- the **ACT** pump is set in operation when the **ACT AUTO P/BSW** is pushed (in).

NOTE : To make sure that pump performance is correct it may be necessary to descend to or below 27,000 ft.

**ON A/C ALL

J. Operation of Engine Fuel-Supply System (Conditional)

(1)Failures.
(a)Pump and valve failures will be shown on the overhead **FUEL** panel and on the **ECAM** warning display, this will also give the steps of the procedure that are necessary.

(2)Crossfeed.
(a)For the tank from which fuel is to be fed:

- the PUMP white OFF legends and amber warning legends are off
- the ISOL VALVES green flowbar is on.

(b)Crossfeed valve open:
- the X FEED P/BSW pushed (in), the green in-line flowbar is on.

(c)Pumps set to OFF in the tank with the lower content:
- the applicable PUMP P/BSWs released (out), the white OFF legends are on.

(d)Fuel quantities balanced:
- the applicable PUMP P/BSWs pushed (in), the white OFF legends are off the amber warning legends are off
- the X FEED P/BSW pushed (in), the green in-line flowbar is on.

6. Power Supply

(Ref. Fig. 021)

**ON A/C 101-200,

(Ref. Fig. 022)

**ON A/C 001-100,

(Ref. Fig. 023)

**ON A/C ALL

(Ref. Fig. 024)

**ON A/C 001-100,

(Ref. Fig. 025)

**ON A/C 101-200,

(Ref. Fig. 026)

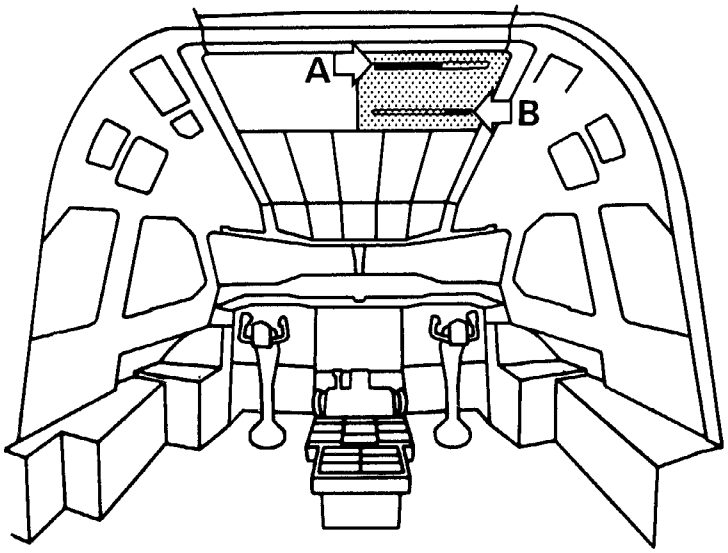
**ON A/C 001-100,

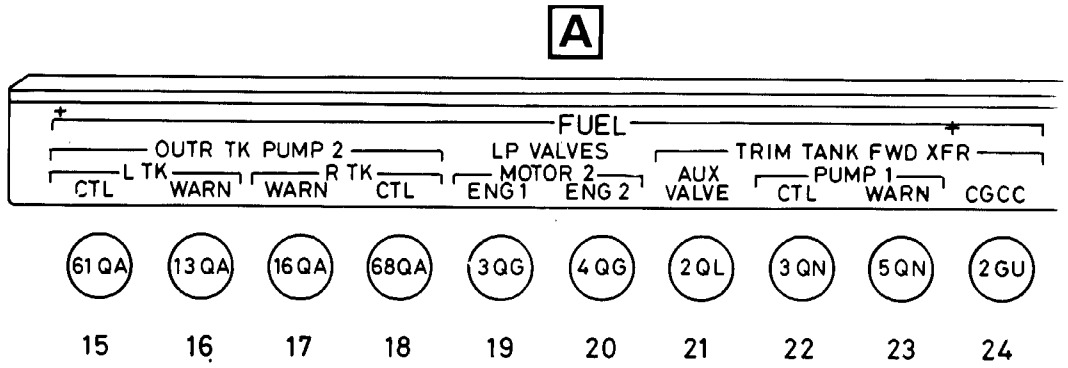
(Ref. Fig. 027)

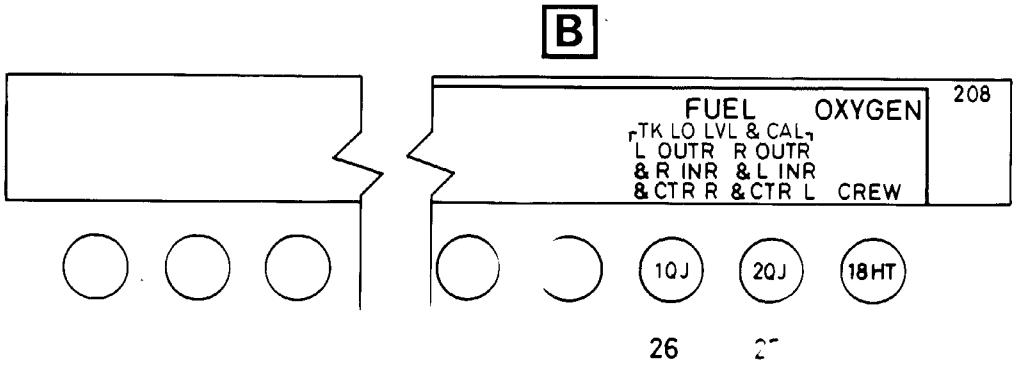
**ON A/C 001-100,

Post SB 28-2049 For A/C 001-003,

(Ref. Fig. 028)







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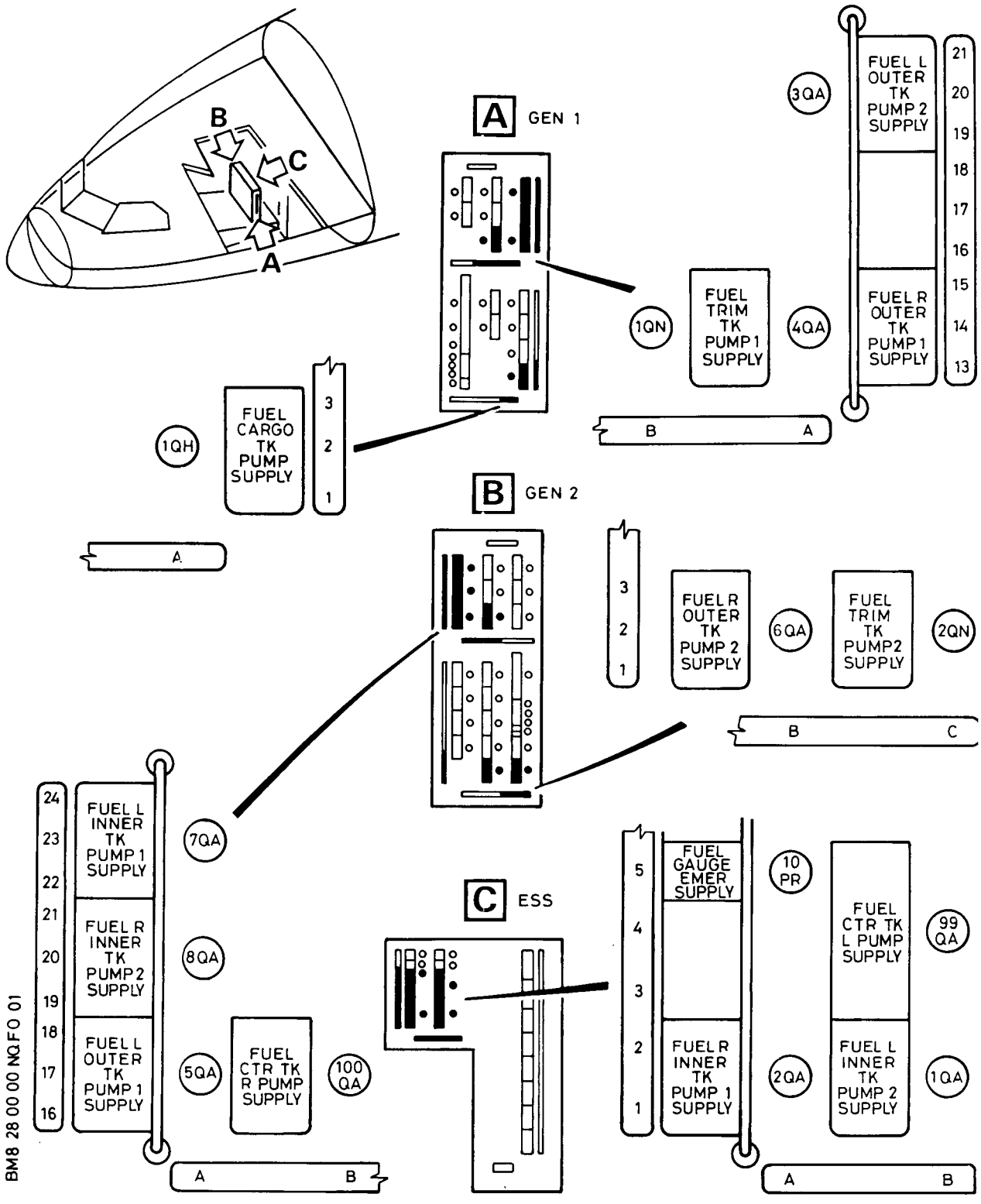
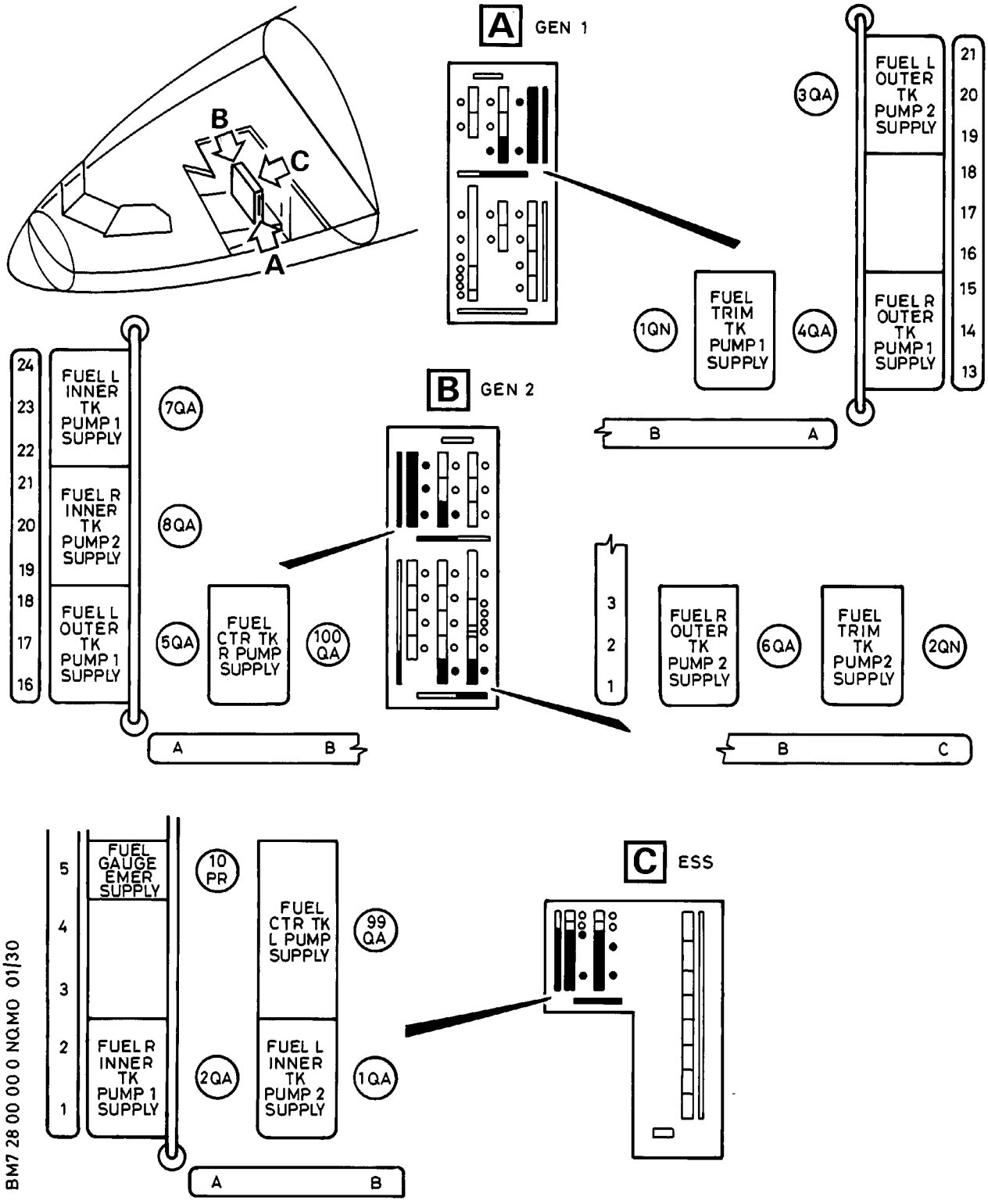
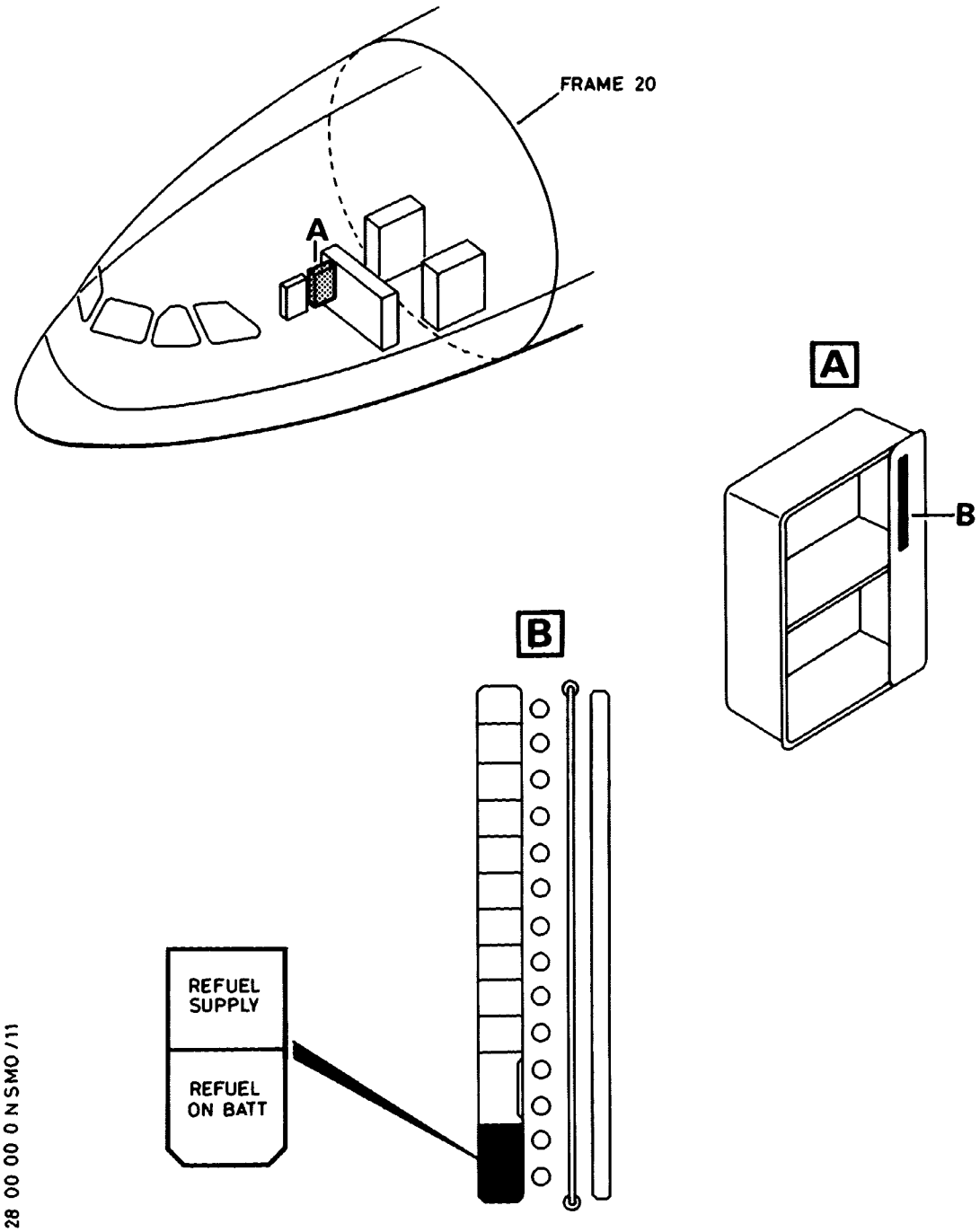
Circuit Breaker Panel 22VU
Figure 021



Circuit Breaker Panel 101VU
Figure 022



Circuit Breaker Panel 101VU
Figure 023



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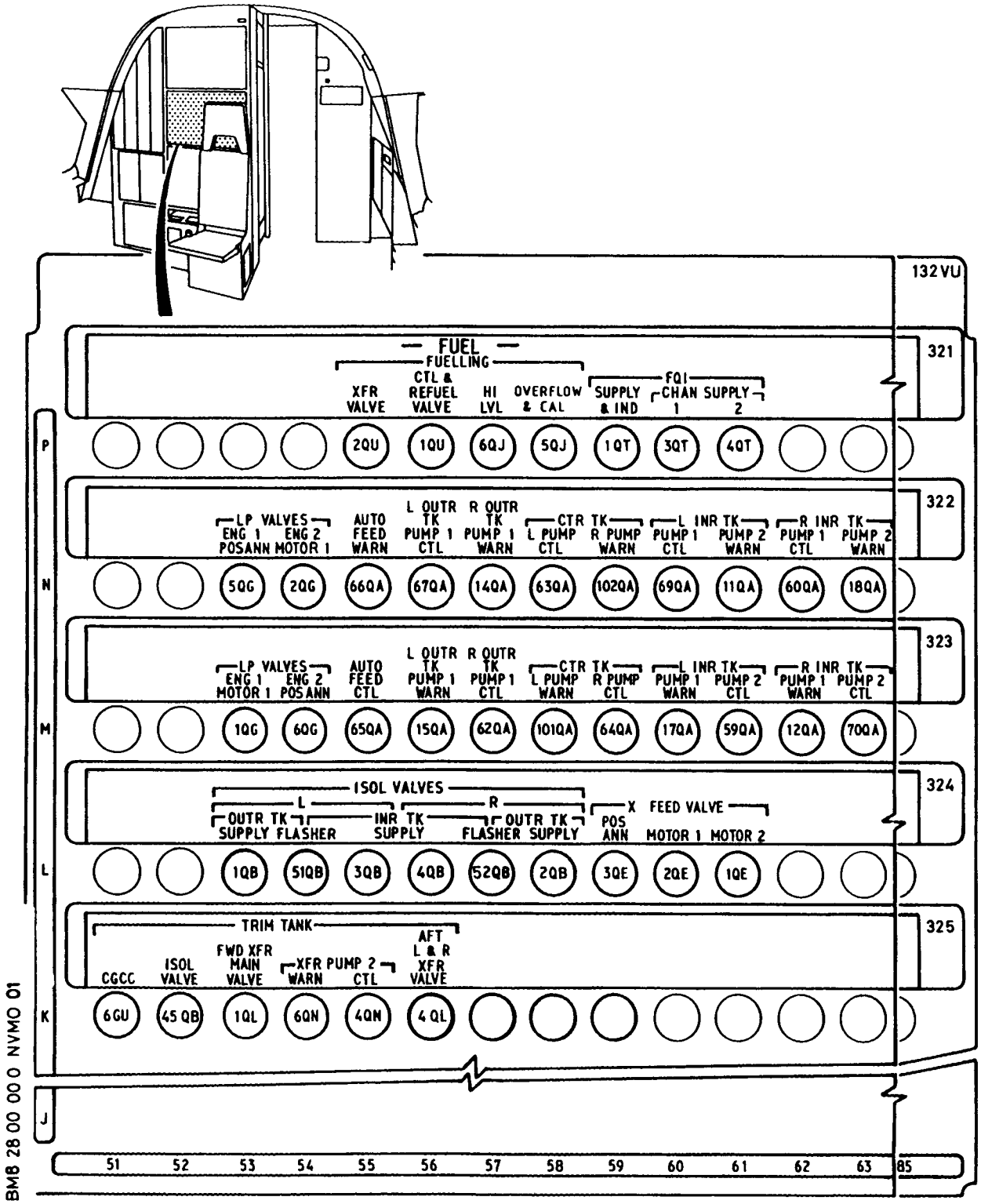
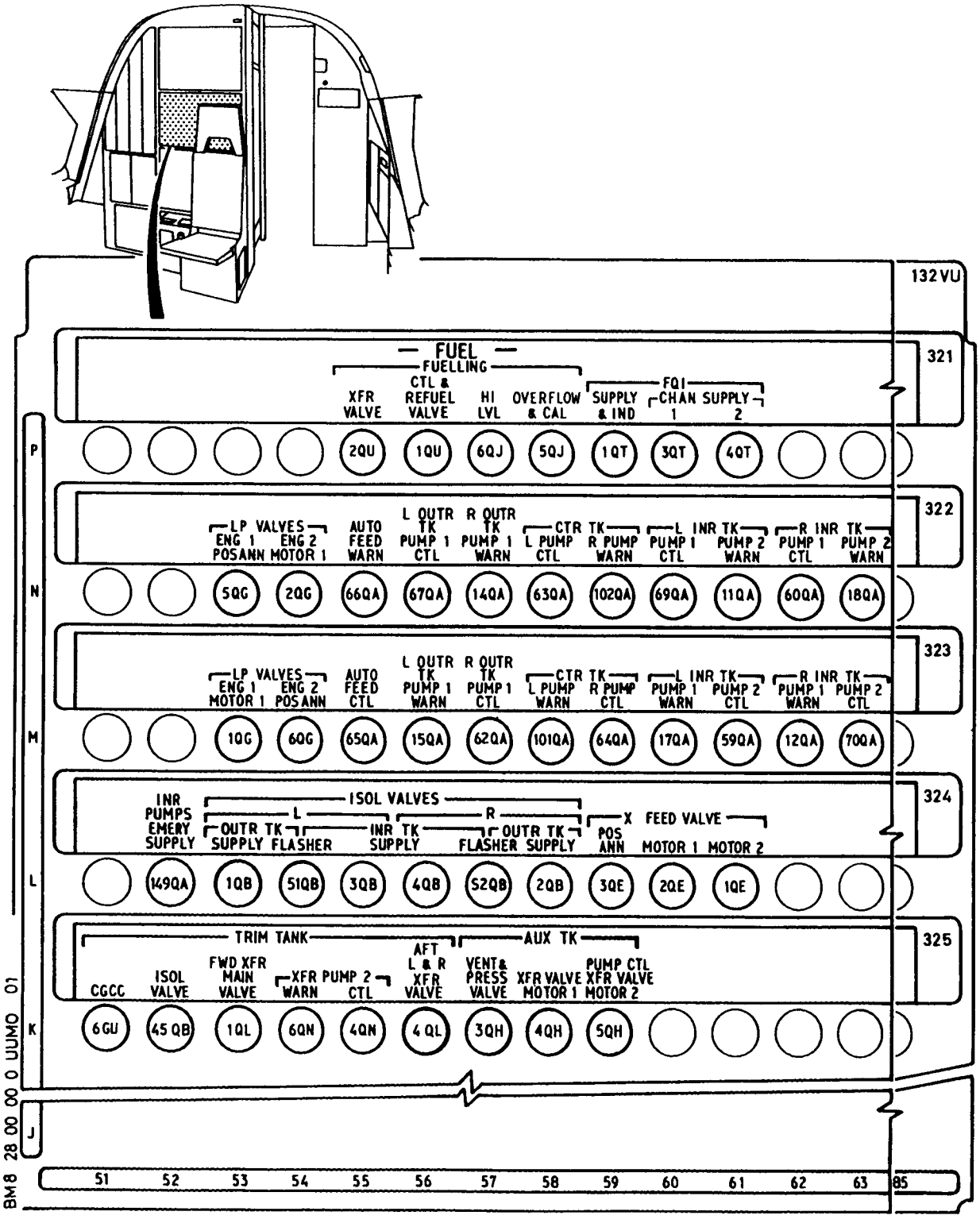
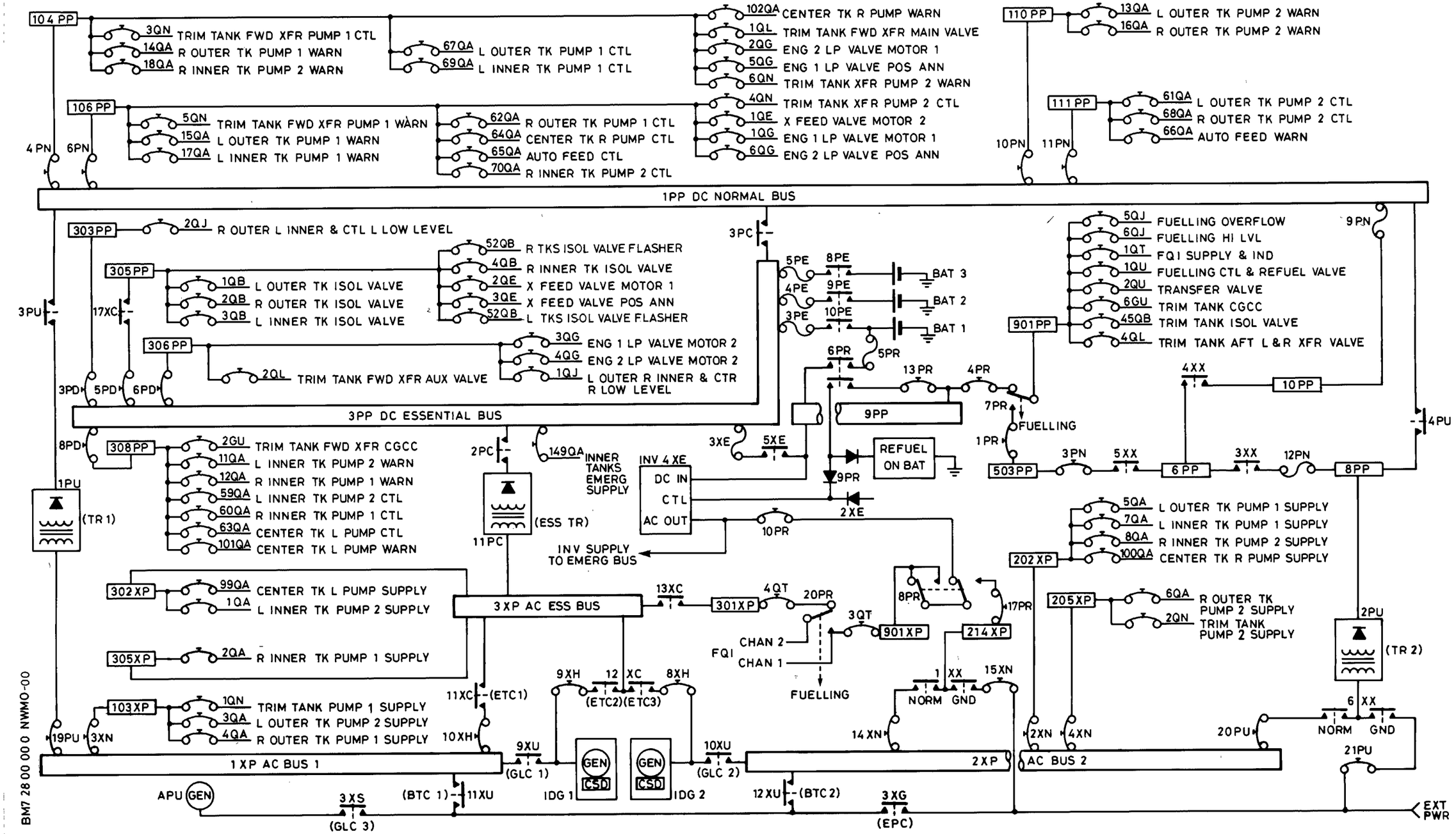
Circuit Breaker Panel 106VU
Figure 024



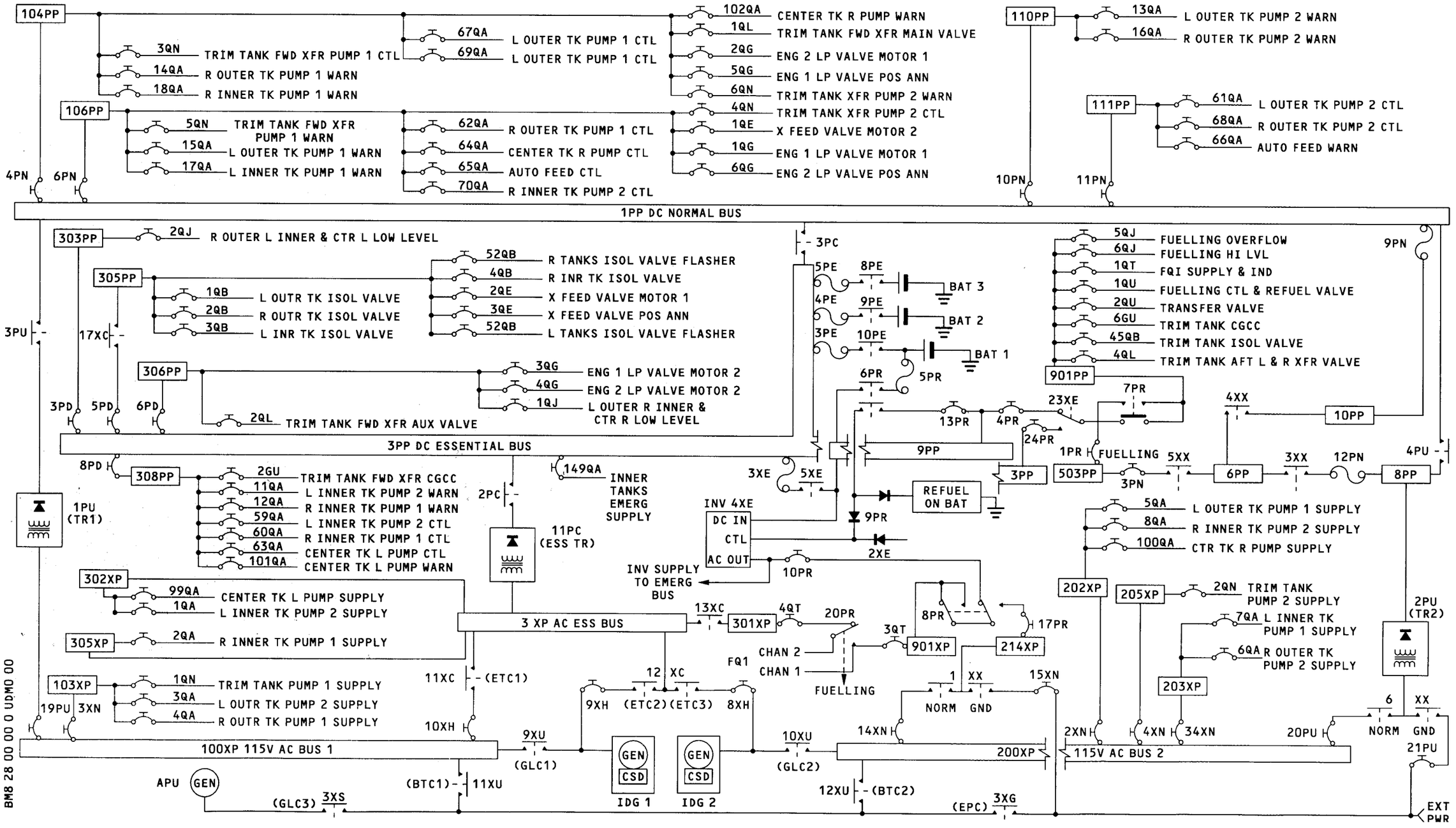
Circuit Breaker Panel 132VU
Figure 025



Circuit Breaker Panel 132VU
Figure 026



Fuel System Power Supply
Figure 027



Fuel-System Power-Supply
Figure 028

**ON A/C 101-200,

(Ref. Fig. 029)

**ON A/C ALL

A. Electrical Power
The fuel system gets electrical power from the busbars which are supplied by the Engine Driven Generators, APU and aircraft batteries.

The system is protected by circuit breakers located on panels 22VU, and 132VU, in the flight compartment, and 101VU, and 106VU, in the avionics compartment.

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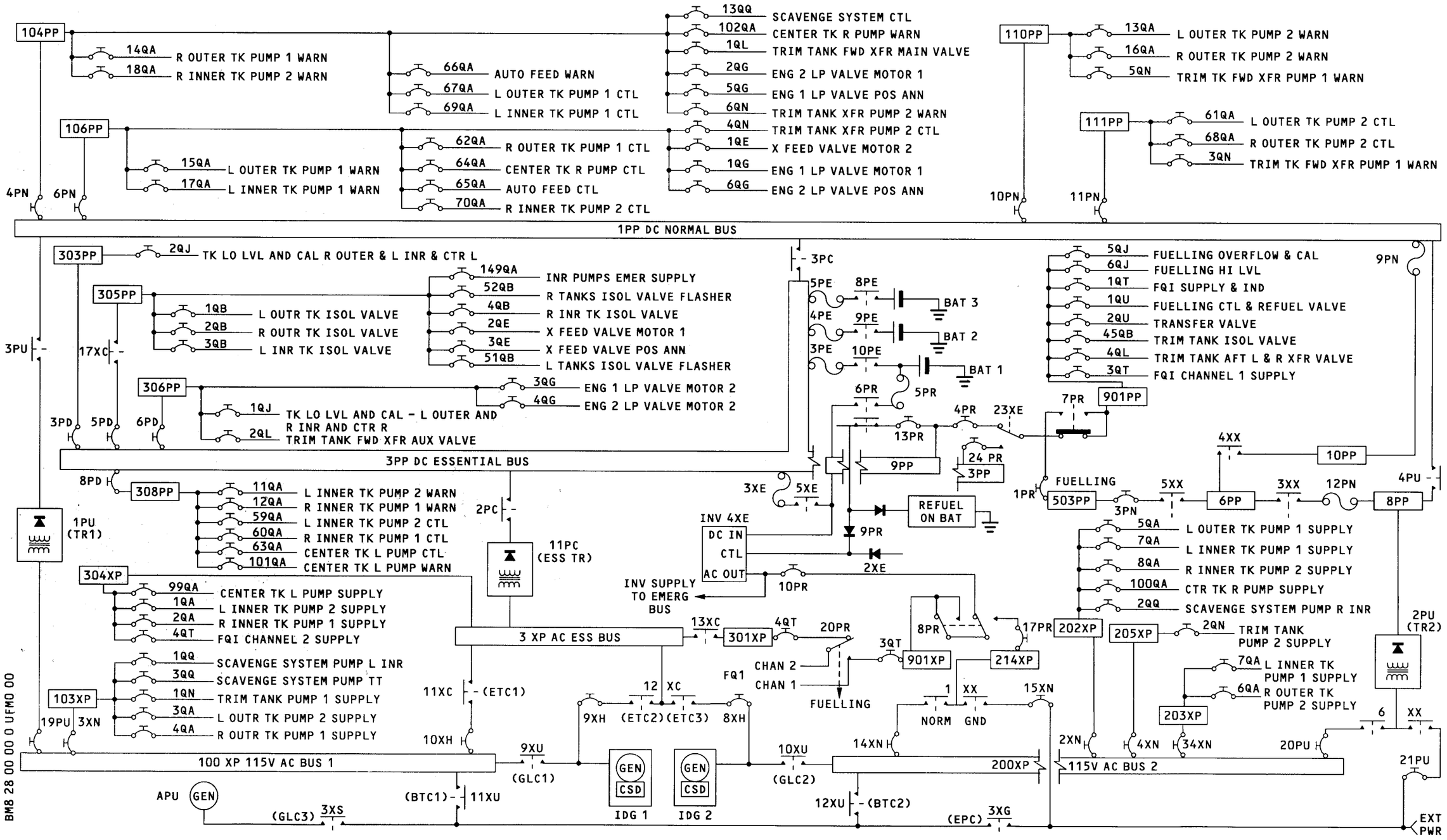


Fuel-System Power-Supply
Figure 029

WARNING: BEFORE PROCEEDING WITH MAINTENANCE WORK ON OR NEAR MECHANICAL FLIGHT CONTROLS OR PRIMARY FLIGHT CONTROL SURFACES, LANDING GEARS, ASSOCIATED DOORS OR ANY MOVING COMPONENT MAKE SURE THAT GROUND SAFETIES AND/OR WARNING NOTICES ARE IN THE CORRECT POSITION TO PREVENT INADVERTENT OPERATION OF THE CONTROLS.

BEFORE POWER IS SUPPLIED TO THE AIRCRAFT MAKE SURE THAT THE ELECTRICAL CIRCUITS UPON WHICH WORK IS IN PROGRESS ARE ISOLATED.

BEFORE UNDERTAKING MAINTENANCE OPERATIONS ON THE FUEL SYSTEM MAKE SURE THAT FIRE FIGHTING EQUIPMENT IS READILY AVAILABLE AND IN PROXIMITY TO THE WORK AREA.

BEFORE UNDERTAKING MAINTENANCE WORK ON THE FUEL SYSTEM, THE PRESCRIBED SAFETY PROCEDURES AS WELL AS ELECTRICAL SAFETY PRECAUTIONS MUST BE APPLIED (REF. 24-00-00, P. Block 301).

1. General

A. Before undertaking maintenance work on the fuel system, personnel must rigorously observe the following safety precautions.

These safety precautions must be read at the same time as the special instructions and safety measures applicable to specified maintenance procedures and in particular, the operations that follow:

R - Replenishing of Fuel Tanks (Ref. 12-11-28, P. Block 301).
- Fuel Sampling for Water Contamination (Ref. 12-32-28, P. Block 301).
- Defueling (Ref. 28-25-00, P. Block 301).
- Access to Fuel Tanks (Ref. 28-10-00, P. Block 301).
R - Fuel Tank Working Areas (Ref. 28-10-00, P. Block 301).
- Fuel Tank Ventilation (Ref. 28-10-00, P. Block 301).
R - Use of Flammable Gas Detection Devices (Ref. 28-10-00, P. Block 301).
- Electronics Racks Ventilation (Ref. 21-21-00, P. Block 301).
- Aircraft Grounding (Ref. 24-00-00, P. Block 301).

B. Personnel who do specified maintenance tasks must wear approved protective clothing.

2. Safety Precautions

WARNING: BEFORE YOU DO MAINTENANCE WORK ON THE FUEL SYSTEM, THE SAFETY PRECAUTIONS THAT FOLLOW MUST BE OBSERVED.

TOO MUCH EXPOSURE TO FUEL VAPOR CAN CAUSE SERIOUS ILLNESS, LETHARGY OR DEATH.

CONTACT WITH FUEL FOR TO LONG CAUSE SKIN IRRITATION.

DO NOT GET AIRCRAFT FUEL:
- IN YOUR MOUTH
- IN YOUR EYES
- ON YOUR SKIN FOR A LONG TIME
AIRCRAFT FUEL IS POISONOUS.

AVIATION FLUIDS ARE FLAMMABLE AND POISONOUS.

SMOKING IS NOT PERMITTED WHEN YOU HANDLE AVIATION FLUIDS.

A. General Safety Precautions
(1) Make sure that the aircraft is grounded correctly (Ref. 24-00-00, P. Block 301).
(2) Make sure that the lighting in the work area is sufficient to work safely.
(3) Use only the approved spark-proof lamps and torches in the fuel tank.
(4) Make sure that the flow of clean air in the work area is sufficient to work safely.
(5) Before you start the maintenance task make sure that these are available:
- the correct fire-fighting equipment
- approved persons to use the fire-fighting equipment.
(6) Do not get aircraft fuel in your eyes, mouth, nose, ears or on your skin.
(a) If you get aircraft fuel in your eyes, mouth, nose or ears:
1 Flush with clean water.
2 Get medical aid.
(b) If you get aircraft fuel on your skin:
1 Remove any clothing soaked with fuel.
2 Clean the skin with soap and water.
3 Flush the skin with clean water.
4 If the skin is dry, apply an approved cream to it.
(7) Do not get your clothes soaked with fuel.
(8) Use approved protective clothing made from material which will not cause sparks.
(9) Protect your skin with barrier cream.
(10) You must use a respirator if the fuel-gas concentration in the work area is more than 5% of the Lower Explosive Limit (LEL).
(11) Put "NO SMOKING" warning notices around the work area.
(12) In the work area you must not:
- smoke
- use flames which do not have protection
- operate electrical equipment which is not necessary for the task
- operate electrical equipment which is not approved for the task
- pull or move metal objects along the ground
R - use footwear which has metal studs or exposed steel toe-caps
- use hearing-aids or battery operated equipment which will cause sparks
- have any material which will cause sparks or flames.
(13) You must immediately flush away or remove any fuel leakage.
(14) You must put any material which is used to remove any fuel leakage in

special fireproof containers.
(15)You must do all the maintenance tasks in very clean conditions.
(16)Use only approved cleaning materials.
(17)Make sure that all signs of solvents and cleaning agents are removed.
(18)Make sure that all electrical circuits in maintenance are isolated before you apply electrical power to the aircraft.
(19)Put blanking caps on all disconnected pipes and openings in components and tanks.
(20)If possible, safety all components before you place them inside the fuel tank.
(21)Make sure that all the fuel system components have correct electrical bonding.
(22)Do not connect electrical equipment to a power source less than 30 meters away, unless the power source has spark-proof connectors.
(23)It is forbidden, under any circumstances whatsoever, to start-up or simulate engine start-up or undertake any other maintenance work on the aircraft, the nature of which is likely to create an accident risk during maintenance work on the fuel system.

B. Technical Procedures

WARNING: WHEN FUEL SYSTEM COMPONENTS ARE WIRE LOCKED, THE ENDS OF THE LOCKWIRE MUST BE FOLDED UNDER THE TWISTED SECTION OF WIRE, SO THAT THE ENDS ARE TRAPPED AND HELD AGAINST THE COMPONENT. THIS IS TO ELIMINATE ELECTROSTATIC DISRUPTIVE DISCHARGE EFFECT (CORONA EFFECT) AGAINST SHARP POINTS. EVERY TAIL MUST BE ENCLOSED WITH SEALANT (MAT. No. 09-001) 2mm (0.08 in) THICK.

(1)All wirelocking must be accomplished outside the tank area, with the exception of the T-connection on the transfer line at STA2612 (FR 47/48).

NOTE: Gammah couplings inside the fuel tanks are not required to be wire locked, they are self-locking.

(2)Maintenance work on the fuel system must be carried out with scrupulous cleanliness.
(3)Blank or cap disconnected lines, and exposed ports in component parts, to prevent impurities or foreign matter entering the fuel system.

WARNING : DO NOT USE PAPER TOWELS TO MOP UP RESIDUAL FUEL IN TANKS. PAPER TOWELS CAN CAUSE AN ELECTROSTATIC DISCHARGE. USE CLEAN RAGS OR SPONGES.

(4)Wipe up any spilled fuel immediately.
(5)Use only approved materials for wiping components, lines and unions.
(6)Do not leave loose live electrical cables on board the aircraft or in the working area.
(7)Make certain that the aircraft and all pumping equipment, containers and ground supply units are electrically grounded. Check, and if necessary re-make ground bondings on all components as well as access doors before these components are removed.

WARNING : THE FUEL PIPES ROUTED THROUGH THE WET FUEL TANK AREAS MUST BE PROVIDED WITH A CONTINUOUS ELECTRICAL PATH TO THE ADJACENT PIPE. THIS PROVIDES A SAFE ELECTROSTATIC DISCHARGE AND LIGHTENING CURRENT PATH BACK TO THE AIRCRAFT STRUCTURE.

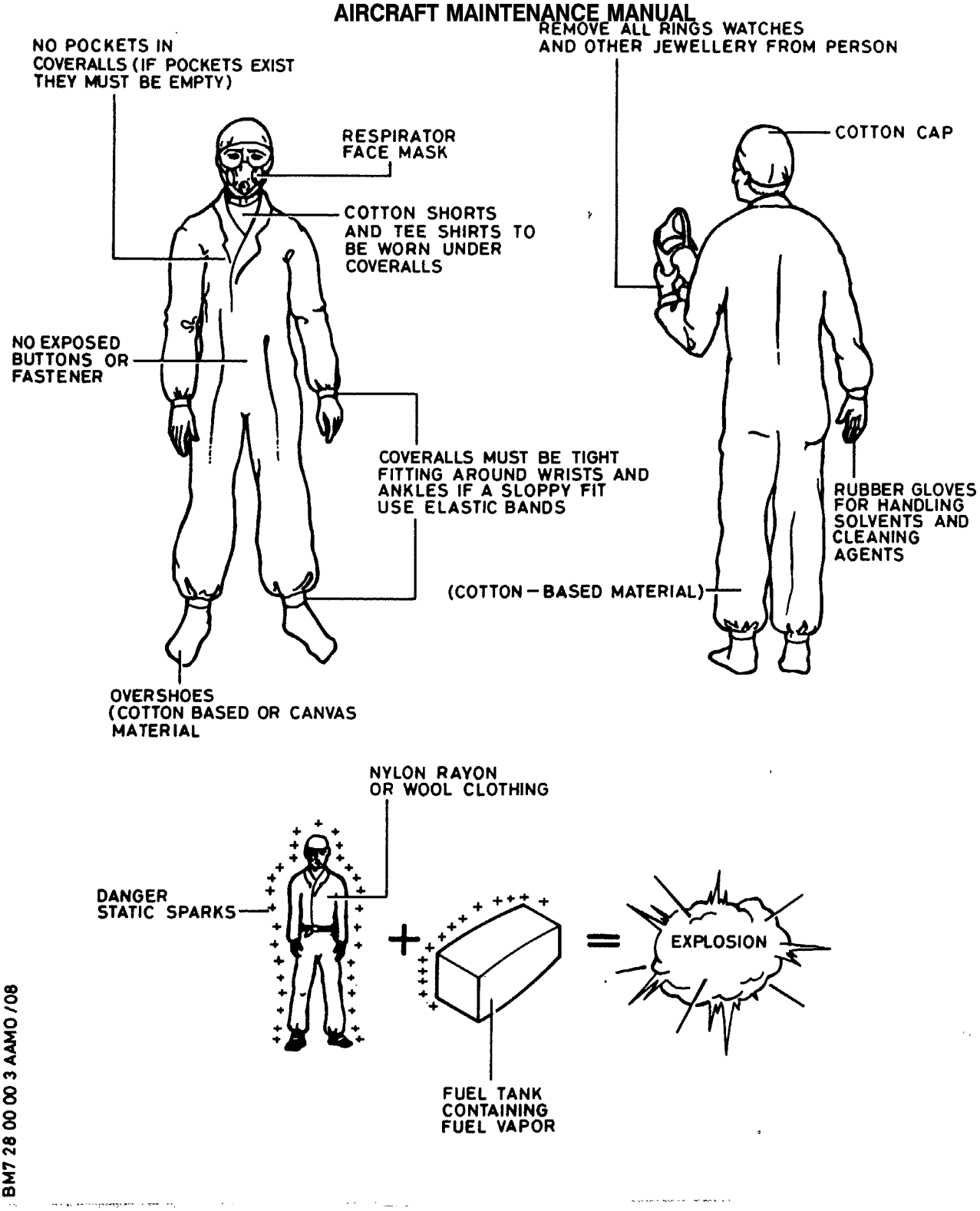
(8) Make sure that all the fuel system components have correct electrical bonding (Ref. 28-00-00, P. Block 601).
(9) Do not connect electrical equipment to a live power point situated at less than 30 meters (approximately 100 ft) from an open fuel tank or any puddles of fuel, if the equipment is not provided with male, spark-proof connectors.
(10) Do not use electrical test equipment liable to produce sparks in the working area.

WARNING : CLEANING OPERATIONS USING APPROVED SOLVENTS AND CLEANING AGENTS MUST BE CARRIED OUT IN A WELL-VENTILATED AREA. THE SAFETY PRECAUTIONS MUST BE OBSERVED DURING CLEANING OPERATIONS.

(11) Clean all components before installation in the fuel system, using recommmended solvents. Make certain that all traces of solvent have been removed before equipment is installed.

C. Protective Clothing and Equipment
(Ref. Fig. 301)
Personnel working in or around fuel tanks must wear protective clothing conforming to the following specification:

(1) A cotton coverall having no visible metallic buttons, buckles, hooks or studs which might catch on the structure and fall into the system. Coveralls of wool, silk, nylon or any other synthetic material must NOT be used. The arms and legs of the coverall should be tight-fitting at wrists and ankles. If the coverall is provided with pockets, these must be emptied, especially breast pockets. Coveralls approved as jet fuel proof may be used if available.
(2) Wear cotton underclothing beneath the coverall.
(3) Wear a cotton cap or other suitable headgear.
(4) Wear protective canvas or cotton overshoes over working shoes when in fuel tanks. Do not dirty the soles of the overshoes before entering the tank or afterwards when leaving it.
(5) Wear rubber gloves when handling solvents or cleaning agents, this is compulsory. Any remaining exposed skin must be protected by using an approved barrier cream.
(6) Wear protective goggles when handling solvents and cleaning agents, this is also compulsory unless goggles are already being worn in a full-face respirator.


NO POCKETS IN COVERALLS (IF POCKETS EXIST THEY MUST BE EMPTY)
RESPIRATOR FACE MASK
COTTON SHORTS AND TEE SHIRTS TO BE WORN UNDER COVERALLS
NO EXPOSED BUTTONS OR FASTENER
COVERALLS MUST BE TIGHT FITTING AROUND WRISTS AND ANKLES IF A SLOPPY FIT USE ELASTIC BANDS
OVERSHOES (COTTON BASED OR CANVAS MATERIAL
REMOVE ALL RINGS WATCHES AND OTHER JEWELLERY FROM PERSON
COTTON CAP
RUBBER GLOVES FOR HANDLING SOLVENTS AND CLEANING AGENTS
(COTTON-BASED MATERIAL)
NYLON RAYON OR WOOL CLOTHING
DANGER STATIC SPARKS
EXPLOSION
FUEL TANK CONTAINING FUEL VAPOR
BM7 28 00 00 3 AAMO/08

Approved Clothing and Equipment
Figure 301

FUEL - GENERAL - REMOVAL/INSTALLATION

R **WARNING : THIS PROCEDURE USES A FUEL SYSTEM ITEM THAT IS IN A CATEGORY**
R **KNOWN AS A CRITICAL DESIGN CONFIGURATION CONTROL LIMITATION**
R **(CDCCL). CDCCL IDENTIFIES AN ITEM THAT CAN BE THE SOURCE OF A**
R **POSSIBLE FUEL TANK IGNITION. YOU MUST KEEP ALL CDCCL ITEMS IN THE**
R **APPROVED CONFIGURATION. DAMAGE, WEAR OR CHANGES TO A CDCCL ITEM CAN**
R **CAUSE A POSSIBLE FUEL TANK EXPLOSION.**

LANDING GEAR - MAKE SURE THAT THE GROUND SAFETIES AND CHOCKS ARE IN POSITION.

FLIGHT CONTROLS - MAKE SURE THAT THE GROUND SAFETIES AND NOTICES ARE IN POSITION.

OBEY THE SAFETY PRECAUTIONS IN 28-00-00, P. BLOCK 301 AND 28-10-00, P. BLOCK 301.

MAKE SURE THAT THE FIRE FIGHTING EQUIPMENT IS AVAILABLE AND ADEQUATE.

1. Pipes/Rib Connectors and Joints

A. Reason(s) for the Job

(1)To remove and install a typical pipe section from the refuel/defuel gallery, the engine feed system and the vent system.

(2)To remove and install a typical rib connector from the refuel/defuel gallery, the engine feed system and the vent system.

NOTE 1 : For the removal of the engine pylon(s) and the fuel feed pipes in the pylon(s), refer to 28-20-00, P. Block 401.

NOTE 2 : For the removal and installation of the refuel/transfer pipes, the vent pipes and the joints in the trim tank, refer to 28-12-37, P. Block 401.

NOTE 3 : The permitted damage limits for the fuel pipes and the fuel line shrouds are contained in the Fuel Pipe Repair Manual.

2. Equipment and Materials

ITEM	DESIGNATION
A.	Access Platform 4 m (13 ft)
B.	O-ring
C.	Warning Notices
D.	Plastic Spatula
E. Material No. 01-001	Fuels (Ref. 20-31-00)
F. Material No. 05-001	Special Materials (Ref. 20-31-00)
G. Material No. 07-001C	Lacquer (Ref. 20-31-00)

ITEM	DESIGNATION
Referenced Procedures	
- 20-28-11, P. Block 1	Electrical Bonding
- 28-00-00, P. Block 301	Fuel - General
- 28-10-00, P. Block 301	Storage
- 28-11-22, P. Block 401	Manhole Covers (Wings)
- 28-11-24, P. Block 401	Manhole Cover - Booster Pump
- 28-11-29, P. Block 401	Manhole Cover - Center tank
- 28-11-33, P. Block 401	Manhole Covers - Trim Tank
- 28-12-00, P. Block 501	Tank Venting System
- 28-12-37, P. Block 401	Pipes and Joints Trim Tank
- 28-20-00, P. Block 401	Distribution
- 28-21-00, P. Block 501	Fuel Pump System
- 28-25-00, P. Block 501	Refuel/Defuel System
- 28-25-00, P. Block 301	Refuel/Defuel system
- 57-30-11, P. Block 401	Wing Tip - Structure Complete

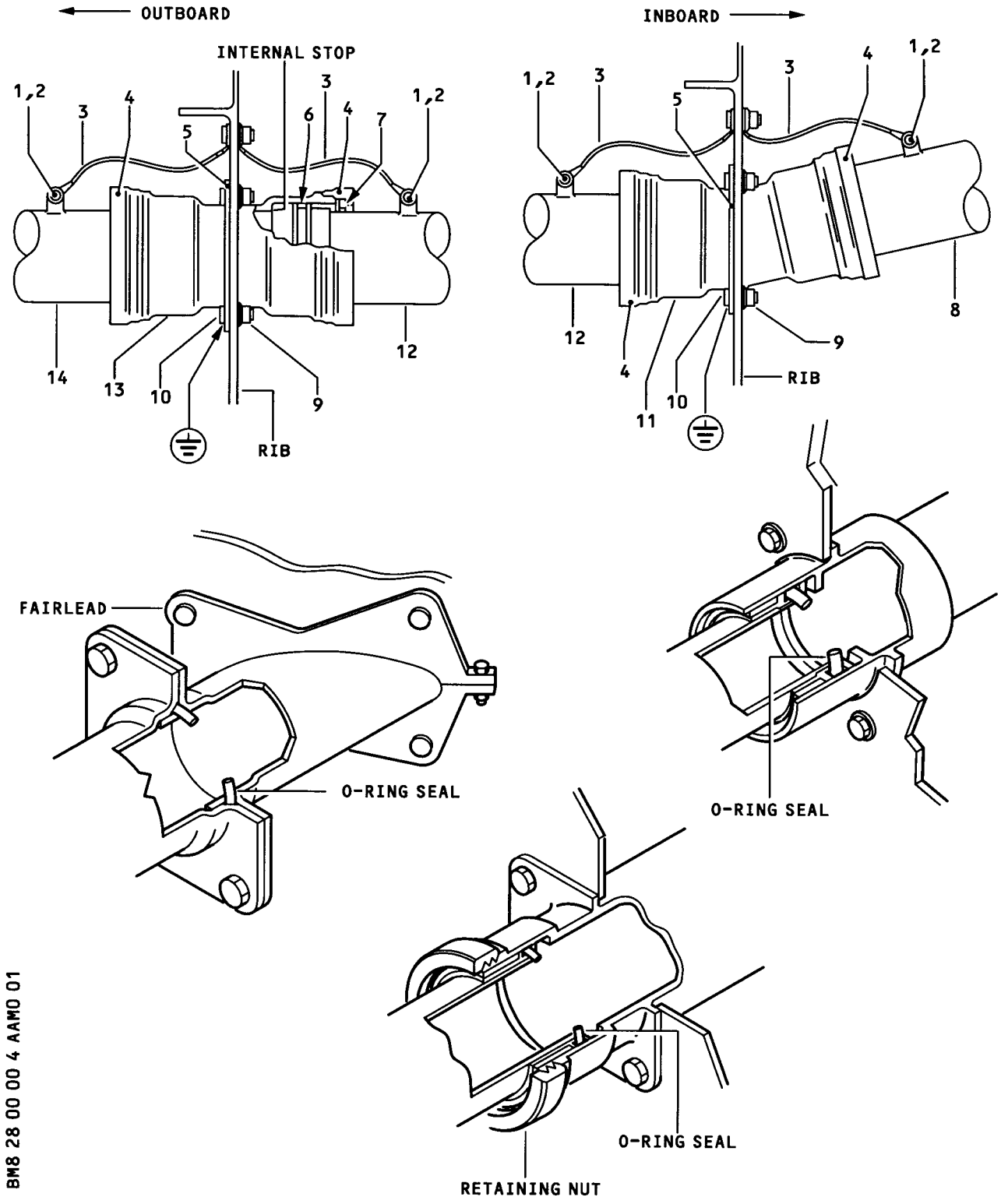
3. Procedure

A. Job Set-Up
(1)Defuel the aircraft (Ref. 28-25-00, P. Block 301).
(2)Put the access platform in position.
(3)Remove the applicable manhole covers (Ref. 28-11-22, and/or 28-11-24, and/or 28-11-29, and/or 28-11-33, P. Block 401).
(4)Put the warning notices in position around the work area.

B. Removal
(Ref. Fig. 401)
(1)Wing-tank fuel pipes - typical assembly.
(a)For the vent system outboard of RIB 10, remove the wing tip (Ref. 57-30-11, P. Block 401) and the blanking plates from RIB 29.
(b)Remove the nuts (1) and the bolts (2) and disconnect the bonding straps (3) from the pipes (8), (12) and (14).
(c)Loosen the pipe retaining nut(s) (4) (if installed) on the rib connectors (11) and (13).
(d)Use a plastic spatula to remove the sealant from the bonded bolt (10) and the nut (9). Remove all of the nuts (9) and the bolts (10) from the rib connector (13).

NOTE : Make a note of the position of the bonded bolt (10) and the nut (9). The bonded bolt (10) and the nut (9) are coated with sealant and painted with a layer of lacquer (Material No. 07-001C). This bonded bolt (10) is used for the electrical bonding of the assembly and must be installed in the same position and to the same standard.

(e)Move the pipe (14) in an outboard direction to contact the internal stop in the next connector. Move the rib connector (13) on the pipe



Pipes and Connectors - Typical Assembly
Figure 401

R

(14) until the internal stop contacts the pipe (14). If necessary, loosen or remove the fairleads to get full travel.
(f)Move the pipe (12) in an inboard direction to contact the internal stop in the rib connector (11), then move the pipe (12) to one side and remove it.
(g)Remove and discard the O-ring seals (6).
(h)If necessary, remove the snap ring (7) and disconnect the pipe retaining nut (4) (if installed) from the pipe (12).

(2)Wing-tank rib connectors - typical assembly.
(a)For the vent system outboard of RIB 10, remove the wing tip (Ref. 57-30-11, P. Block 401) and the blanking plates from RIB 29.
(b)Remove the nuts (1) and the bolts (2) and disconnect the bonding straps (3) from the pipes (8), (12) and (14).
(c)Loosen the pipe retaining nuts (4) (if installed) on the rib connectors (11) and (13).
(d)Use a plastic spatula to remove the sealant from the bonded bolts (10), and the nuts (9). Remove all of the nuts (9) and the bolts (10) from the rib connectors (11) and (13).

NOTE : Make a note of the position of the bonded bolts (10) and the nuts (9). The bonded bolts (10) and the nuts (9) are coated with sealant and painted with a layer of lacquer (Material No. 07-001C). These bonded bolts (10) are used for the electrical bonding of the assembly and must be installed in the same position and to the same standard.

(e)Move the pipe (14) in an outboard direction to contact the internal stop in the next connector. Move the rib connector (13) on the pipe (14) until the internal stop contacts the pipe (14). If necessary, loosen or remove the fairleads to get full travel.
(f)Move the pipe (12) in an inboard direction to contact the internal stop in the rib connector (11), then move the pipe (12) to one side and remove it.
(g)Move the rib connector (11) outboard and remove the pipe (8).
(h)Remove the rib connector (11).
(j)Remove and discard the O-ring seals (5) and (6).

NOTE : The O-ring seal (5) is only installed on the rib connectors at the sealed ribs 14, 15 and 27.

C. Preparation of Replacement Component

CAUTION : YOU MUST DISCARD O-RING SEALS ON DISCONNECTED PIPES AND INSTALL NEW O-RING SEALS BEFORE INSTALLATION OF THE PIPES. THIS PREVENTS POSSIBLE LEAKS.

(1)Make sure that the used O-ring seals (5) and (6) have been removed and discarded.
(2)Lubricate the new O-ring seals (5) and (6) with fuel (Material No. 01-001) or special material (Material No. 05-001).

(3)Install the O-ring seals (6) on the pipes (8), (12) and (14) and the seals (5) on the rib connectors (11) and (13).

NOTE : The O-ring seal (5) is only installed on the rib connectors at the sealed ribs 14, 15 and 27.

D. Preparation for Installation

(1)If applicable, install the pipe retaining nut (4) (if installed) and the snap ring (7) on the pipe (12).

(2)Clean and inspect the component interface and the adjacent area.

E. Installation

(1)Wing-tank fuel pipes - typical assembly.

(a)Put the pipe (12) in the rib connector (11) then move the connector (13) on the pipe (12).

(b)Put the rib connector (13) in position on the rib.

(c)Put the bonded bolt (10) in the correct position, as previously identified and loosely install the nut (9).

(d)Loosely install all of the bolts (10) and the nuts (9) in the rib connector (13).

CAUTION : THE BONDED BOLT (10) MUST BE INSTALLED TO AN APPROVED BONDING STANDARD (REF. 20-28-11, P. BLOCK 1). THIS WILL IMPROVE THE ELECTRICAL BONDING BETWEEN THE CONNECTOR AND THE RIB. AFTER THE BONDED BOLT (10) AND THE NUT (9) HAVE BEEN INSTALLED AND COATED IN SEALANT, A LAYER OF LACQUER (MATERIAL NO. 07-001C) MUST BE APPLIED TO THE HEAD AND THE TAIL OF THE BONDED BOLT (10) (TO IDENTIFY THE LOCATION OF THE BONDED BOLT (10)).

(e)Leave the bonded bolt (10) and the nut (9) loose.

(f)Tighten all of the other bolts (10) and the associated nuts (9) on the rib connector (13).

R WARNING : THIS INSTRUCTION IS APPLICABLE TO A CRITICAL DESIGN
R CONFIGURATION CONTROL LIMITATION (CDCCL) ITEM. CAREFULLY OBEY
R ALL GIVEN INSTRUCTIONS WHEN YOU DO THIS STEP. IF YOU DO NOT
R OBEY THESE INSTRUCTIONS, A DANGEROUS CONDITION CAN OCCUR THAT
R CAN CAUSE A POSSIBLE FUEL TANK EXPLOSION.

(g)The bonded bolt (10) and the associated nut (9) must be installed as a bonded bolt. Do the procedure for (Bridging contact bonding via conducting bolt and nut oversealed, Ref. 20-28-11, P. Block 1).

(h)Apply a layer of oversealing lacquer (Material No. 07-001C) to the head and the tail of the bonded bolt (10) to identify the location of the bonded bolt (10).

(J)With the rib connector (13) installed, but with the pipe retaining nuts (4) (if installed) loose, move the pipe (12) in each direction to contact the internal stops. Make sure that the seal retaining flange (at both ends of the pipe (12)) cannot be seen after the end of the rib connectors (11) and (13). Keep the pipe (12) in the mid position.

(k)If installed, tighten the pipe retaining nuts (4).

(l)If applicable, install or tighten the fairleads. Make sure that there is a minimum clearance of 0.15 in (3.8 mm) between the pipe (12) and the holes in the rib.
(m)Install the bolts (1), the nuts (2) and the bonding straps (3) (Ref. 20-28-11, P. Block 1).
(n)Put all the other moved pipes in the mid position.
(p)If applicable, install the blanking plates on RIB 29 and install the wing tip (Ref. 57-30-11, P. Block 401).

(2)Wing-tank rib connectors - typical assembly.
(a)Move the pipe (8) in an inboard direction to contact the internal stop in the next connector. Then, move the rib connector (11) on the pipe (8).
(b)Put the rib connector (11) in position on the rib.
(c)Put the pipe (12) in the rib connector (11) then move the rib connector (13) on the pipe (12).
(d)Put the rib connector (13) in position on the rib.
(e)Put the bonded bolts (10) in the correct positions, as previously identified and loosely install the nuts (9).
(f)Loosely install all of the bolts (10) and the nuts (9) in the rib connectors (11) and (13).

CAUTION : THE BONDED BOLTS (10) MUST BE INSTALLED TO AN APPROVED BONDING STANDARD (REF. 20-28-11, P. BLOCK 1). THIS WILL IMPROVE THE ELECTRICAL BONDING BETWEEN THE CONNECTOR AND THE RIB. AFTER THE BONDED BOLTS (10) AND THE NUTS (9) HAVE BEEN INSTALLED A LAYER OF LACQUER (MATERIAL NO. 07-001C) MUST BE APPLIED TO THE HEADS AND THE TAILS OF THE BONDED BOLTS (10), (TO IDENTIFY THE LOCATIONS OF THE BONDED BOLTS (10)).

(g)Leave the bonded bolts (10) and the nuts (9) loose.
(h)Tighten all of the other bolts (10) and the nuts (9) on the rib connectors (11) and (13).

R WARNING : THIS INSTRUCTION IS APPLICABLE TO A CRITICAL DESIGN
R CONFIGURATION CONTROL LIMITATION (CDCCL) ITEM. CAREFULLY OBEY
R ALL GIVEN INSTRUCTIONS WHEN YOU DO THIS STEP. IF YOU DO NOT
R OBEY THESE INSTRUCTIONS, A DANGEROUS CONDITION CAN OCCUR THAT
R CAN CAUSE A POSSIBLE FUEL TANK EXPLOSION.

(j)The bonded bolts (10) and the associated nuts (9) must be installed as bonded bolts. Do the procedure for (Bridging contact bonding via conducting bolt and nut oversealed, Ref. 20-28-11, P. Block 1).
(k)Apply a layer of oversealing lacquer (Material No. 07-001C) to the heads and the tails of the bonded bolts (10) to identify the location of the bonded bolts (10).
(l)With the rib connectors (11) and (13) installed, (but with the pipe retaining nuts (4) (if installed) loose), move the pipes (8), (12) and (14) in each direction to contact the internal stops. Make sure that the seal retaining flanges (at both ends of the pipes (8), (12) and (14)) cannot be seen after the end of the rib connectors. Keep the

pipes (8), (12) and (14) in the mid position.

(m)If installed tighten the pipe retaining nuts (4).

(n)If applicable, install or tighten the fairleads. Make sure that there is a minimum clearance of 0.15 in (3.8 mm) between the pipes (8), (12) and (14) and the holes in the ribs.

(p)Install the bolts (1), the nuts (2) and the bonding straps (3) (Ref. 20-28-11, P. Block 1).

(q)Put all the other moved pipes in the mid position.

(r)If applicable, install the blanking plates on RIB 29 and install the wing tip (Ref. 57-30-11, P. Block 401).

F. Test

(1)For the fuel feed pipelines do a system test (Ref. 28-21-00, P. Block 501).

(2)For the refueling pipelines do a system test (Ref. 28-25-00, P. Block 501).

(3)For the vent system pipelines do a system test only if a pipeline has been reassembled after complete disassembly (Ref. 28-12-00, P. Block 501).

(4)For the fuel feed pipes in the trim tank do a system test (Ref. 28-12-00, P. Block 501).

G. Close-Up

(1)Make sure that the working area is clean and clear of tools and all miscellaneous items of equipment.

(2)Install the manhole covers (Ref. 28-11-22, and/or 28-11-24, and/or 28-11-29, and/or 28-11-33, P. Block 401).

(3)Remove all the ground handling and maintenance equipment, standard and special tools, (together with ground power and replenish equipment and miscellaneous items).

FUEL - GENERAL - INSPECTION/CHECK

WARNING : LANDING GEAR - MAKE SURE THAT THE GROUND SAFETIES AND CHOCKS ARE IN POSITION.

FLIGHT CONTROLS - MAKE SURE THAT THE GROUND SAFETIES AND NOTICES ARE IN POSITION.

OBEY THE SAFETY PRECAUTIONS IN 28-00-00, P. BLOCK 301 AND 28-10-00, P. BLOCK 301 WHEN YOU ENTER AND LEAVE THE FUEL TANK(S).

MAKE SURE THAT THE FIRE FIGHTING EQUIPMENT IS AVAILABLE AND ADEQUATE.

1. Reason for the Job

R A. To do a visual inspection of the fuel pipe bonding straps in the fuel tanks for the conditions that follow:
R - missing, damaged or corroded bonding straps
R - outer braid sheath loose in the end crimps.

NOTE : Bonding straps which only show signs of tarnish should be kept in position until the next scheduled in-tank inspection.

R B. To do a manual check of the mechanical strength of the end crimps on the bonding straps. This will make sure there is no damage hidden by the end crimps.

2. Equipment and Materials

ITEM	DESIGNATION
A.	Access Platform 6 - 20 ft. (2 - 6 m)
B.	Inspection Lamp - Spark Proof
Referenced Procedures	
- 12-11-28, P. Block 301	Refueling of Fuel Tanks
- 20-28-11, P. Block 1	Electrical Bonding
- 28-00-00, P. Block 301	Fuel - General
- 28-00-00, P. Block 801	Fuel - General - Approved Repairs
- 28-10-00, P. Block 301	Storage
- 28-11-22, P. Block 401	Manhole Covers (Wings)
- 28-11-24, P. Block 401	Manhole Cover - Booster Pump (Wings)
- 28-11-29, P. Block 401	Manhole Covers (Center Tank)
- 28-11-33, P. Block 401	Manhole Covers (Trim Tank)

R **ON A/C 101-200,

- 28-11-37, P. Block 401	Manhole Covers (ACT)

R **ON A/C 101-200,

ITEM	DESIGNATION
R Post SB 28-2105 For A/C 101-200,	
- 28-11-36, P. Block 401	Additional Center Tank
- 28-11-37, P. Block 401	Manhole Covers (ACT)
R **ON A/C ALL	
- 28-25-00, P. Block 301	Refuel/Defuel System

3. Procedure for Wing Tank Bonding Straps

A. Job Set-Up
(1)Defuel the aircraft (Ref. 28-25-00, P. Block 301).
(2)Remove all the wing-tank manhole covers (Ref. 28-11-22 and 28-11-24, P. Block 401).
(3)Put the access platform in position.
(4)Prepare the tank(s) for access (Ref. 28-10-00, P. Block 301).

B. Inspection (Ref. Fig. 601, 602)

NOTE : Use the Bonding Strap Inspection Report Sheet to record the condition of each bonding strap in the wing tanks (Ref. Fig. 601).
For the general arrangement of the manhole covers (Ref. Fig. 602).
R For the location of the fuel-pipe bonding straps in the wing tanks
R (Ref. Fig. 603) thru
R (Ref. Fig. 664).

R (1)Use an inspection lamp to make sure that all the bonding straps are
R installed.
R (2)Visually examine the bonding straps and make sure that:
R - they are not broken
R - there are no broken strands
R - the outer braid sheaths are not loose in the end crimps
R - there is no corrosion.

R NOTE : Bonding straps which only show signs of tarnish should be kept in
R position until the next scheduled in-tank inspection.

R (3)Carefully pull each bonding strap to make sure that the end crimps are
R correctly attached.
R (4)Make sure that the bonding strap connections are in good condition.

R (5)For the LH inner tank between Ribs 1 and 14:
(Ref. Fig. 603, 604, 605)
(Ref. Fig. 606, 607, 608)
(Ref. Fig. 609, 610, 611)
(Ref. Fig. 612, 613)
(Ref. Fig. 614, 615)
(Ref. Fig. 616, 617)
R (6)For the LH outer tank between Ribs 14 and 29:
(Ref. Fig. 618, 619, 620)
(Ref. Fig. 621)
(Ref. Fig. 622, 623, 624)
(Ref. Fig. 625, 626, 627)
(Ref. Fig. 628, 629, 630)
(Ref. Fig. 631, 632, 633)
R (7)For the RH inner tank between Ribs 1 and 14:
(Ref. Fig. 634, 635, 636)
(Ref. Fig. 637, 638, 639)

(Ref. Fig. 640, 641, 642)
(Ref. Fig. 643, 644)
(Ref. Fig. 645, 646, 647)
(Ref. Fig. 648)

R (8)For the RH outer tank between Ribs 14 and 29:
(Ref. Fig. 649, 650, 651)
(Ref. Fig. 652)
(Ref. Fig. 653, 654, 655)
(Ref. Fig. 656, 657, 658)
(Ref. Fig. 659, 660, 661)
(Ref. Fig. 662, 663, 664)

R (9)Replace all defective bonding straps (Ref. 20-28-11, P. Block 1).
R (10)Repair all defective bonding strap attachments (Ref. 28-00-00,
R P. Block 801).

C. Close-Up

(1)Make sure that the work area is clean and clear of tools and all other items of equipment.
(2)Do the procedure for when you come out of a fuel tank (Ref. 28-10-00, P. Block 301).
(3)Remove all the ground handling and maintenance equipment, standard and special tools, ground power, all access equipment and miscellaneous items.
(4)Install the wing-tank manhole covers (Ref. 28-11-22 and 28-11-24, P. Block 401).
(5)Refuel the fuel tank(s) as necessary (Ref. 12-11-28, P. Block 301).

AIRCRAFT DETAILS

OPERATOR CODE :

MSN :

MODEL :

CUSTOMER CODE :

DATE OF INSPECTION :

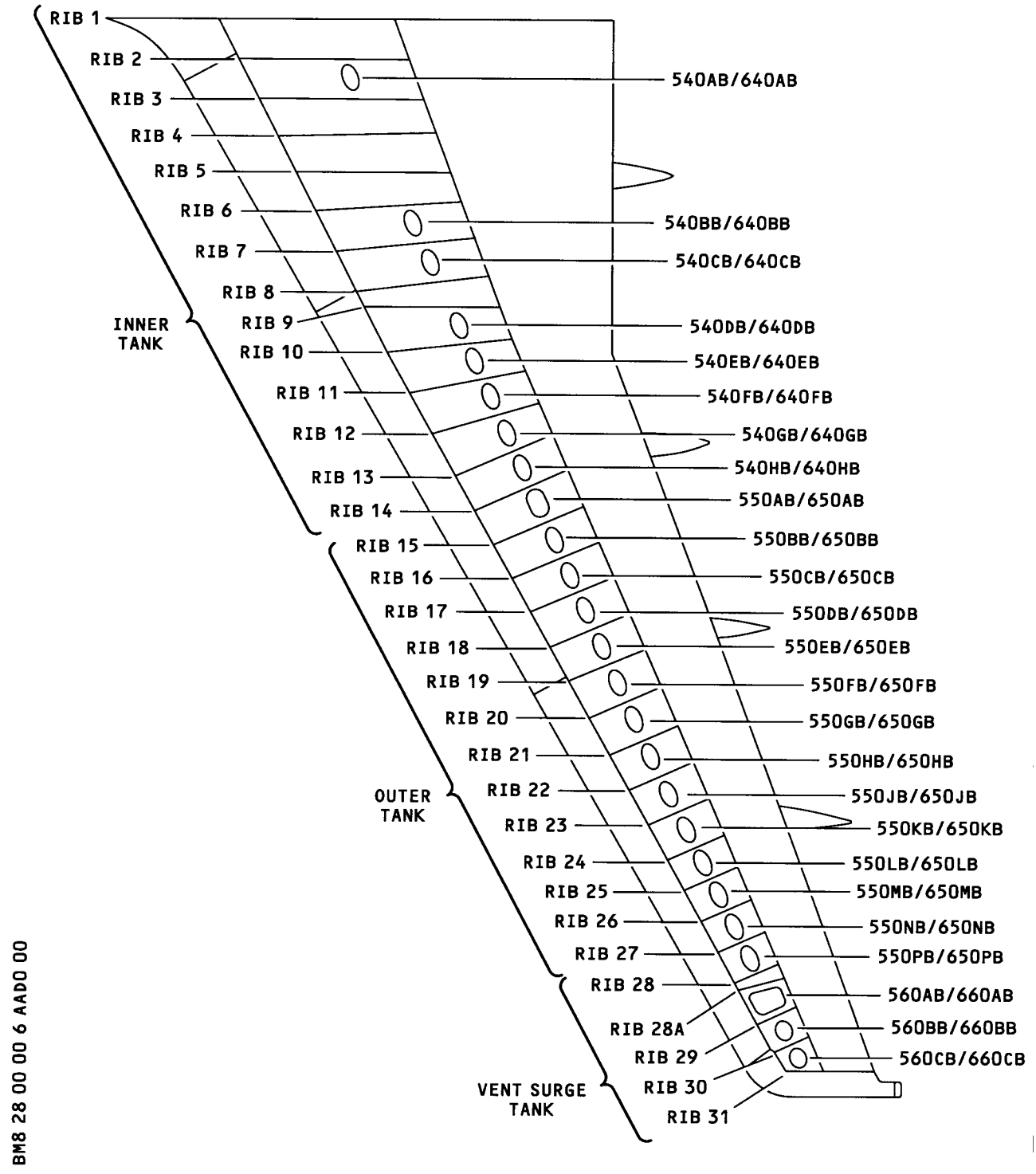
REMARKS :

TANK	MANHOLE/INSPECTION AREA :
FIGURE:	

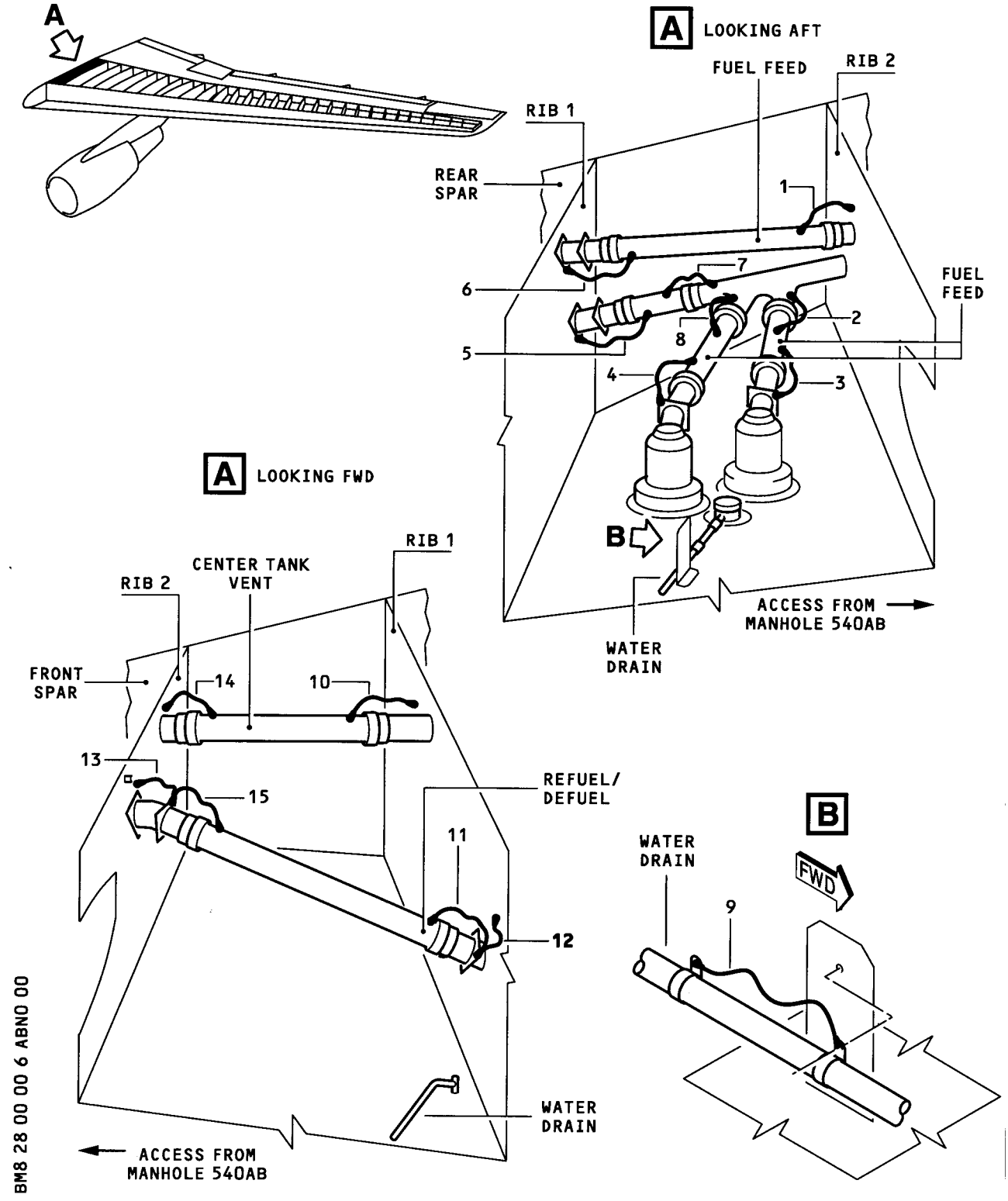
LOCN N°.	FOUND CORRECT	REPLACED	BROKEN	DAMAGED	CORRODED	LOOSE BRAID	REMARKS

BM8 28 00 00 6 AAA0 00

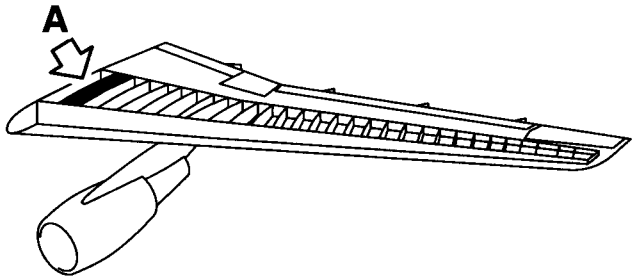
Bonding Strap Inspection Report Sheet
Figure 601

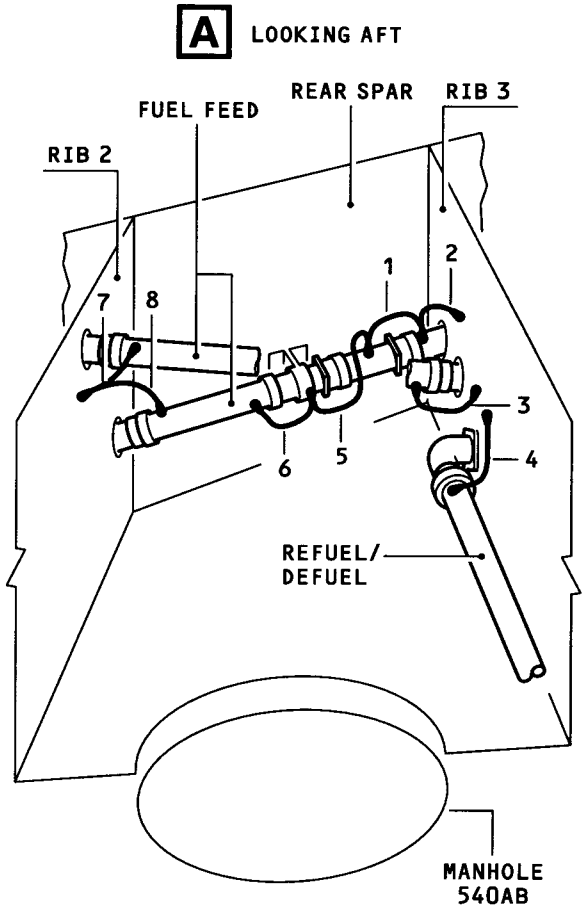


General Arrangement of Manholes - Wing Fuel Tanks
Figure 602



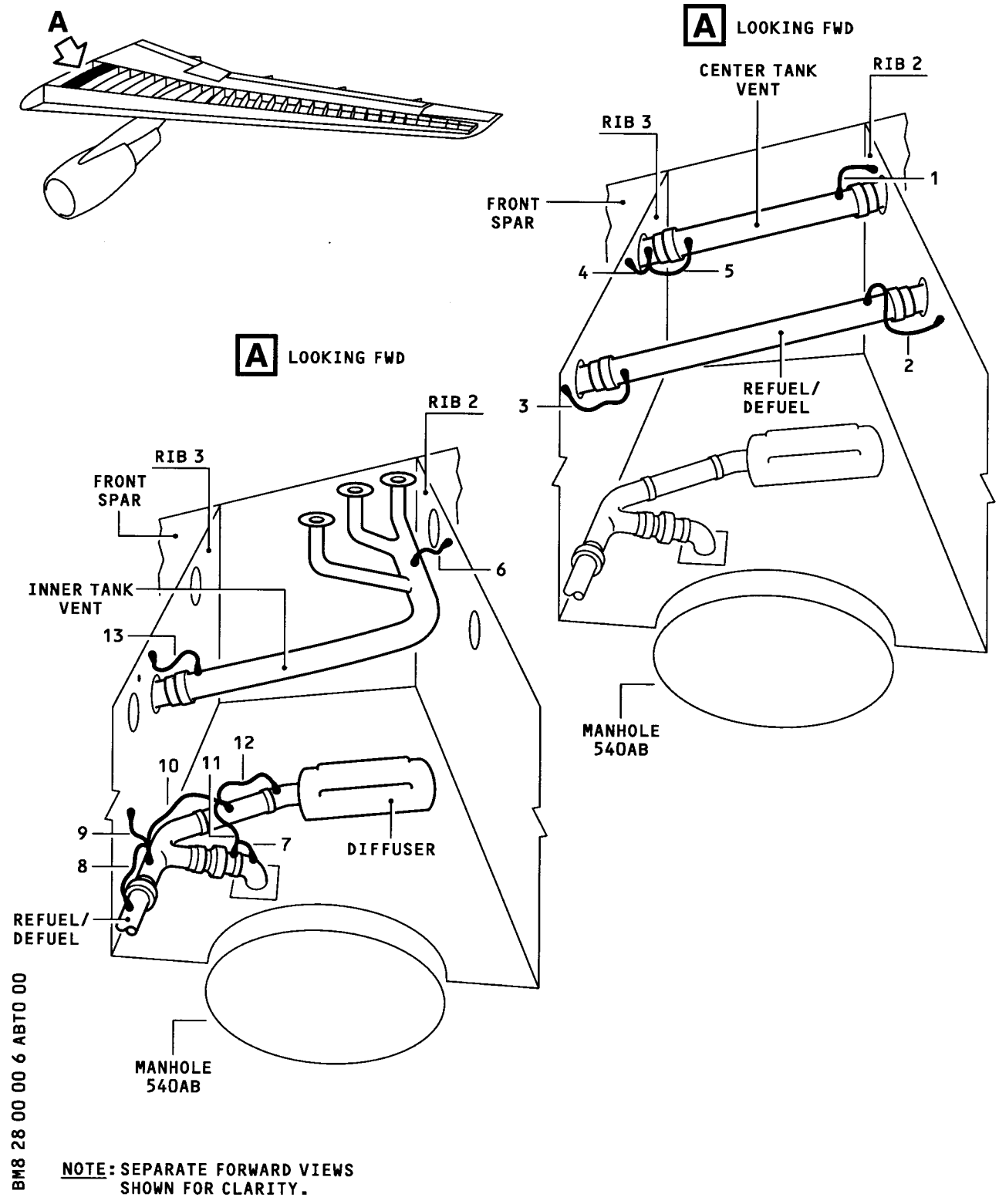
LH Inner Tank between Ribs 1 and 2
Figure 603



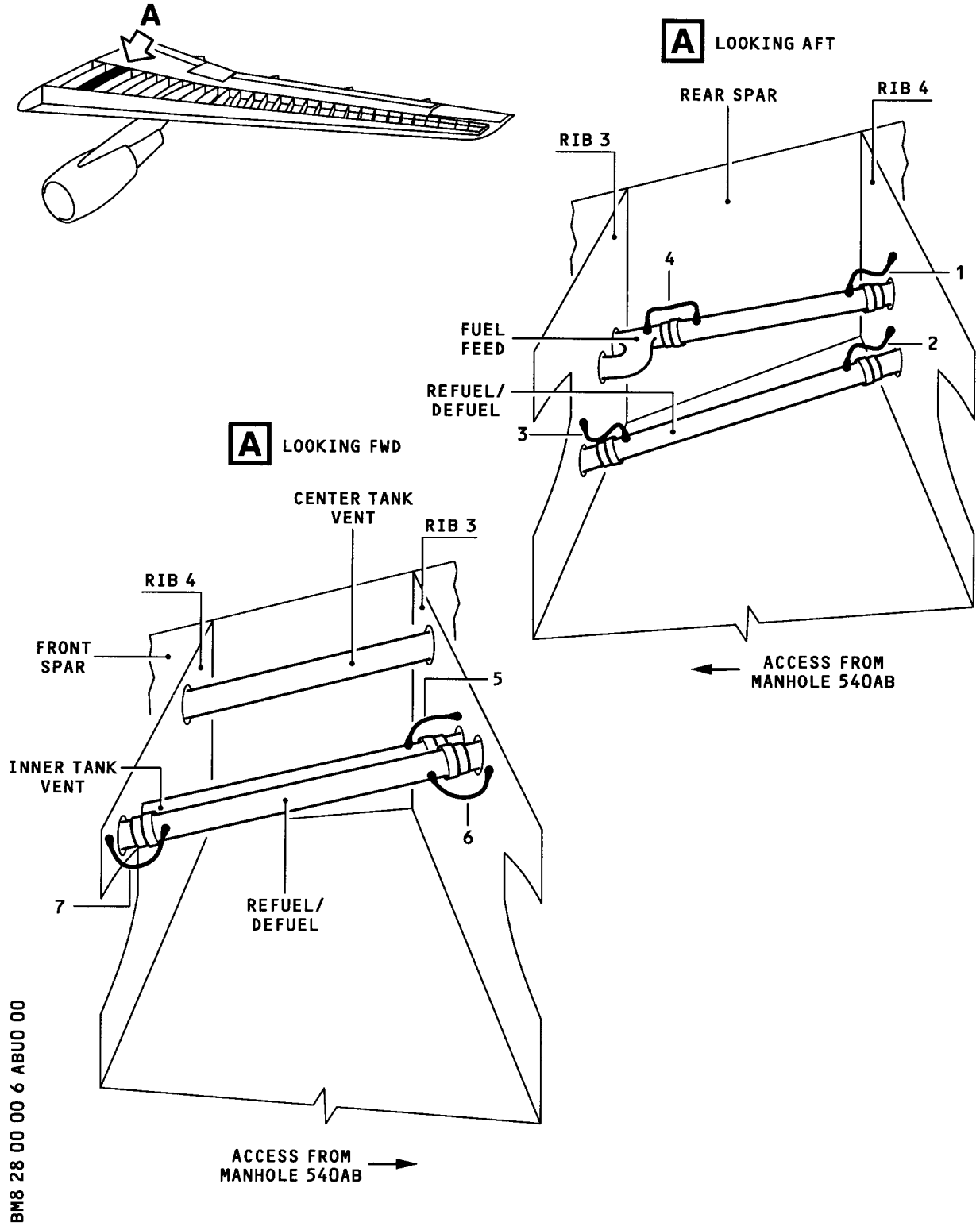


BM8 28 00 00 6 ABR0 00

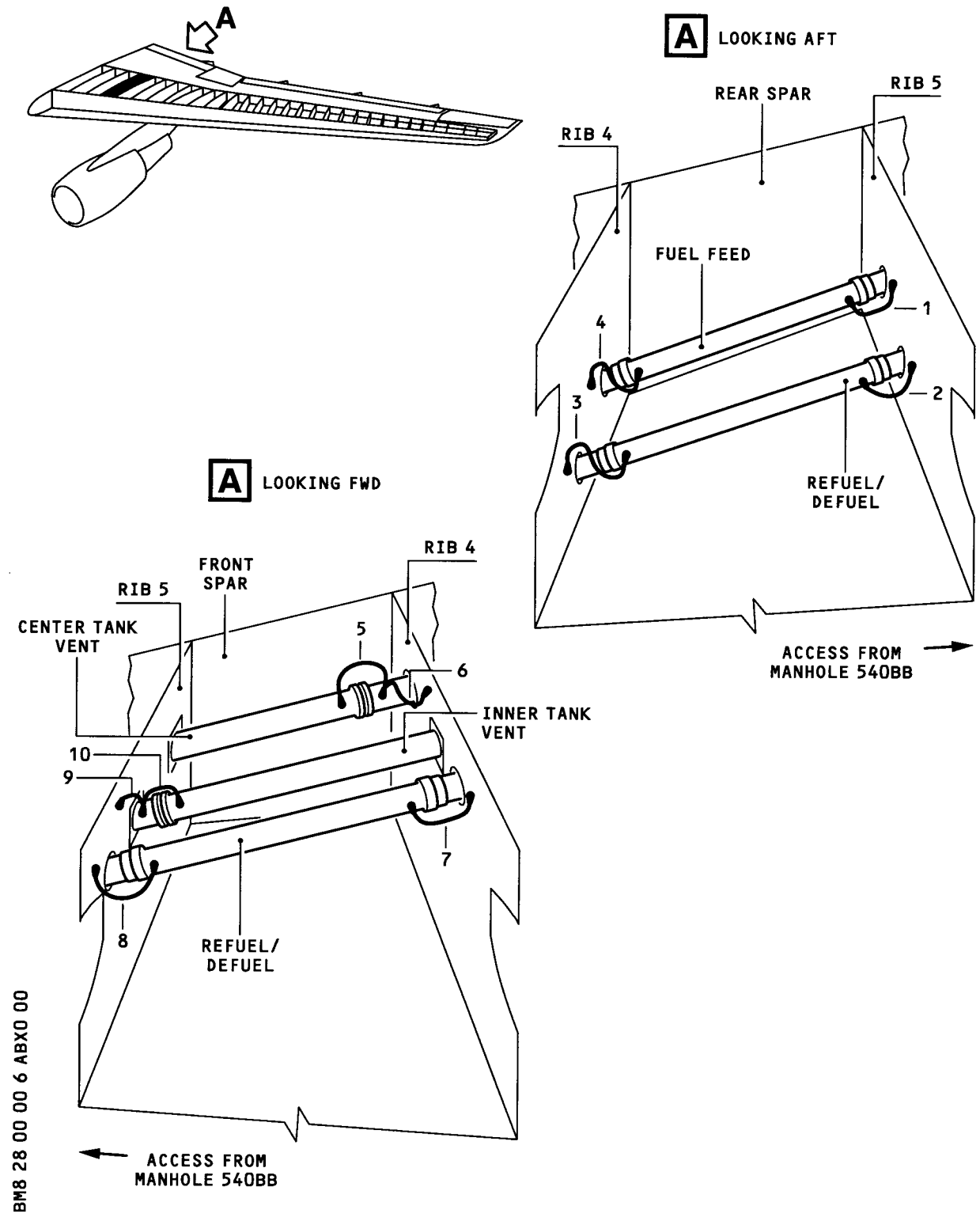
LH Inner Tank Aft between Ribs 2 and 3
Figure 604



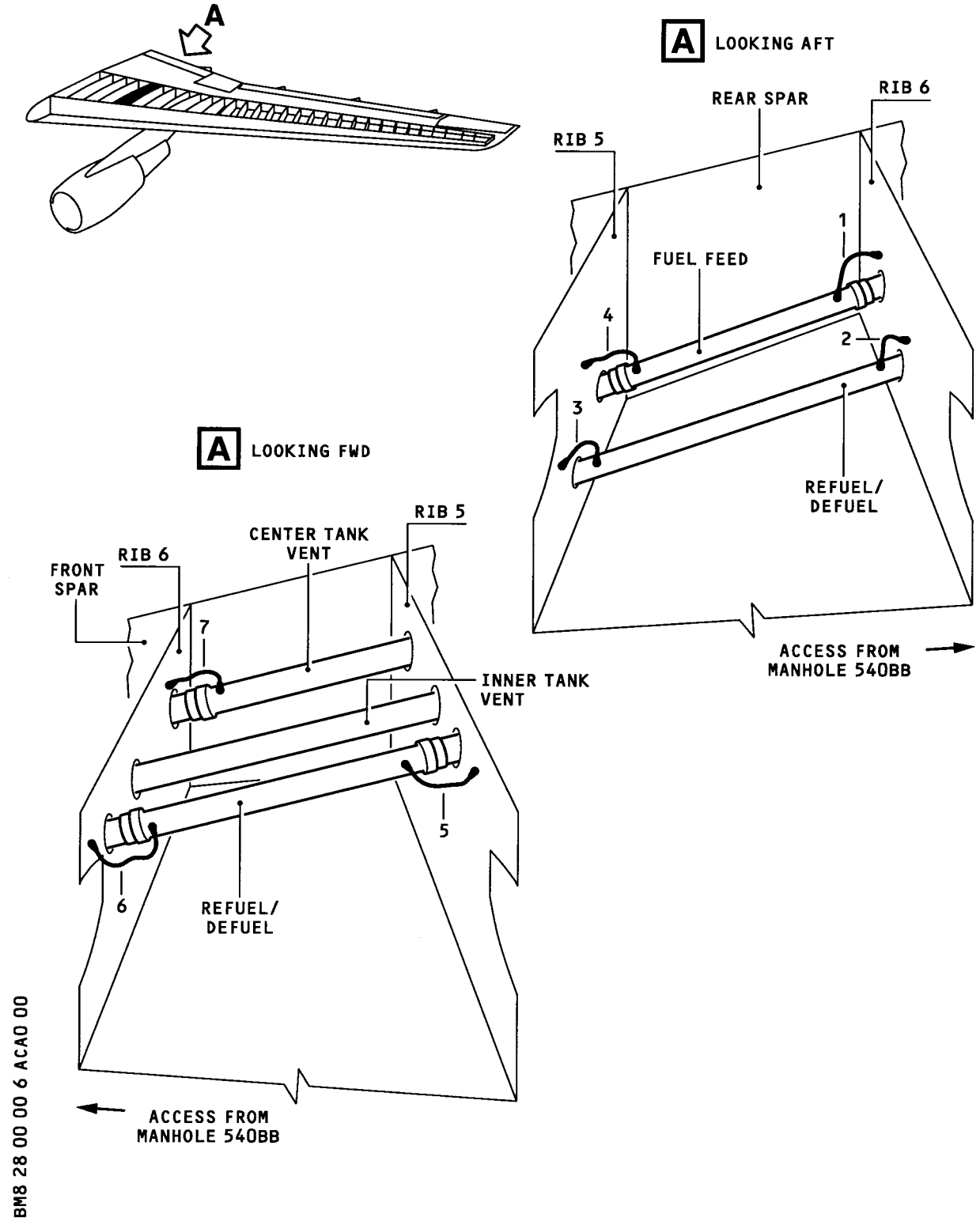
LH Inner Tank Fwd between Ribs 2 and 3
Figure 605



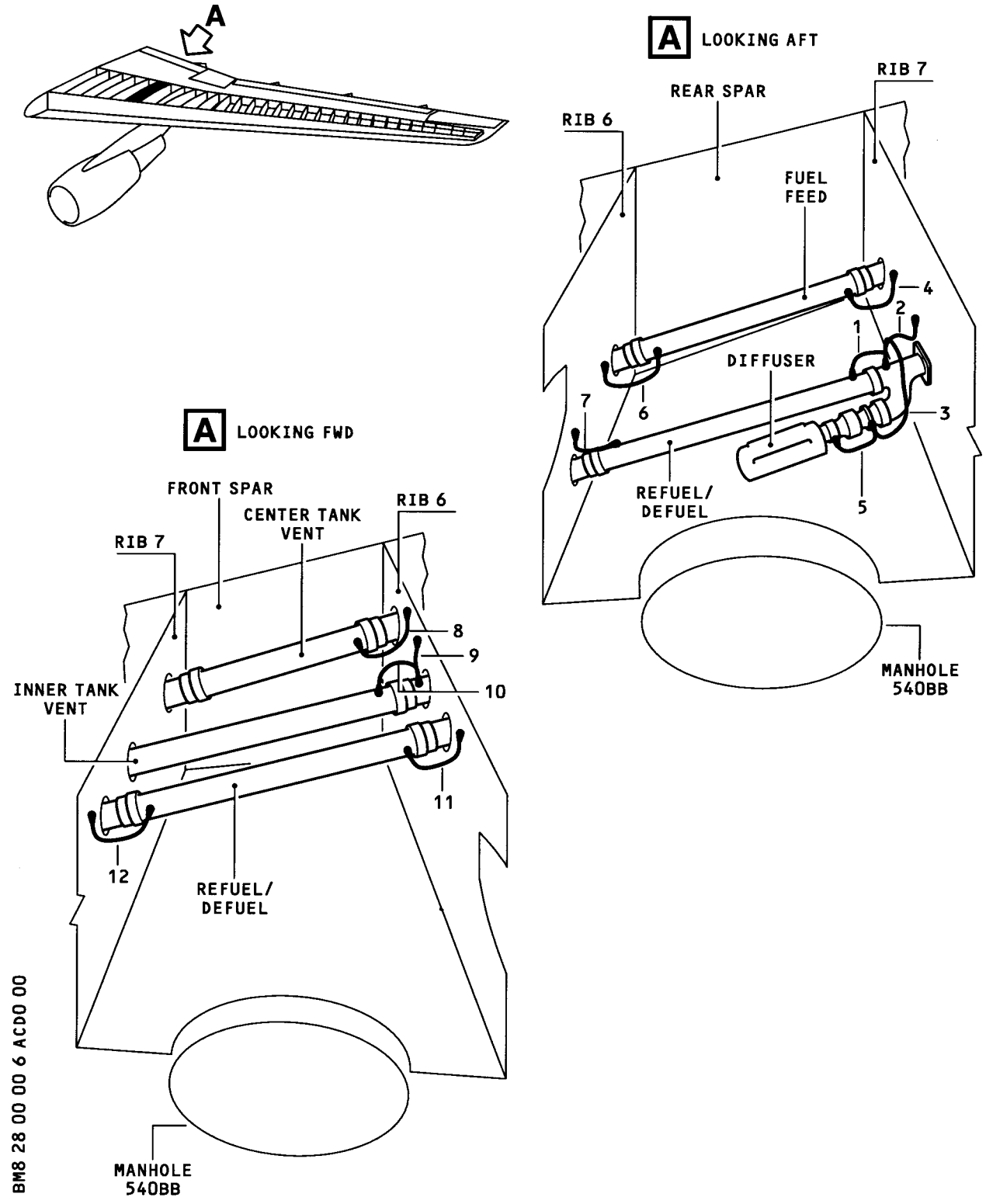
LH Inner Tank between Ribs 3 and 4
Figure 606



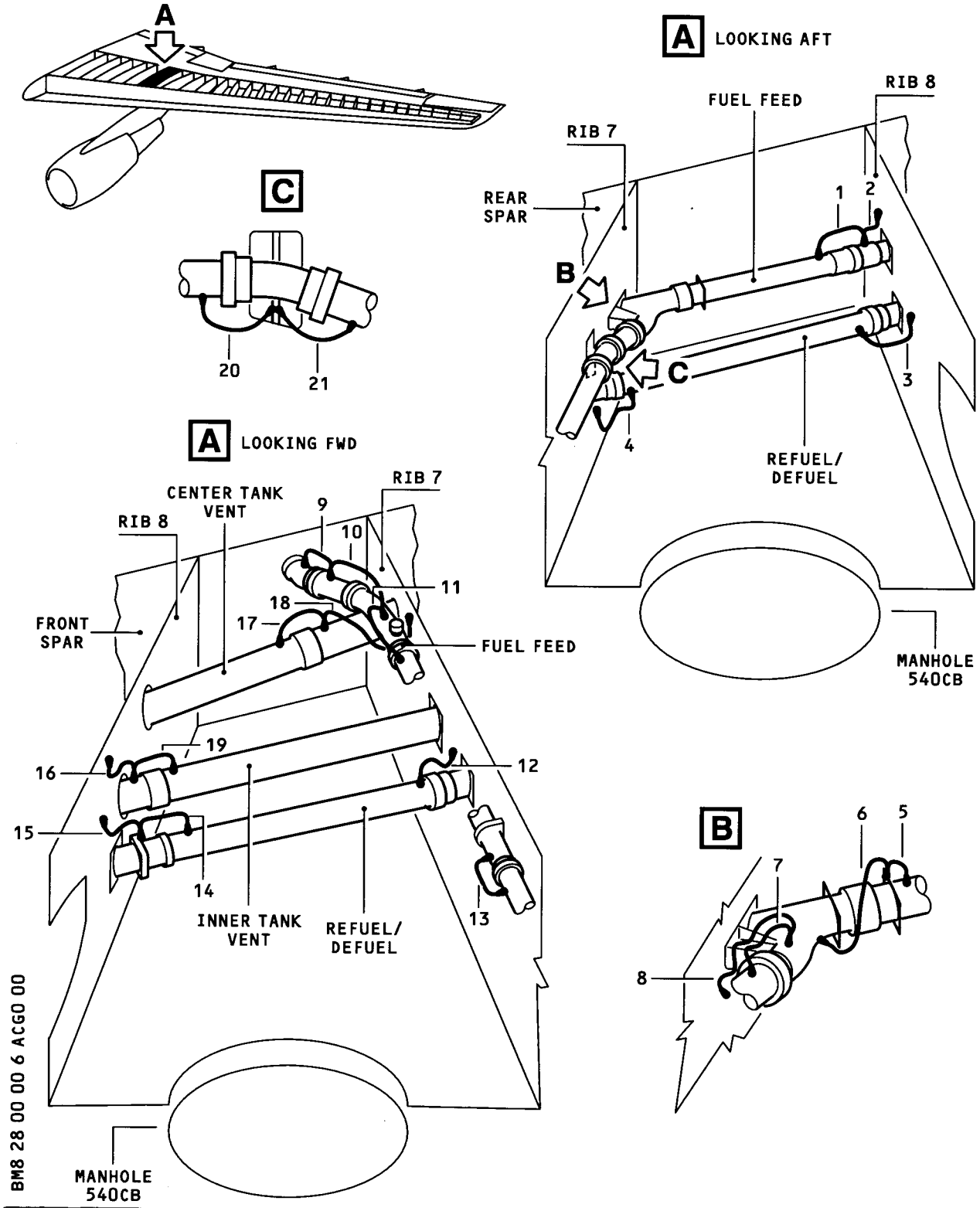
LH Inner Tank between Ribs 4 and 5
Figure 607



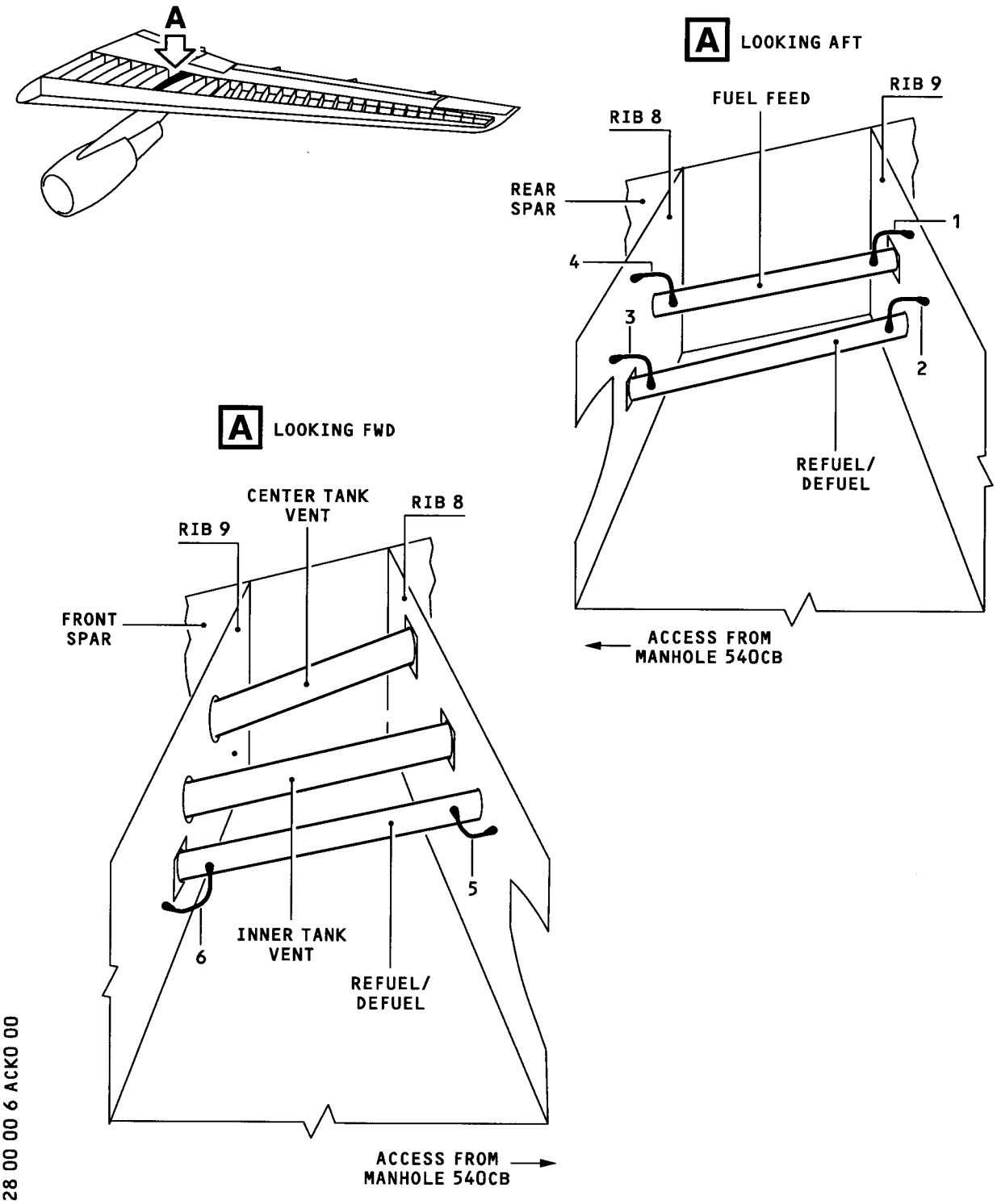
LH Inner Tank between Ribs 5 and 6
Figure 608



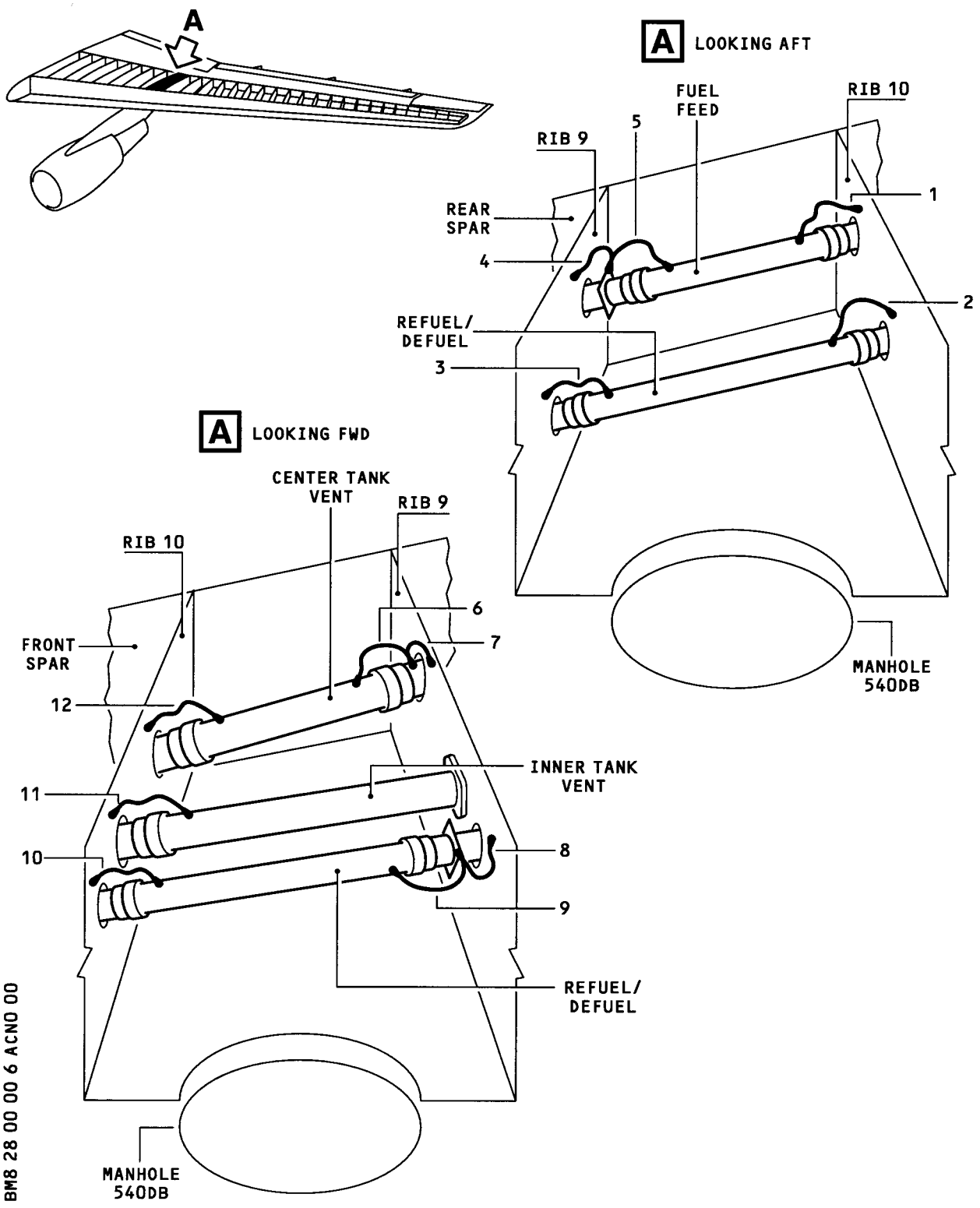
LH Inner Tank between Ribs 6 and 7
Figure 609



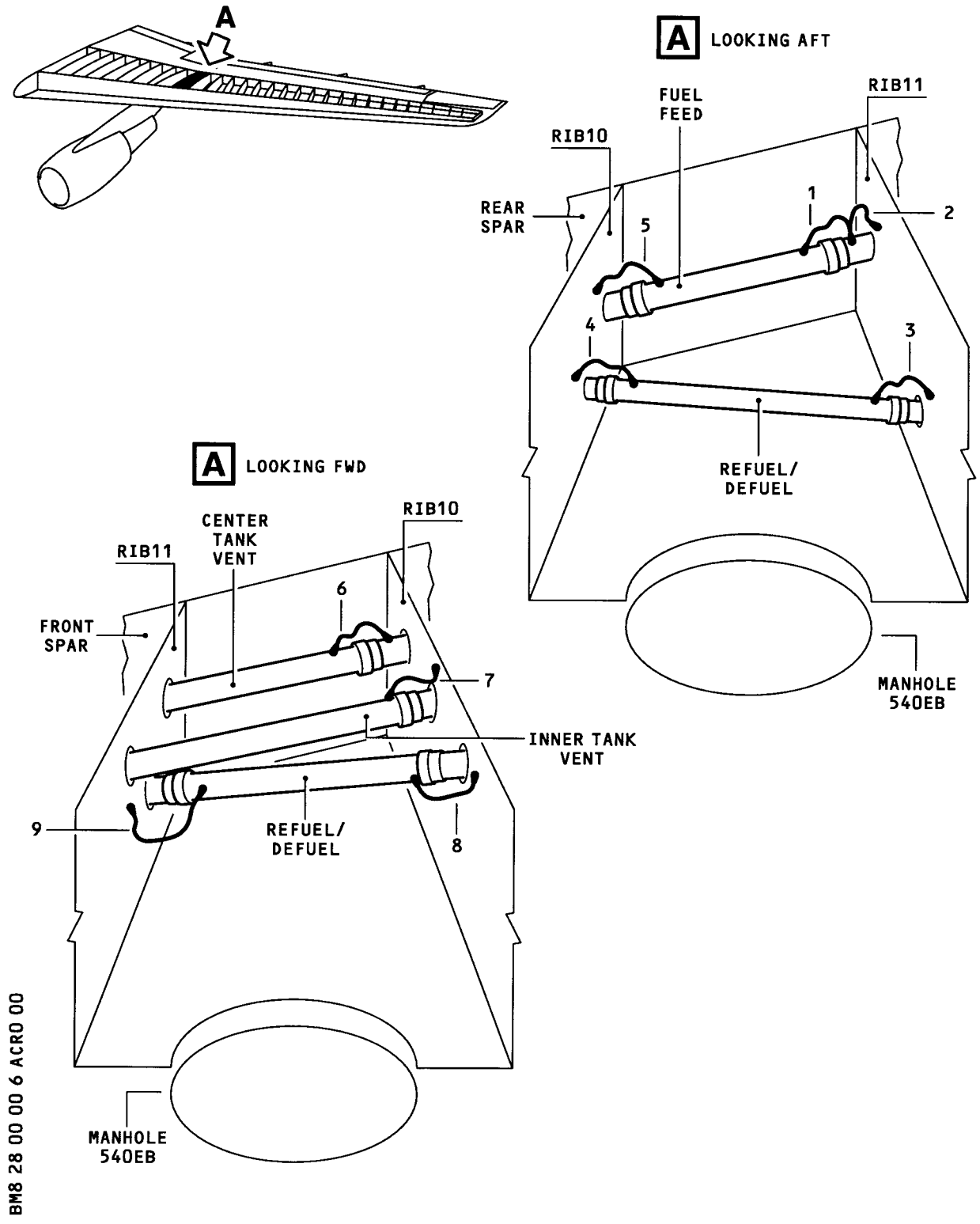
LH Inner Tank between Ribs 7 and 8
Figure 610



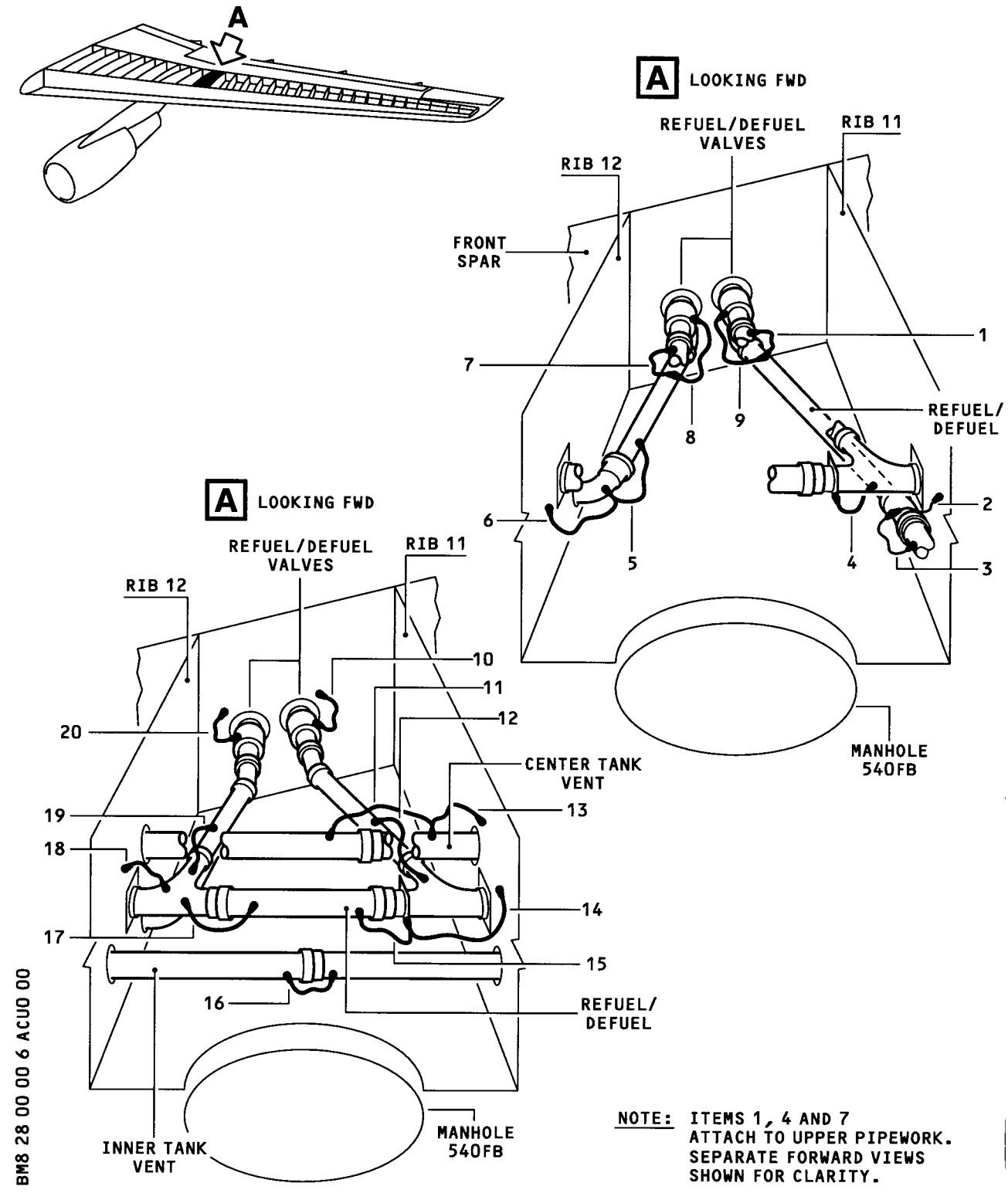
LH Inner Tank between Ribs 8 and 9
Figure 611



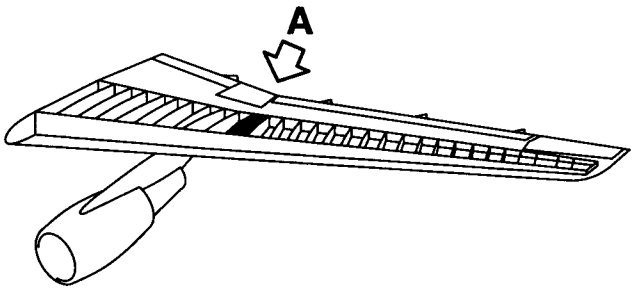
LH Inner Tank between Ribs 9 and 10
Figure 612

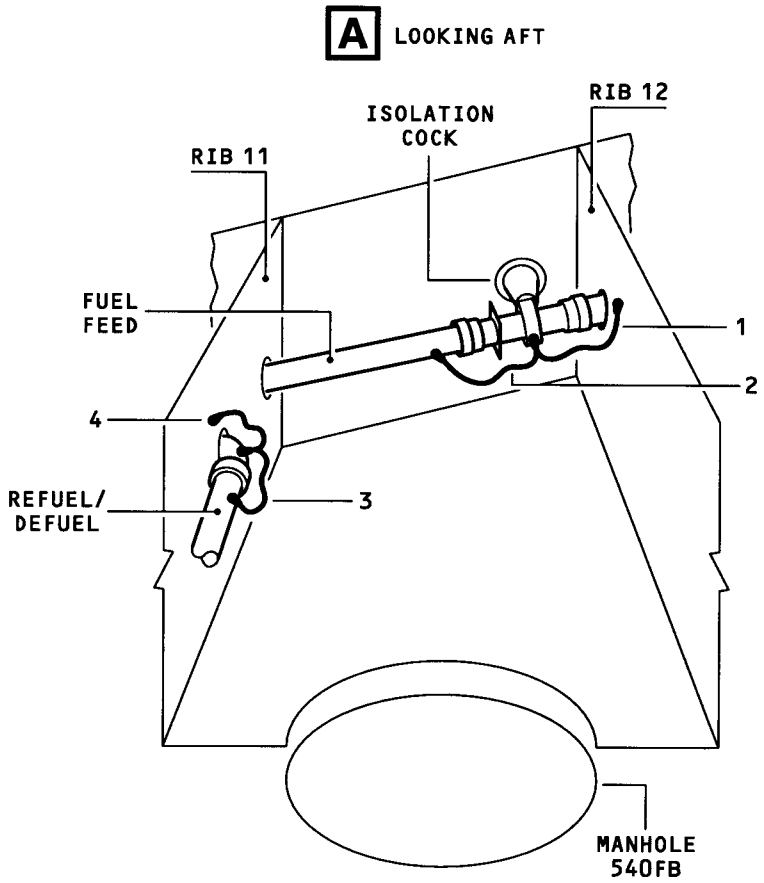


LH Inner Tank between Ribs 10 and 11
Figure 613



LH Inner Tank between Ribs 11 and 12
Figure 614





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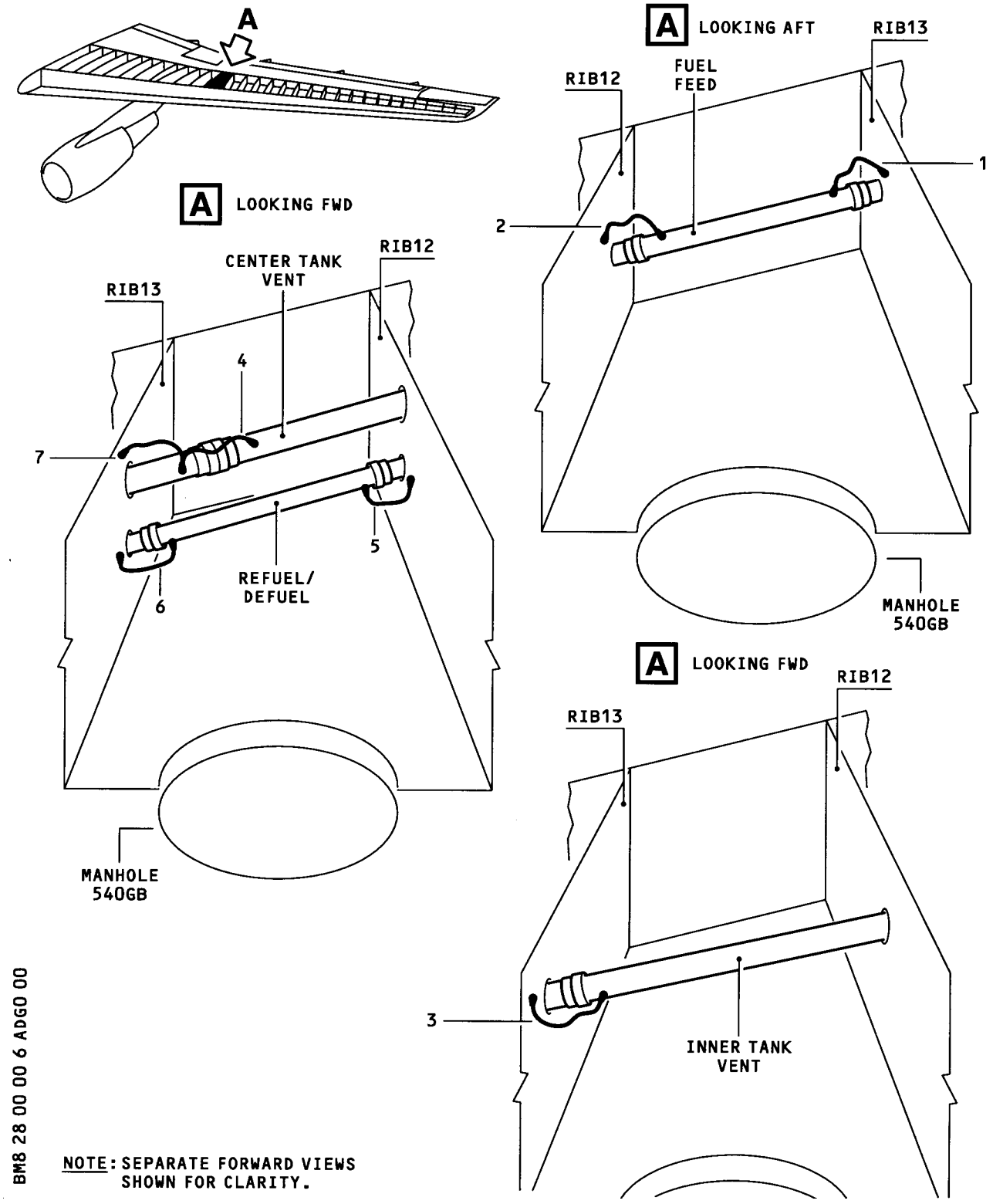
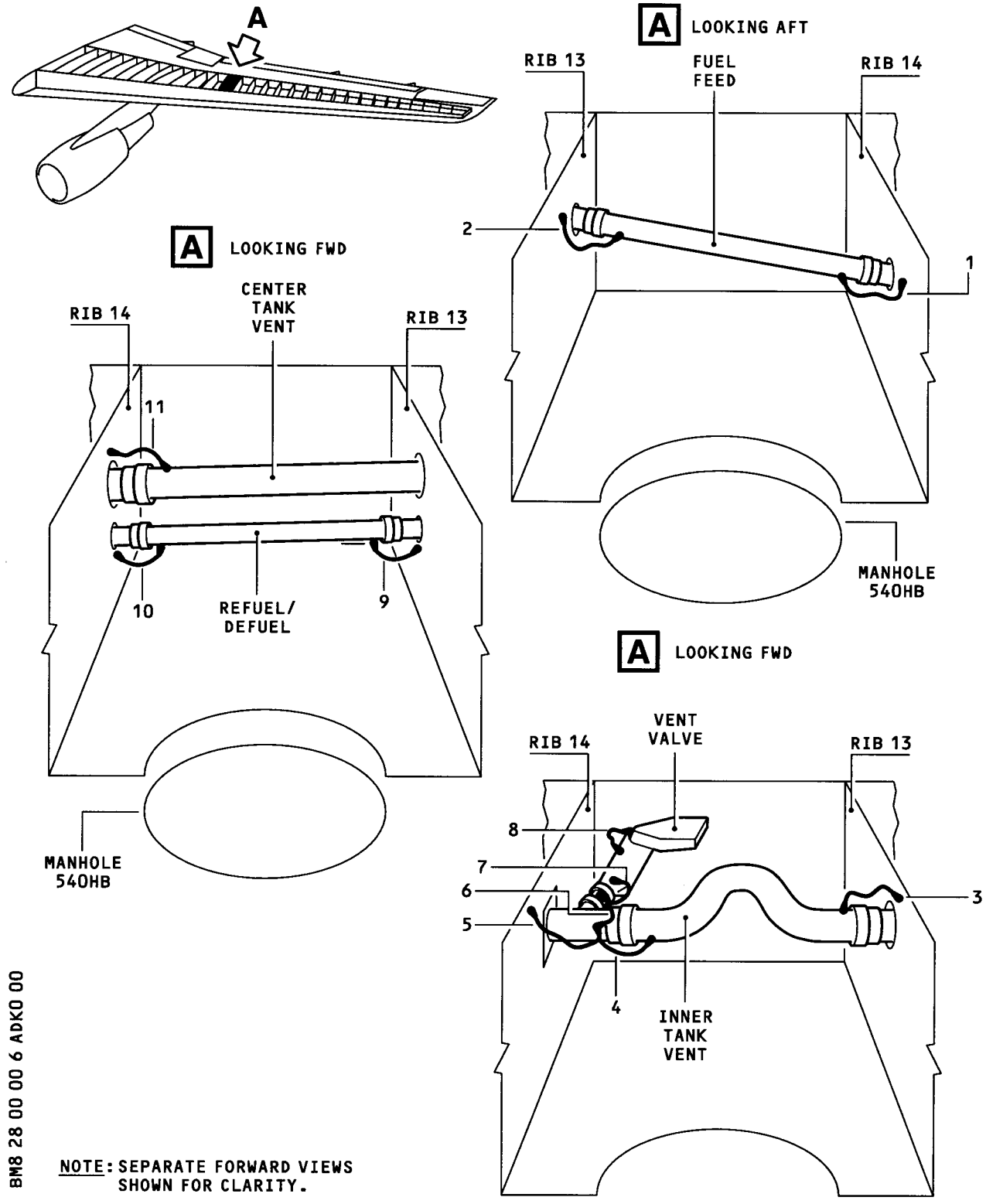
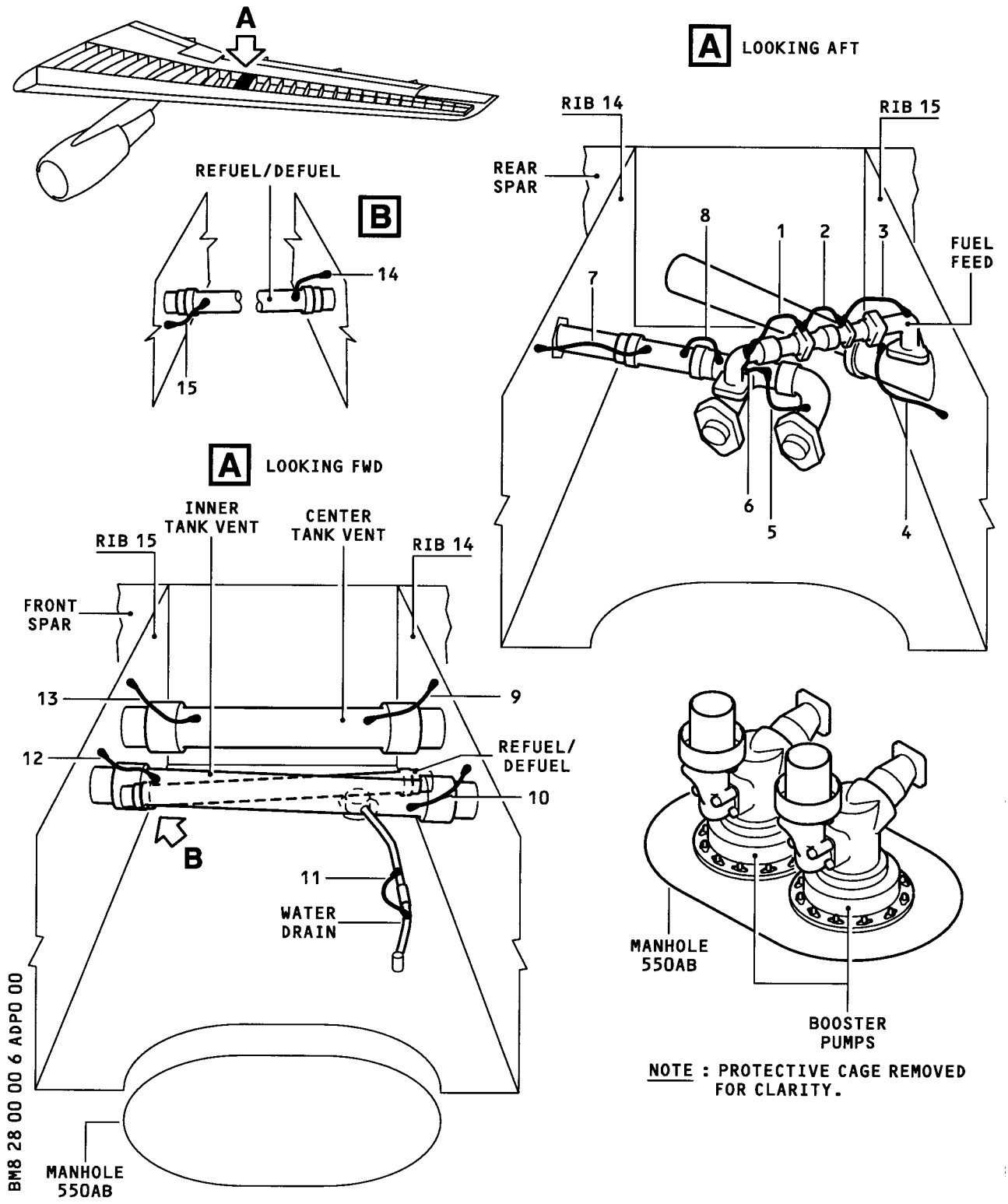
LH Inner Tank between Ribs 11 and 12
Figure 615



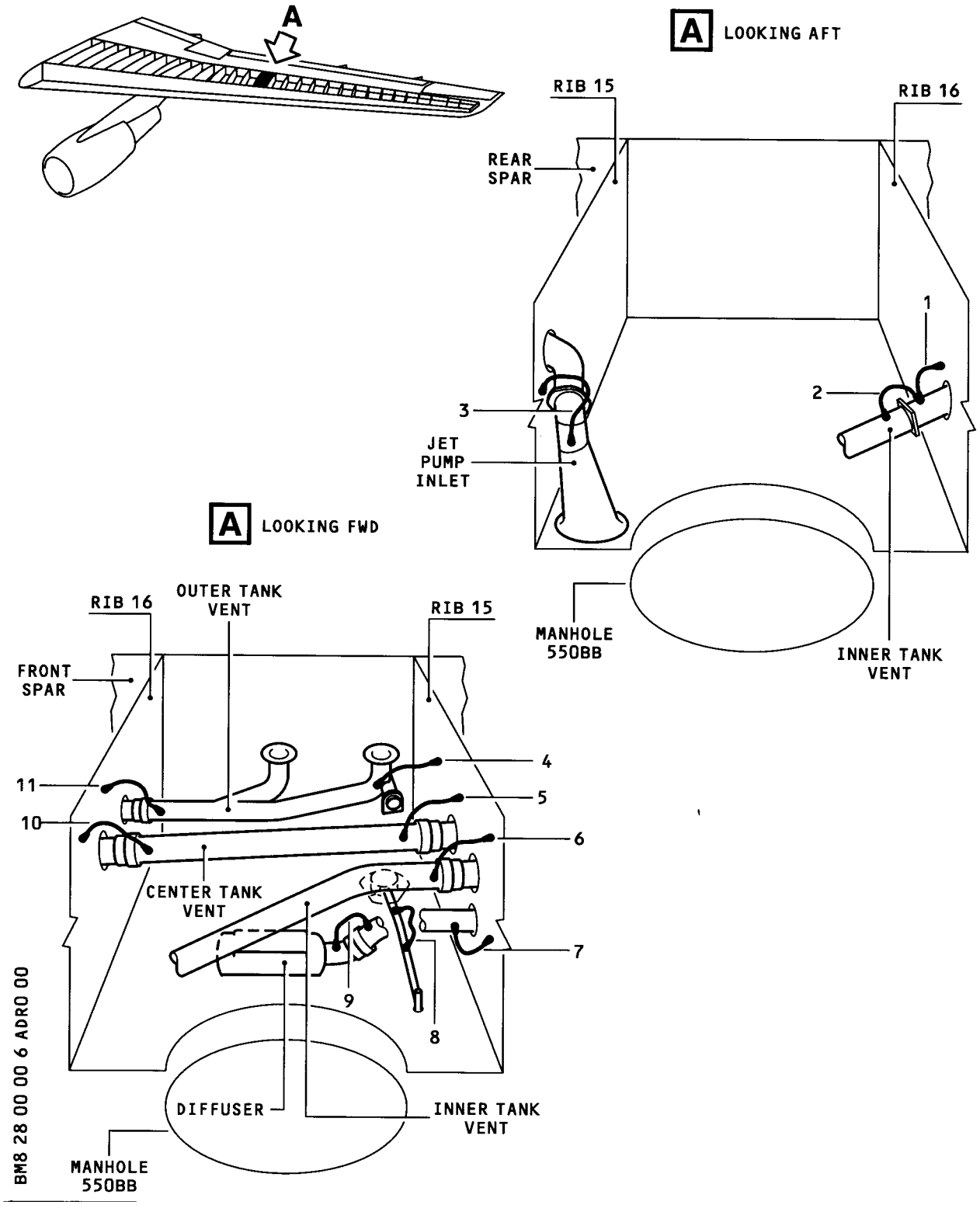
LH Inner Tank between Ribs 12 and 13
Figure 616



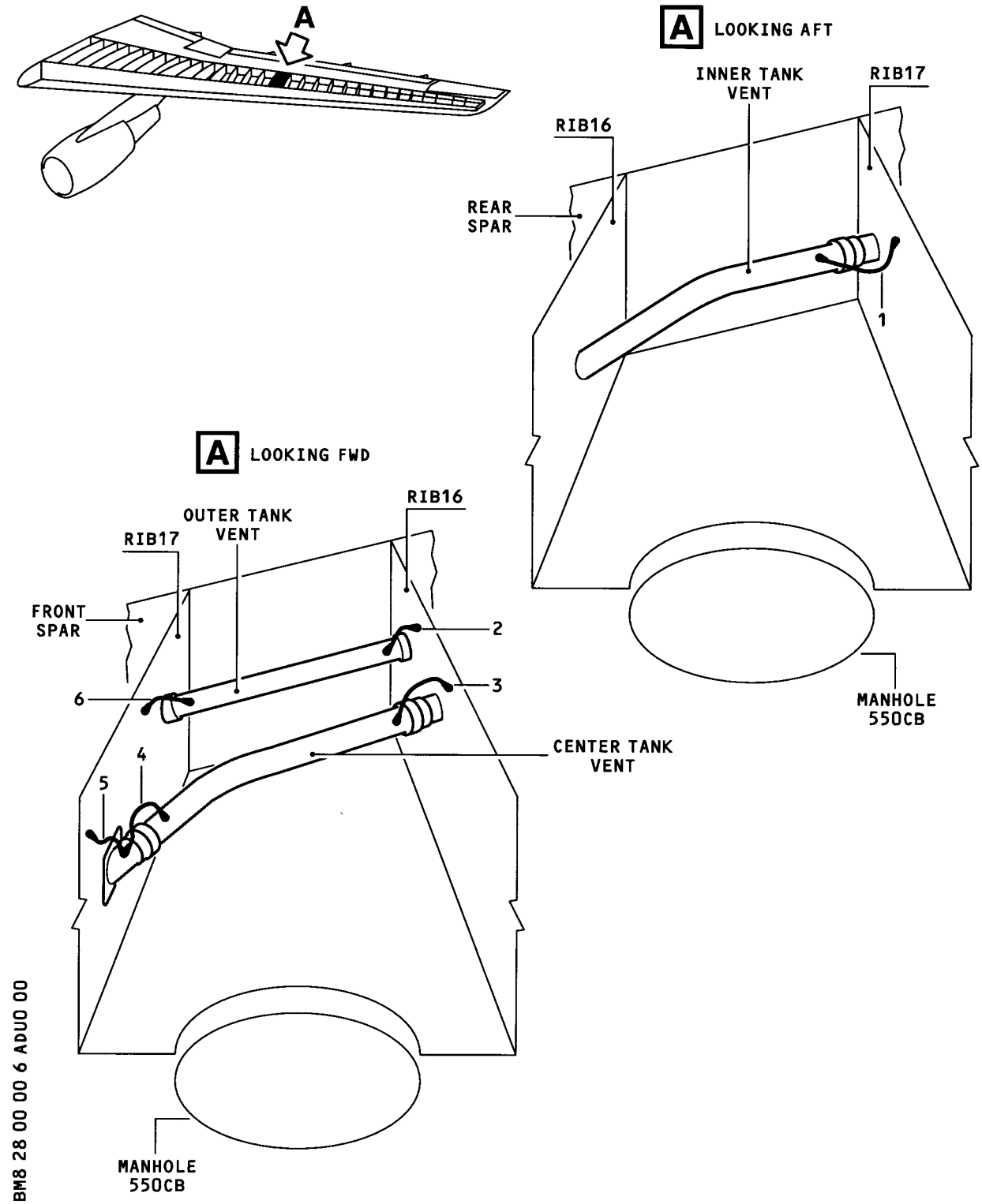
LH Inner Tank between Ribs 13 and 14
Figure 617



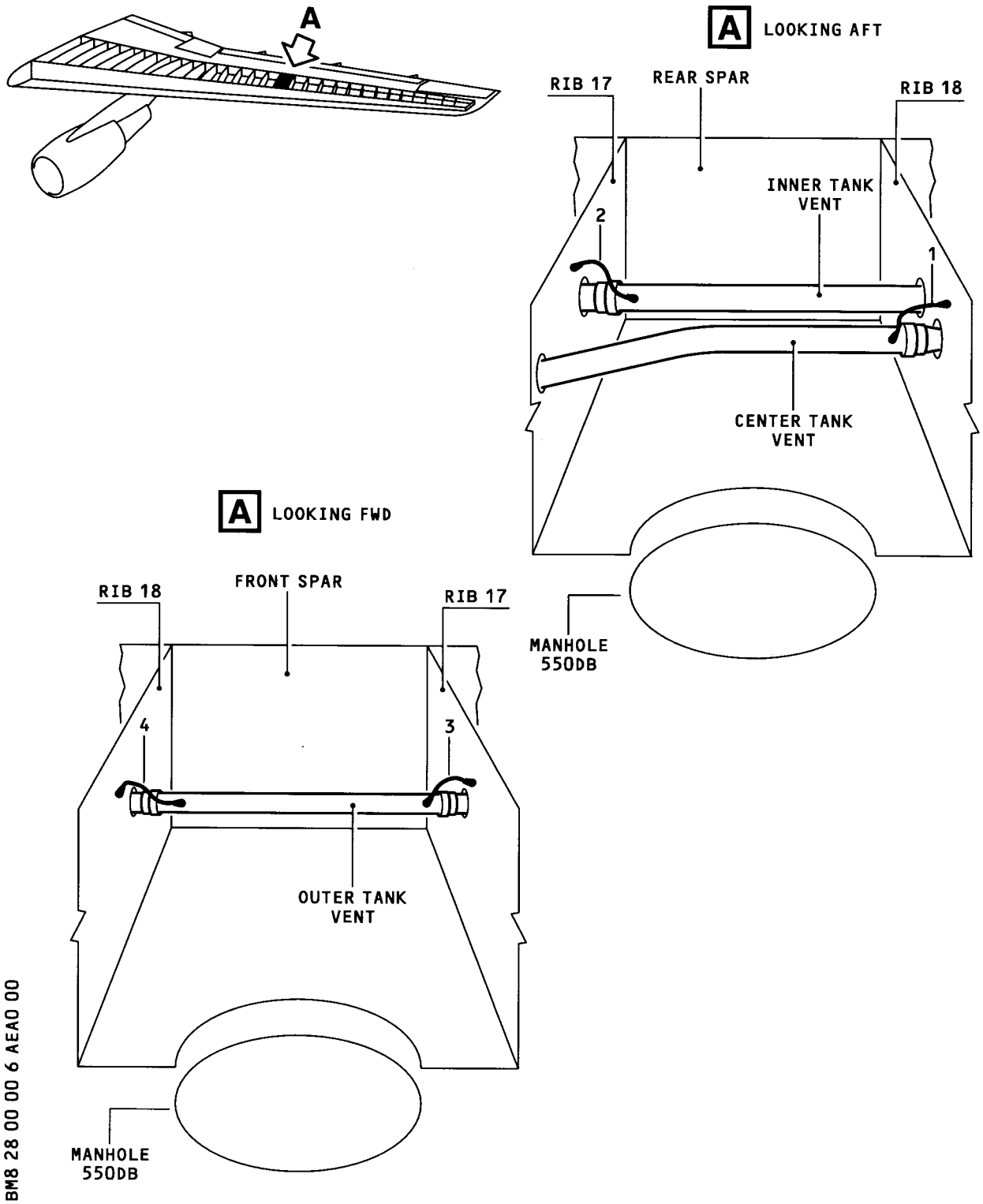
LH Outer Tank between Ribs 14 and 15
Figure 618



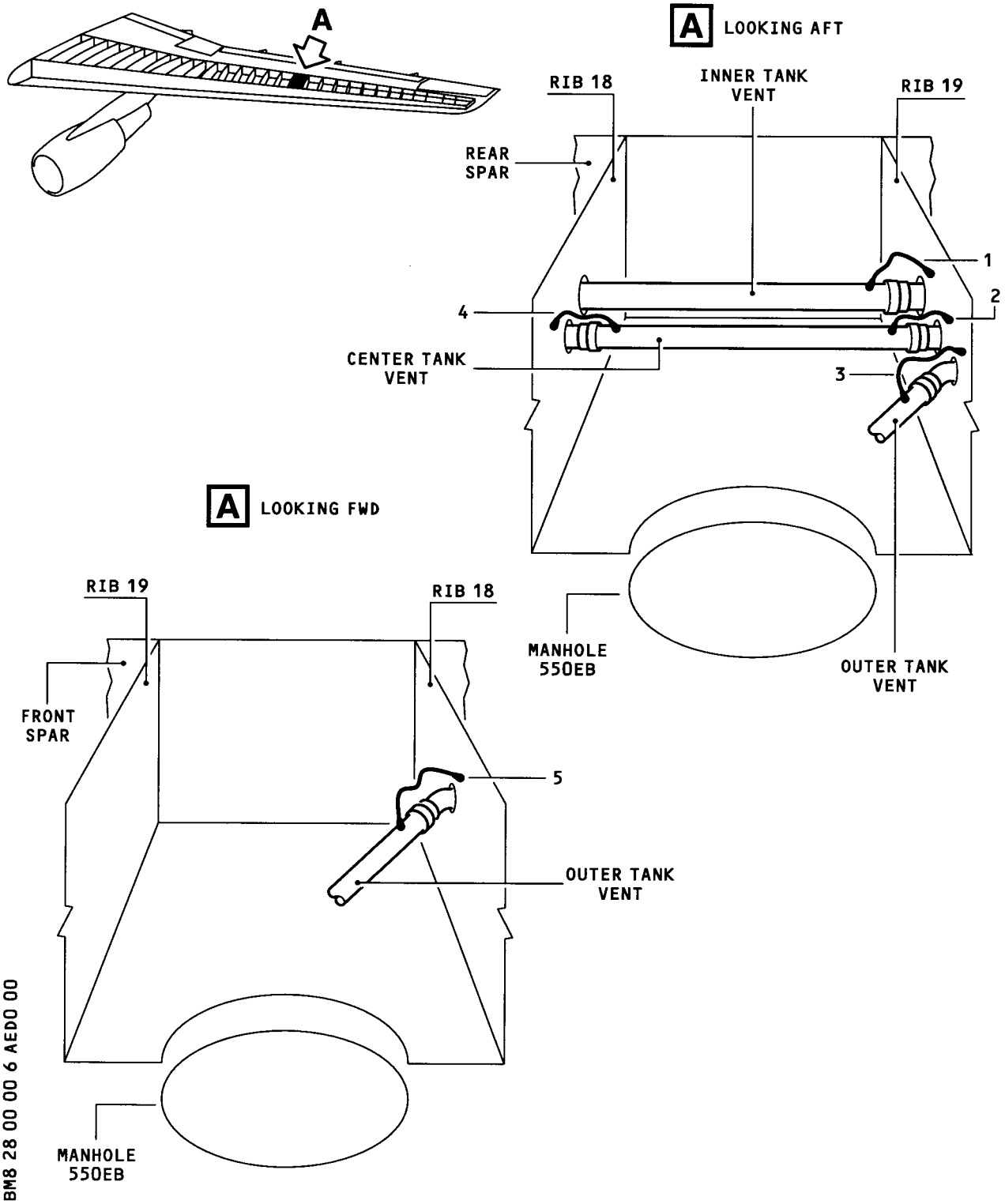
LH Outer Tank between Ribs 15 and 16
Figure 619



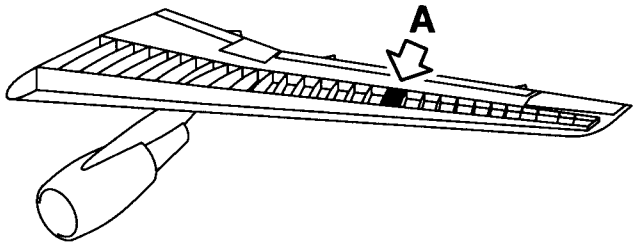
LH Outer Tank between Ribs 16 and 17
Figure 620

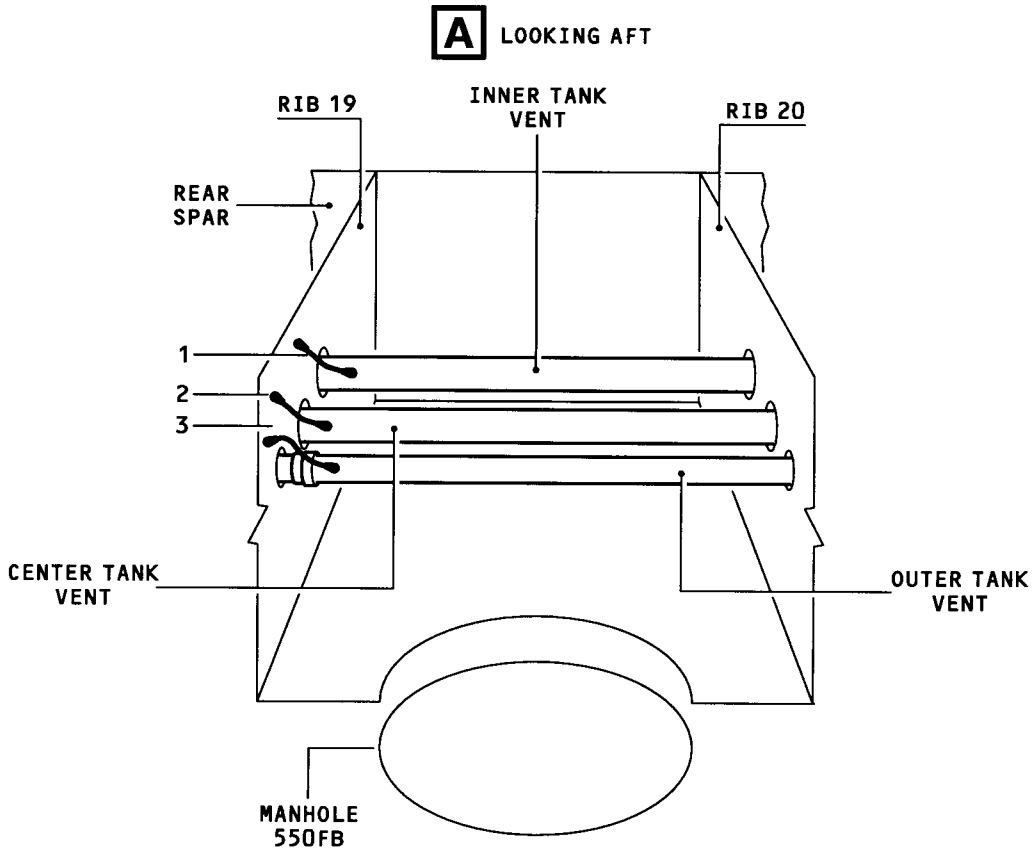


LH Outer Tank between Ribs 17 and 18
Figure 621



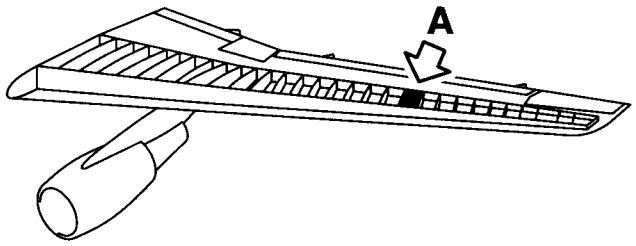
LH Outer Tank between Ribs 18 and 19
Figure 622

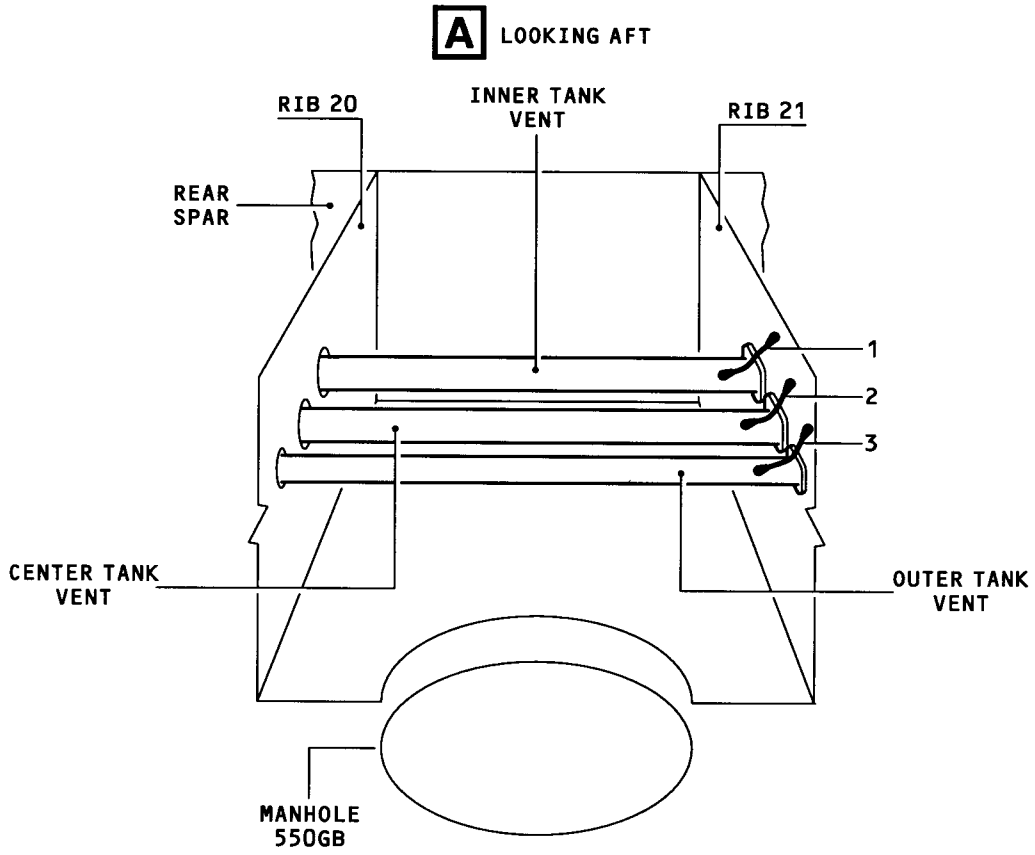




BM8 28 00 00 6 AEG0 00

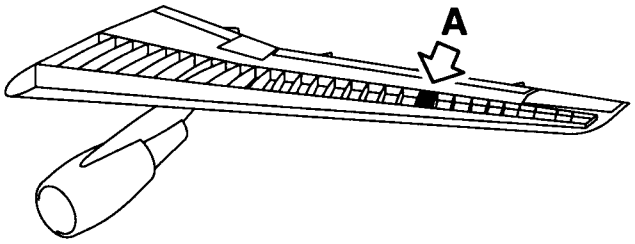
LH Outer Tank between Ribs 19 and 20
Figure 623

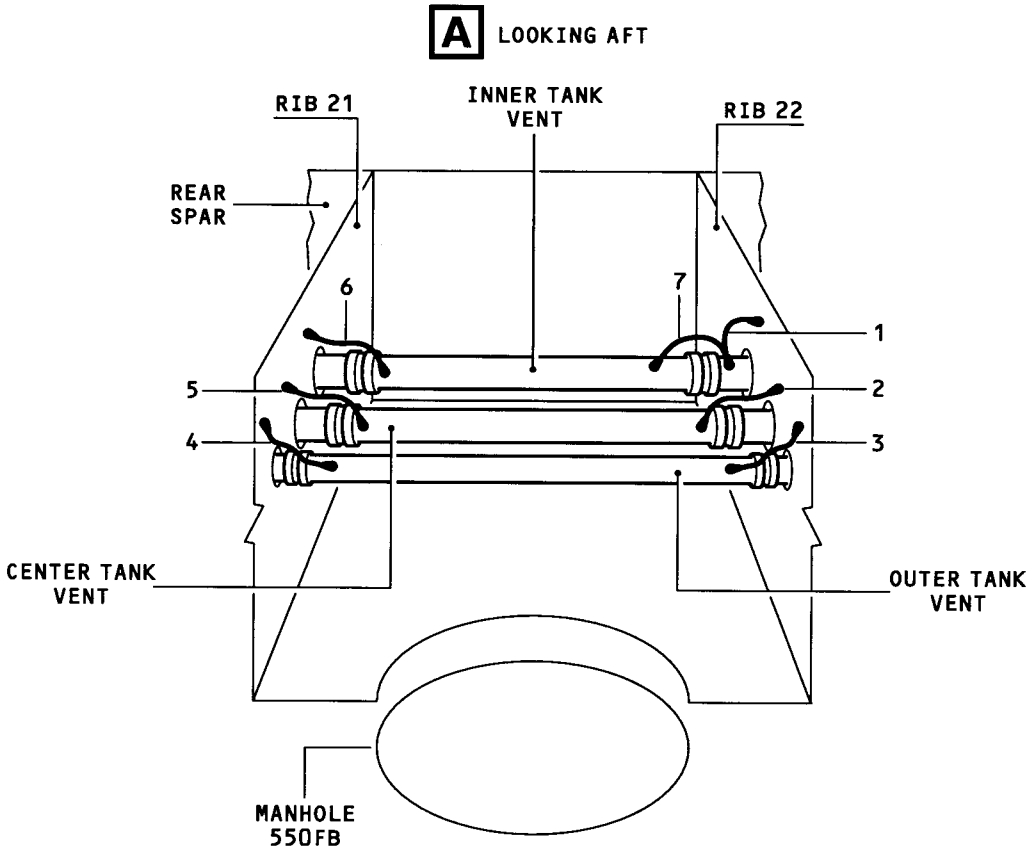




BM8 28 00 00 6 AEK0 00

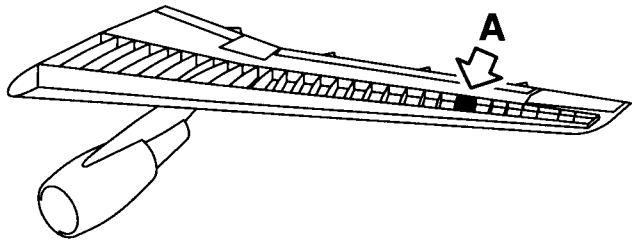
LH Outer Tank between Ribs 20 and 21
Figure 624

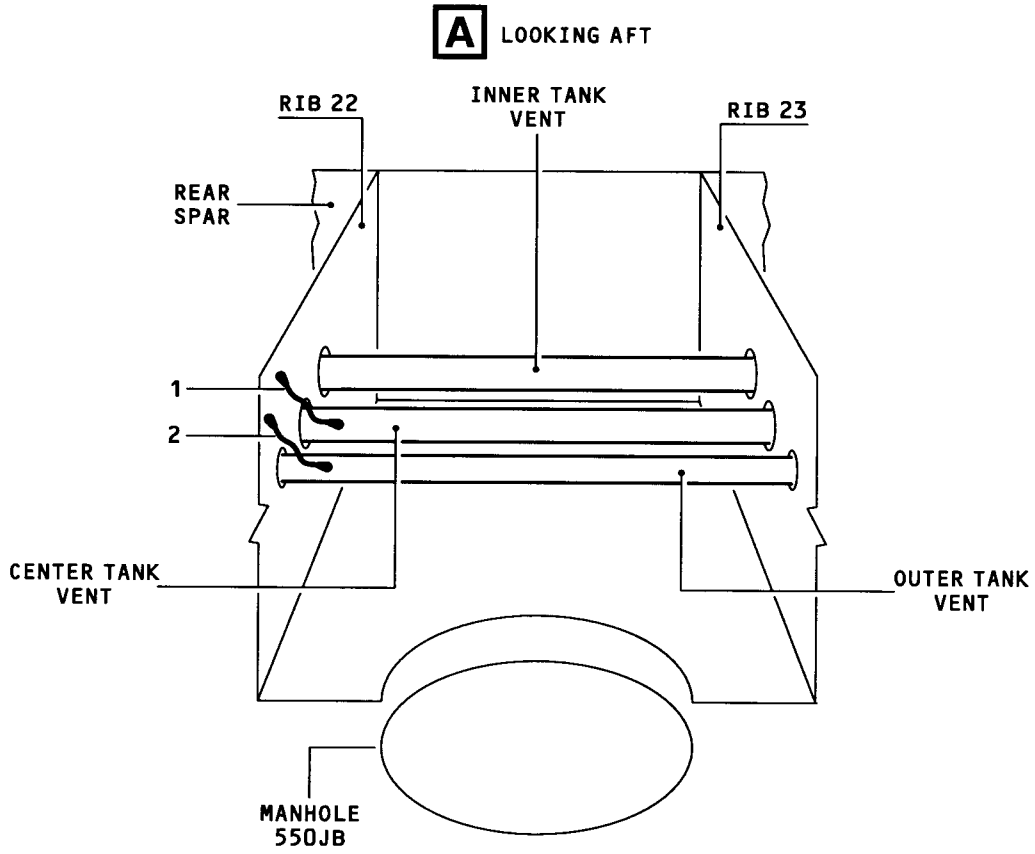




BM8 28 00 00 6 AEN0 00

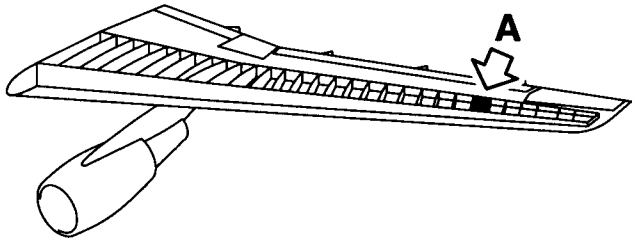
LH Outer Tank between Ribs 21 and 22
Figure 625

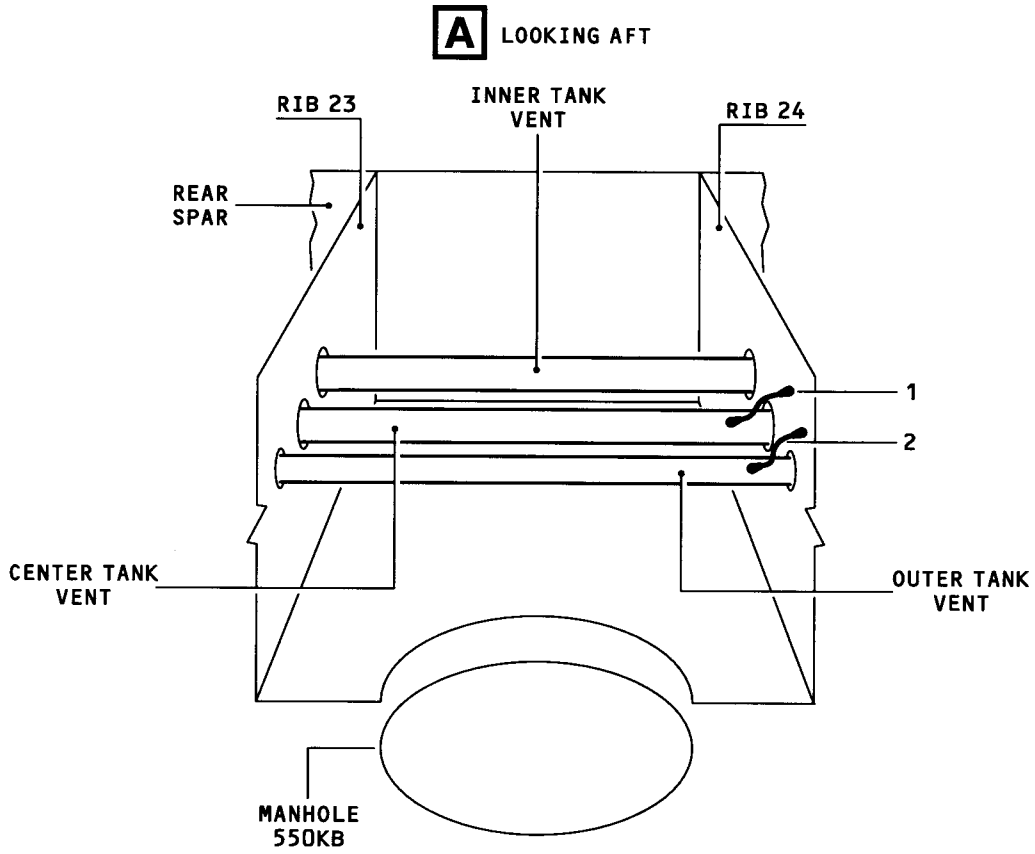




BM8 28 00 00 6 AERO 00

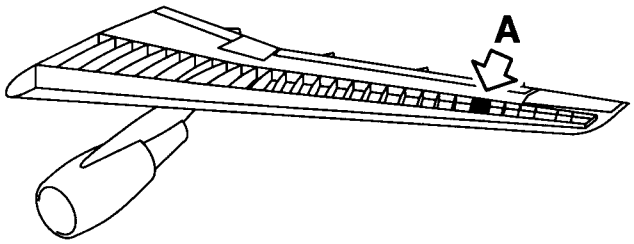
LH Outer Tank between Ribs 22 and 23
Figure 626

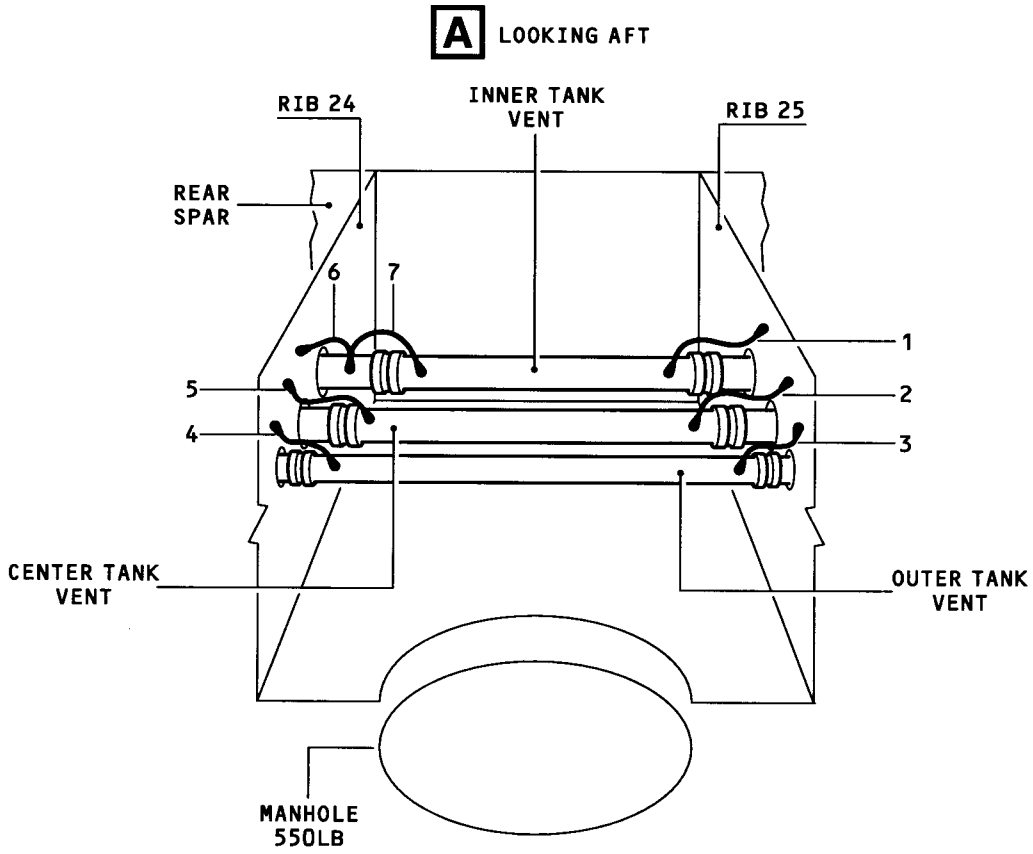




BM8 28 00 00 6 AEU0 00

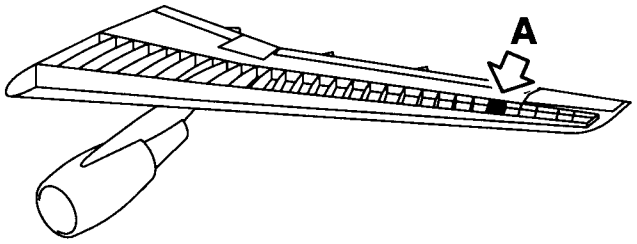
LH Outer Tank between Ribs 23 and 24
Figure 627

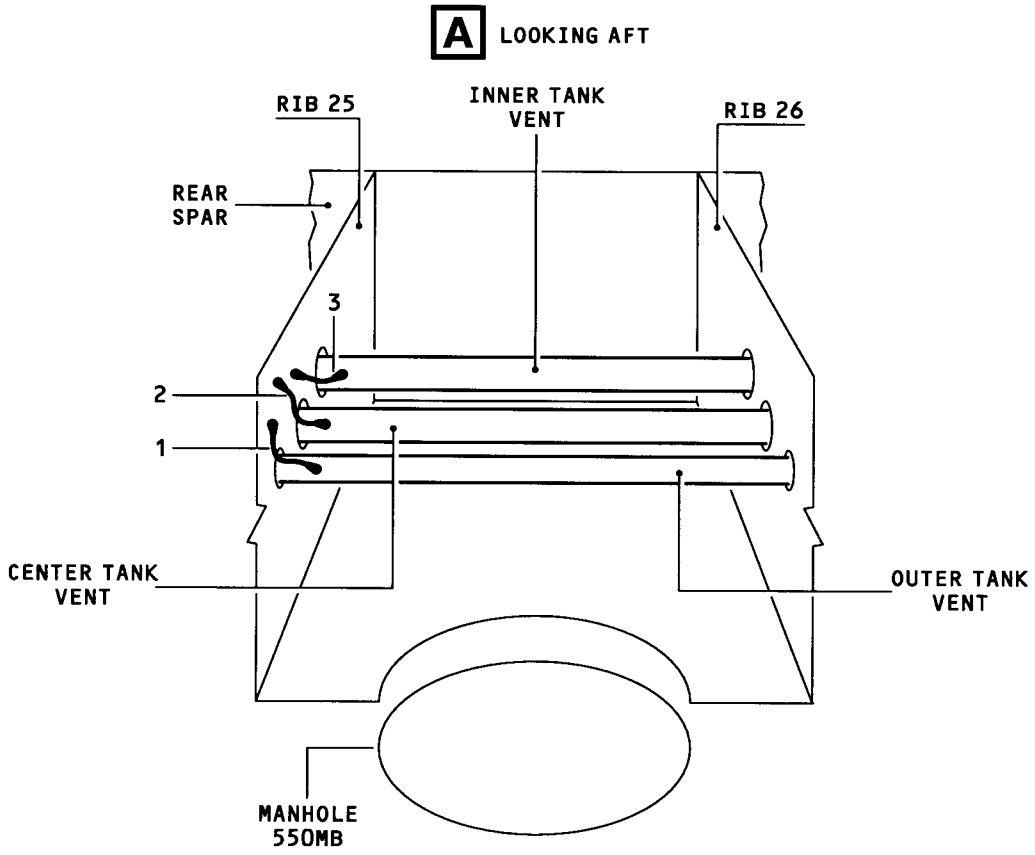




BM8 28 00 00 6 AEX0 00

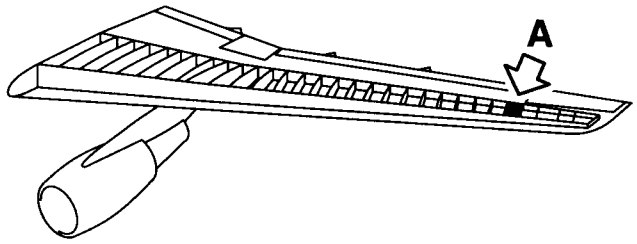
LH Outer Tank between Ribs 24 and 25
Figure 628

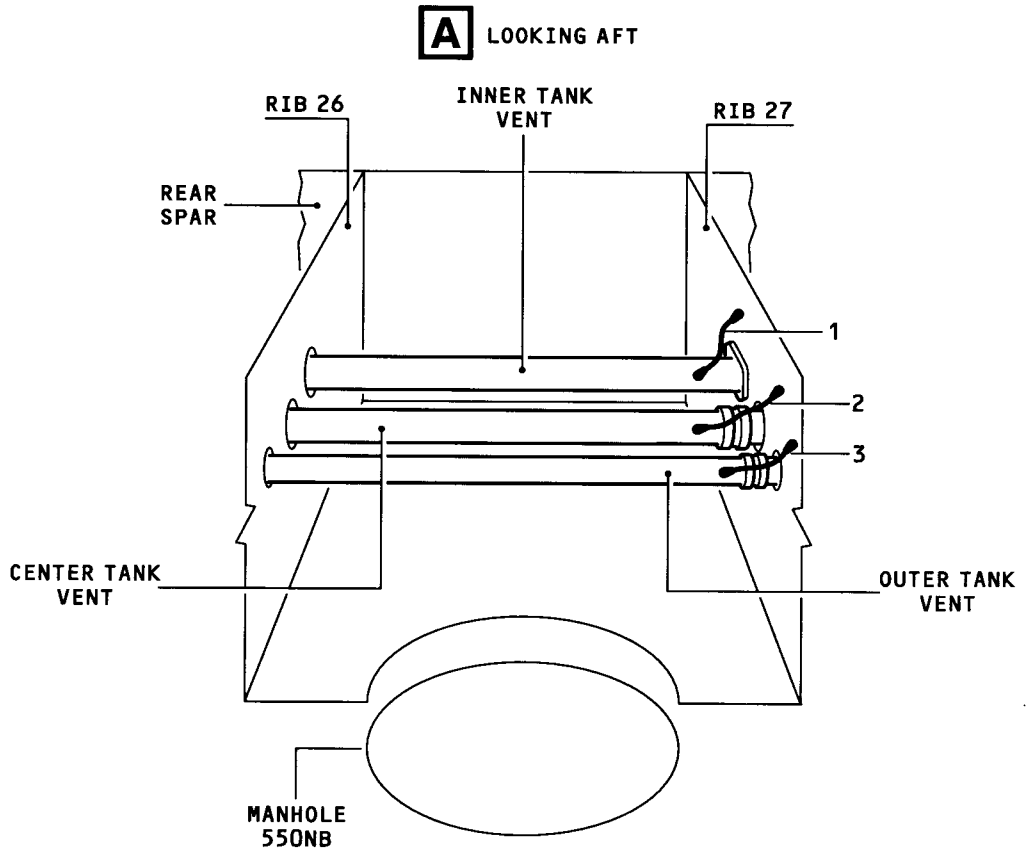




BM8 28 00 00 6 AFA0 00

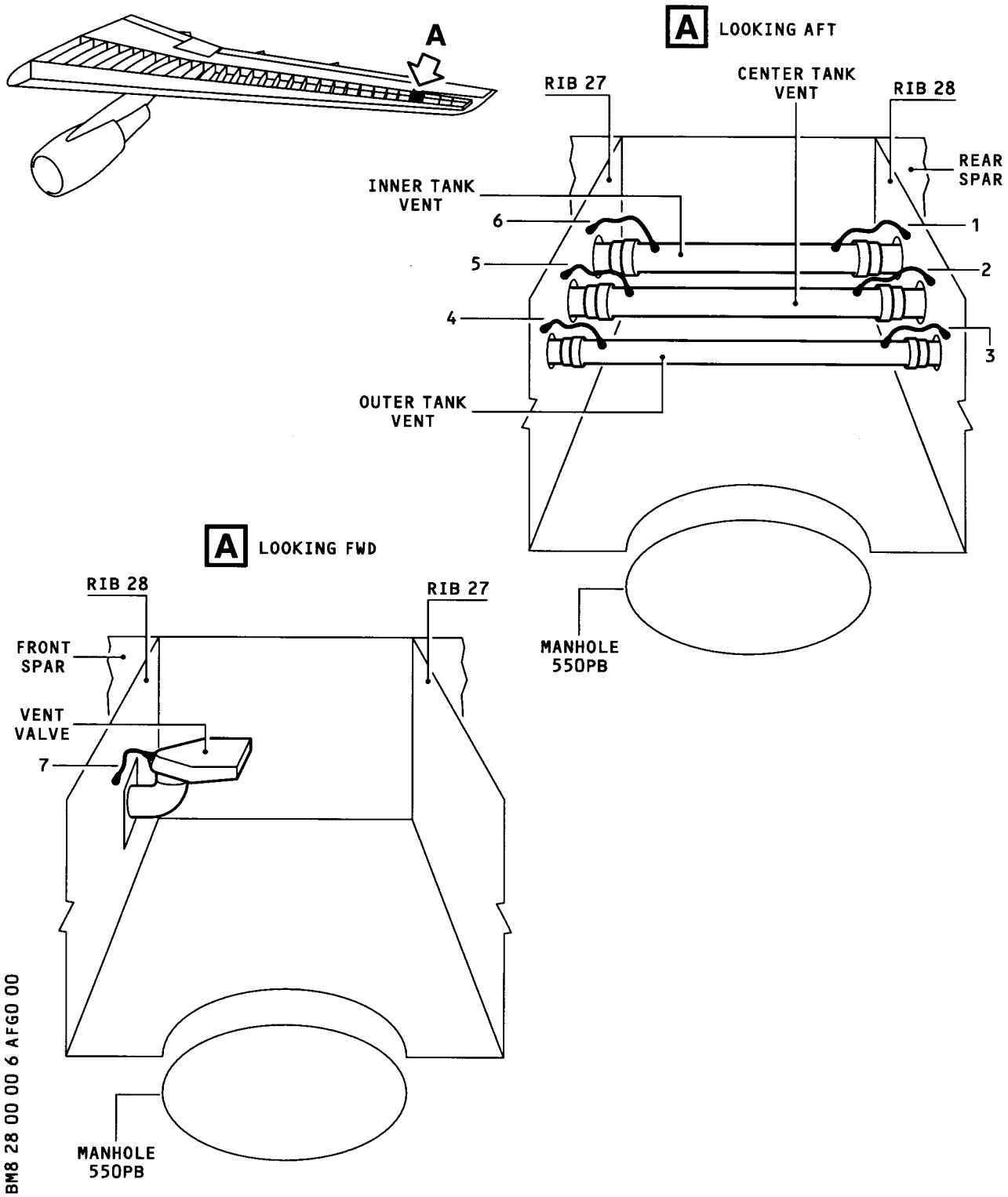
LH Outer Tank between Ribs 25 and 26
Figure 629



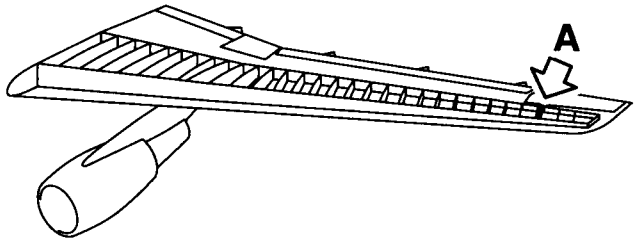


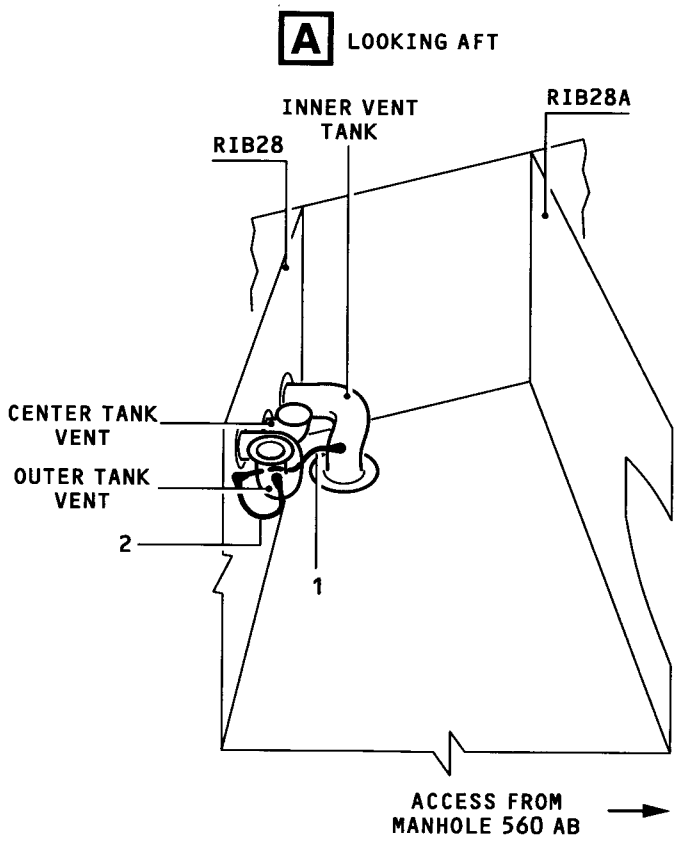
BM8 28 00 00 6 AFD0 00

LH Outer Tank between Ribs 26 and 27
Figure 630



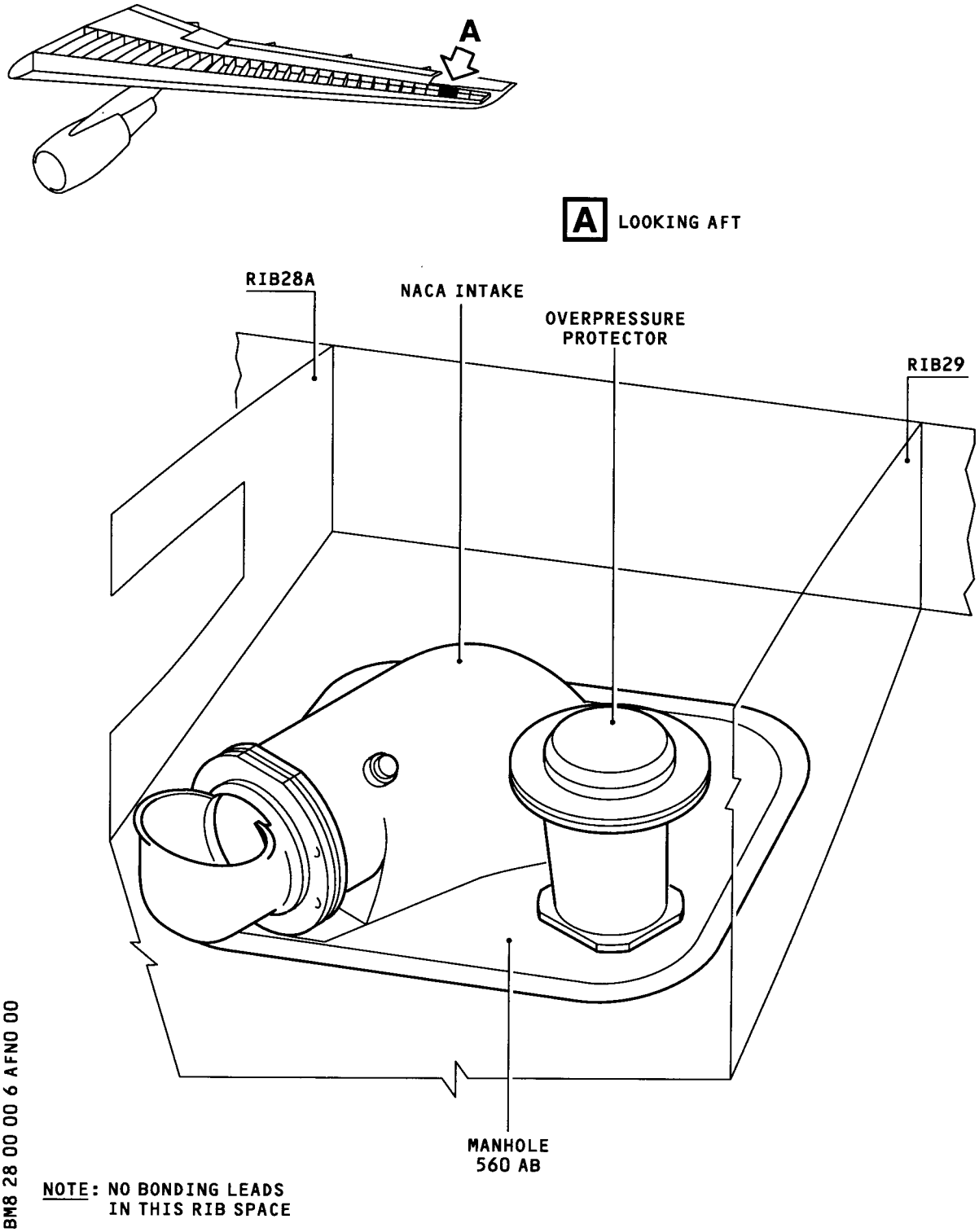
LH Outer Tank between Ribs 27 and 28
Figure 631



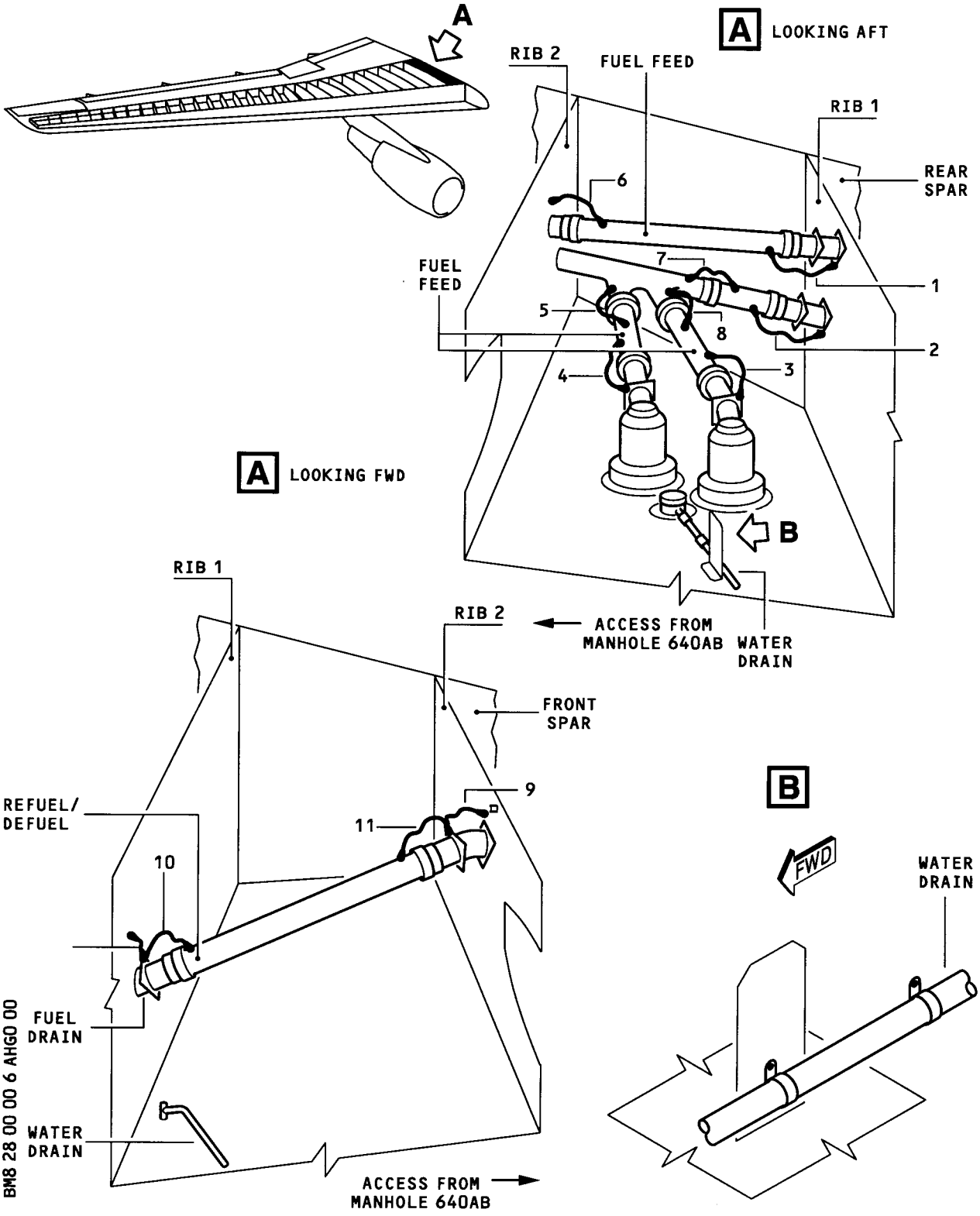


BM8 28 00 00 6 AFK0 00

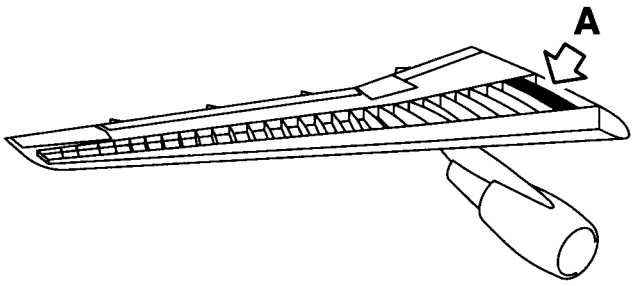
LH Outer Tank between Ribs 28 and 28A
Figure 632

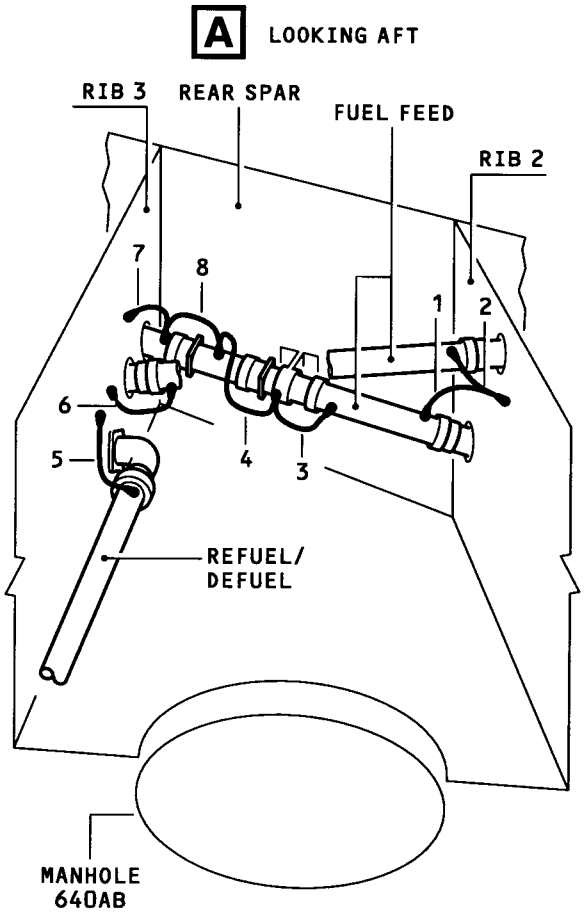


LH Outer Tank between Ribs 28A and 29
Figure 633



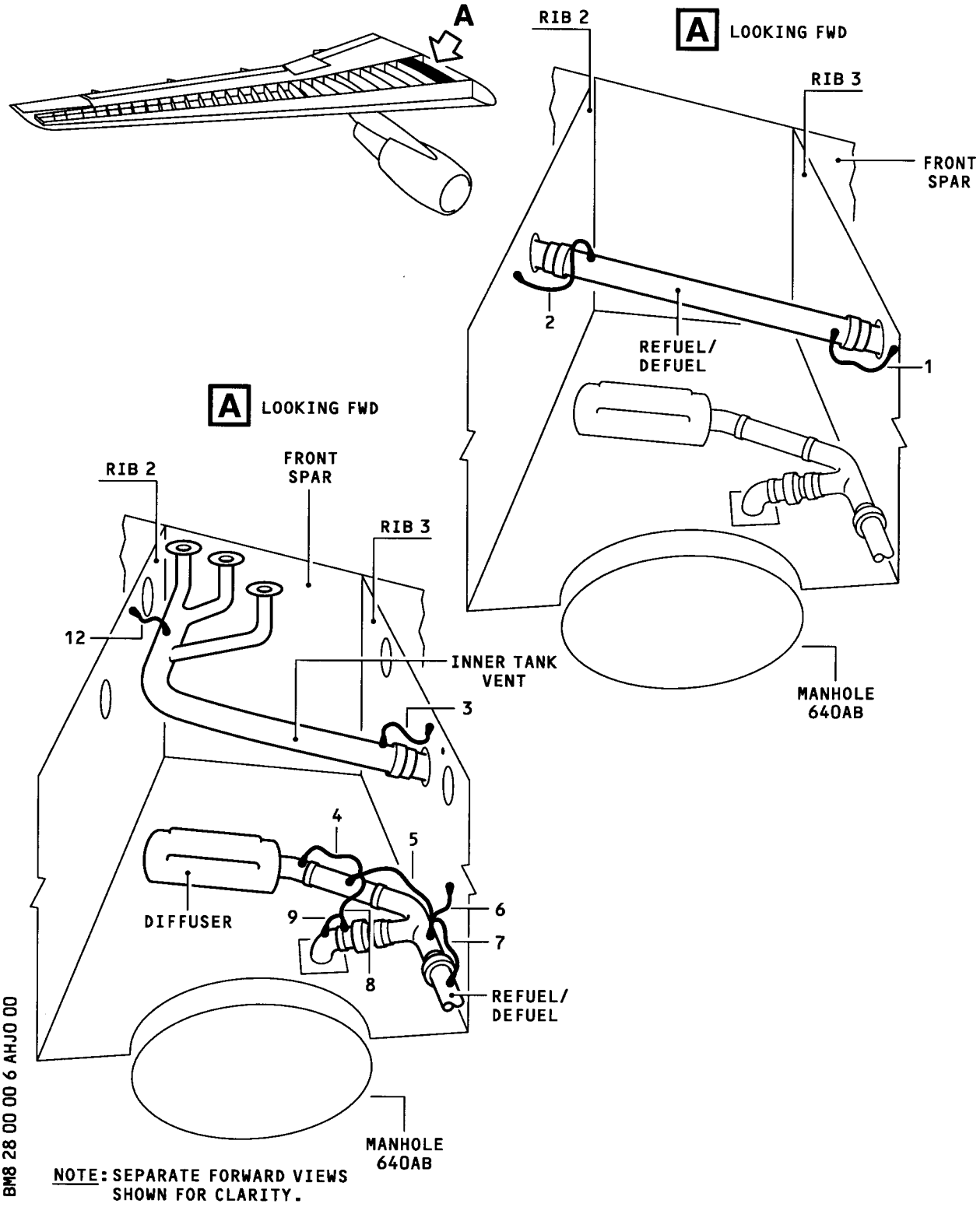
RH Inner Tank between Ribs 1 and 2
Figure 634



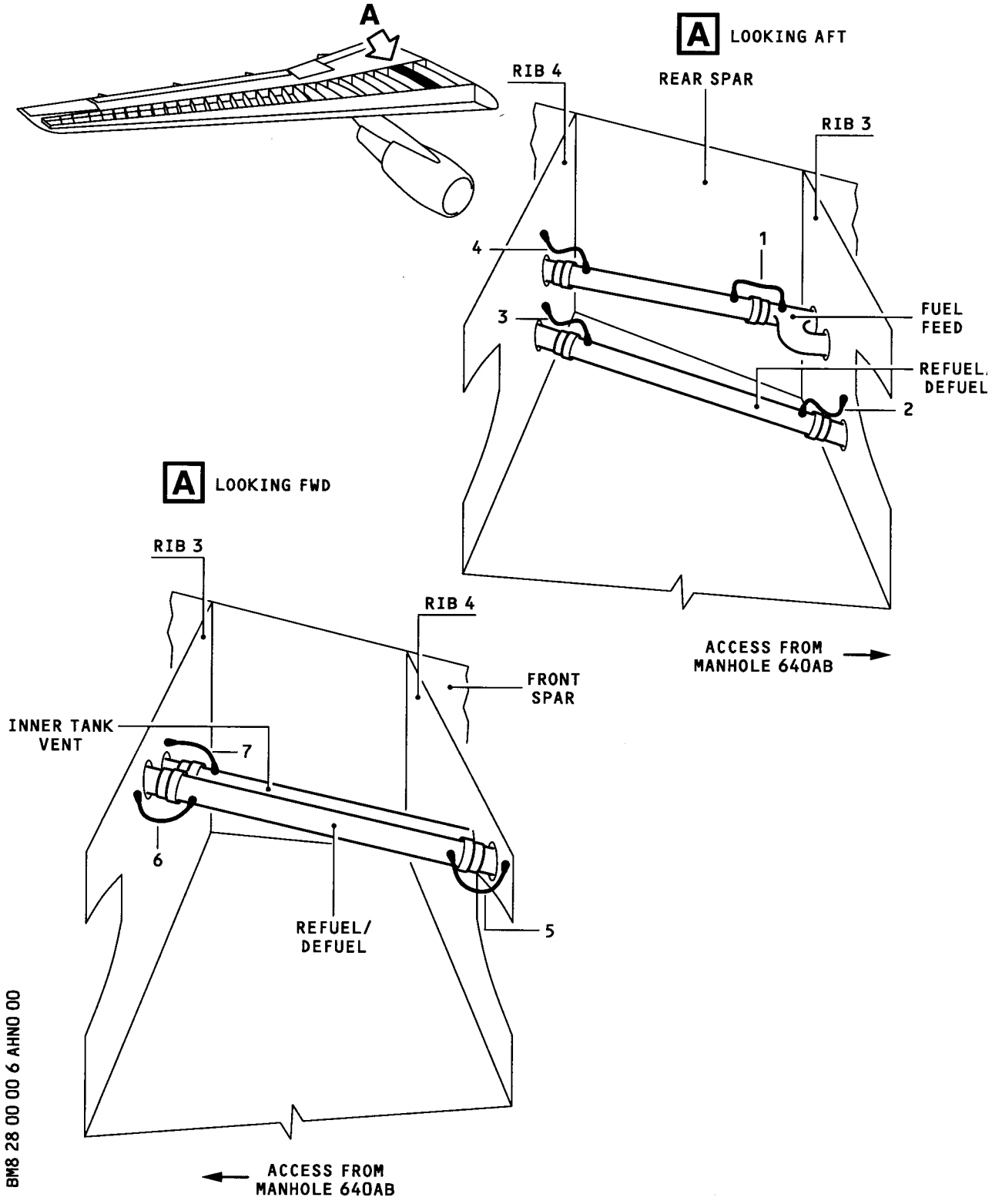


BM8 28 00 00 6 AHKD 00

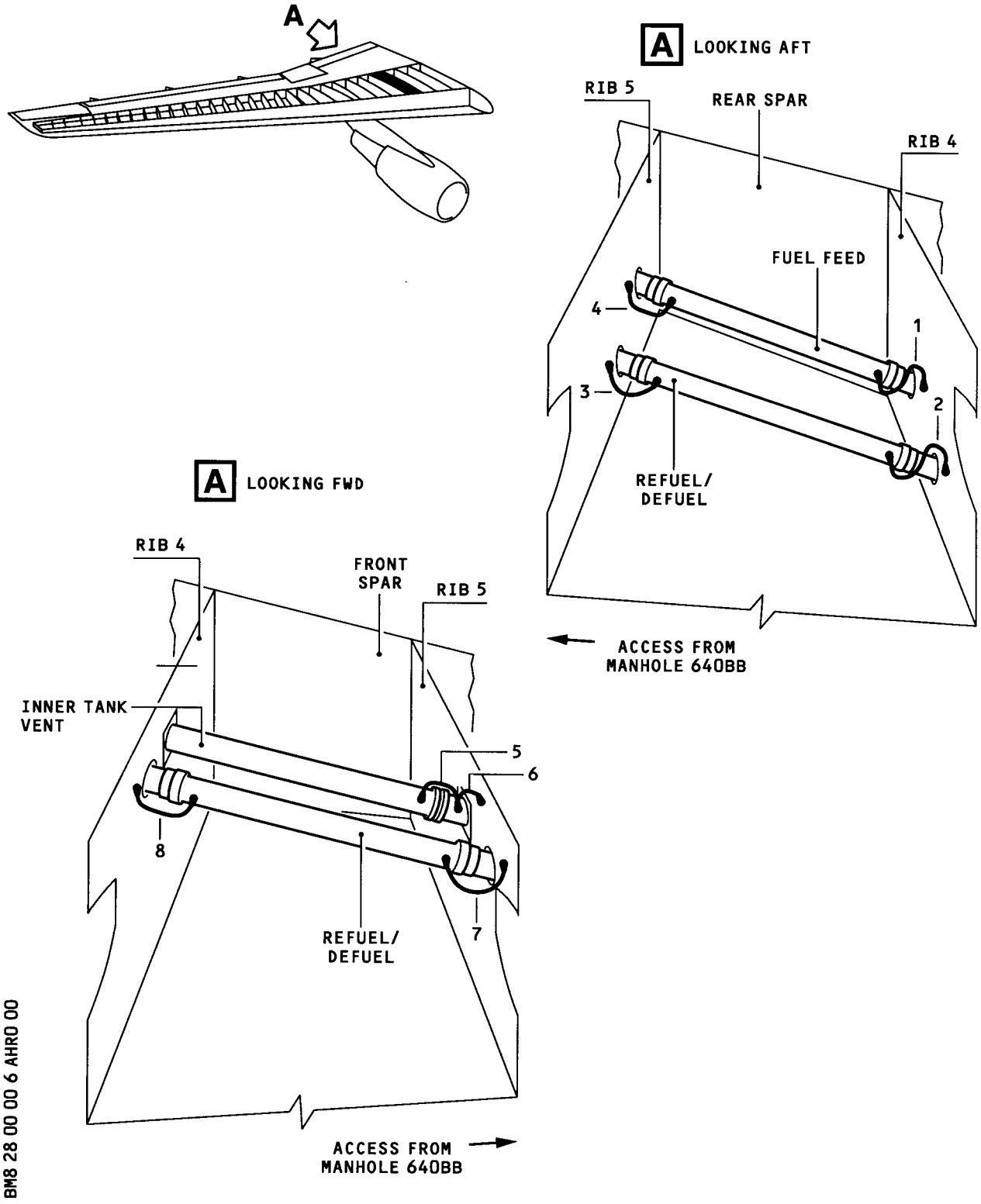
RH Inner Tank Aft between Ribs 2 and 3
Figure 635



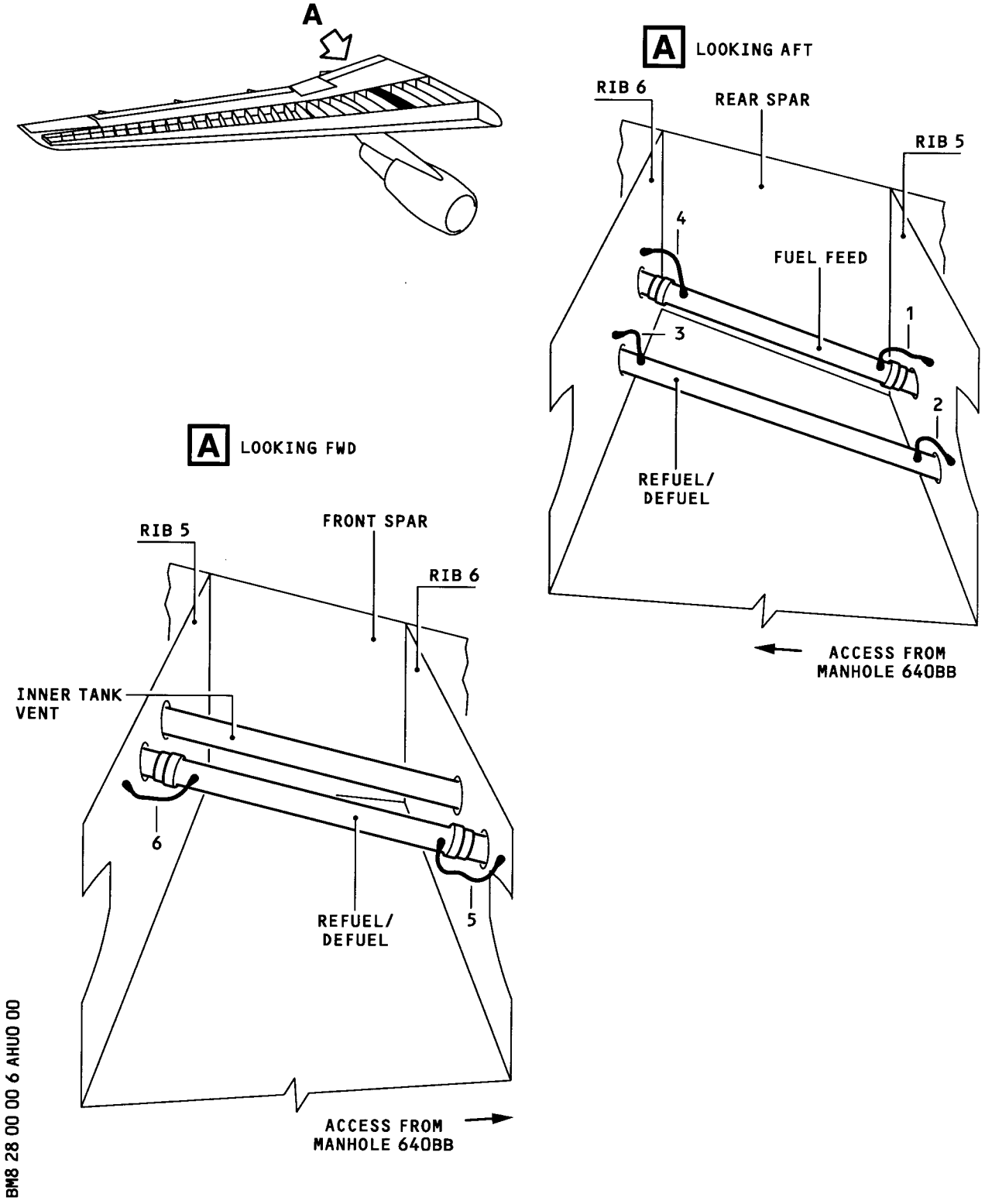
RH Inner Tank Fwd between Ribs 2 and 3
Figure 636



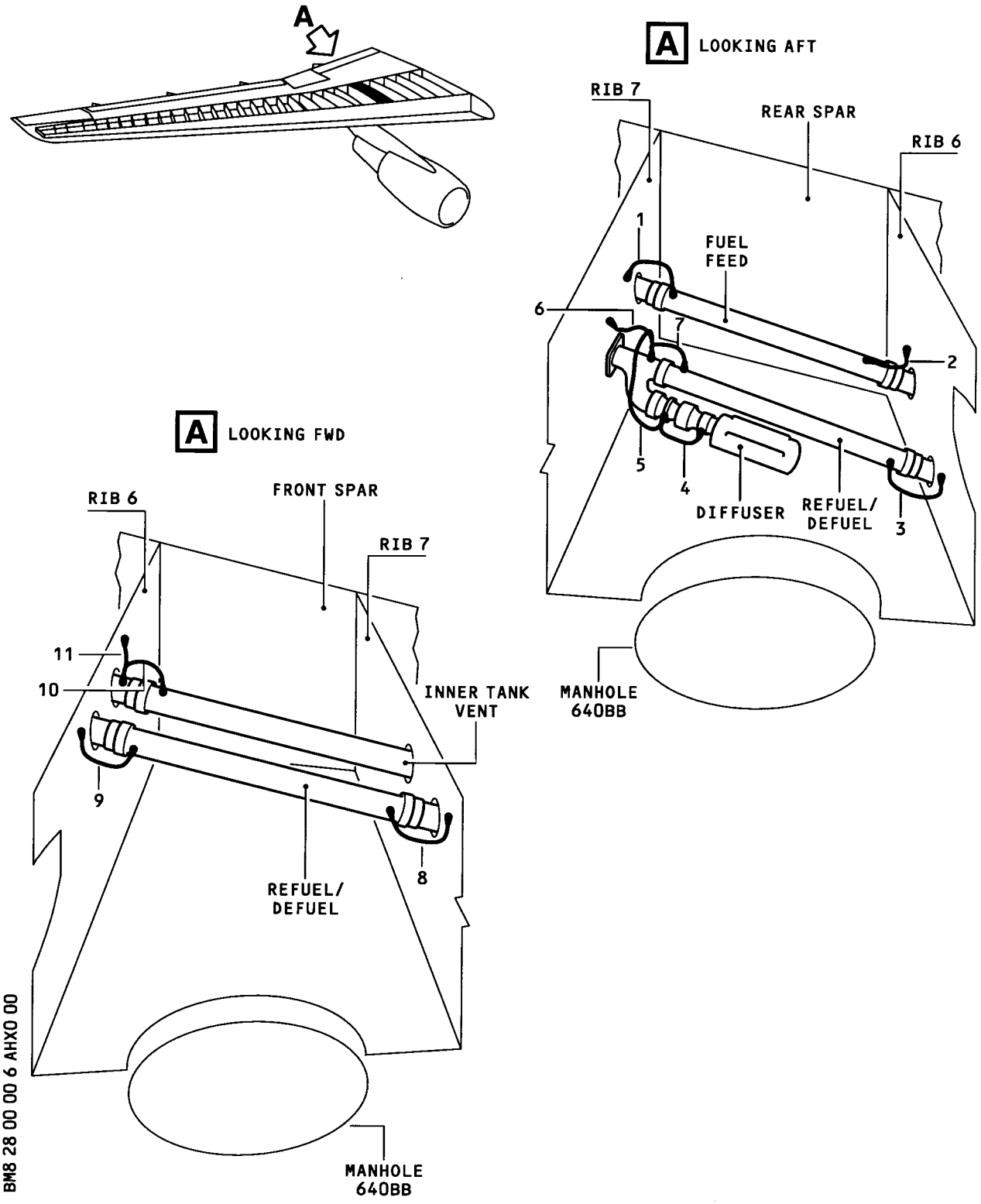
RH Inner Tank between Ribs 3 and 4
Figure 637



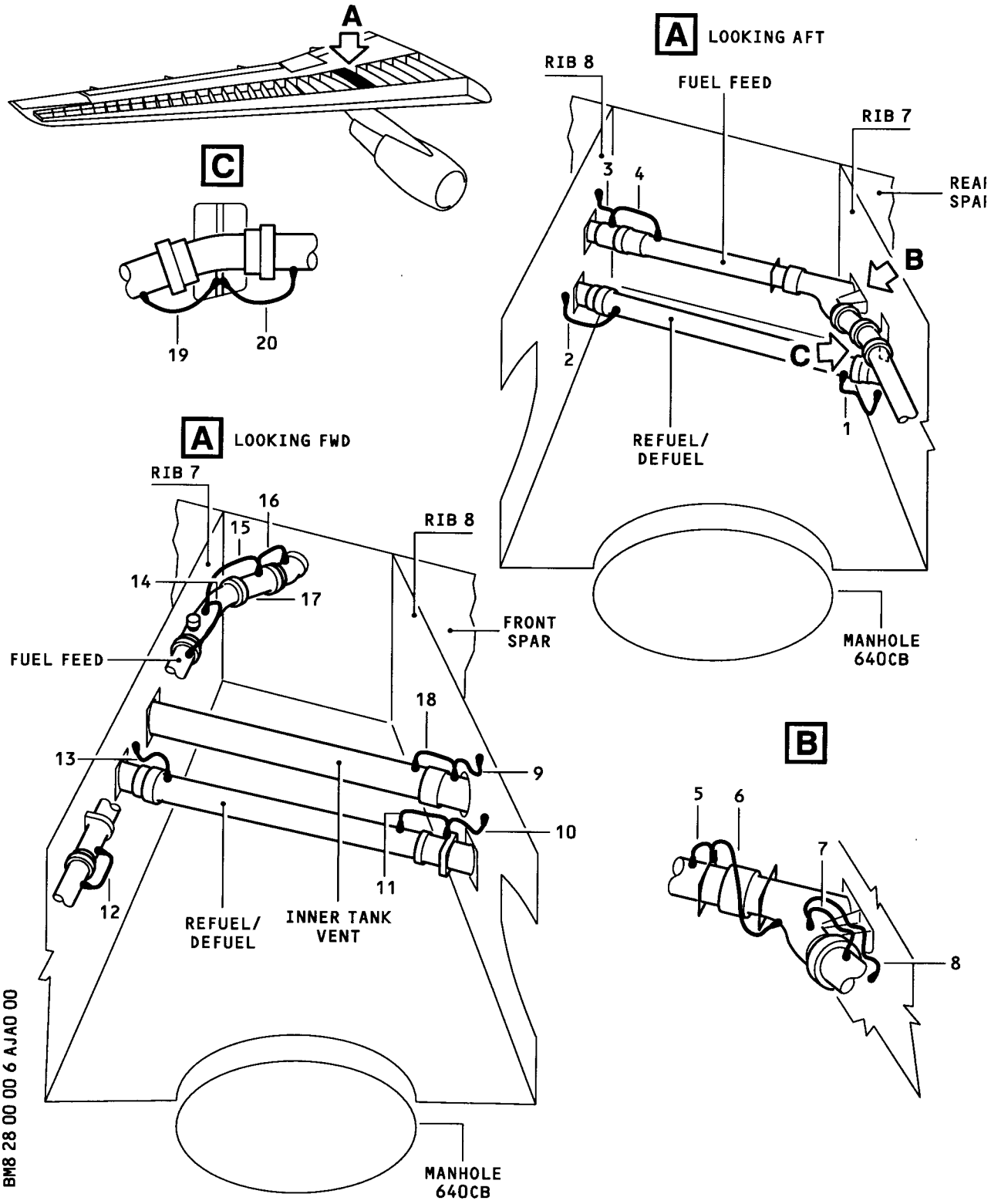
RH Inner Tank between Ribs 4 and 5
Figure 638



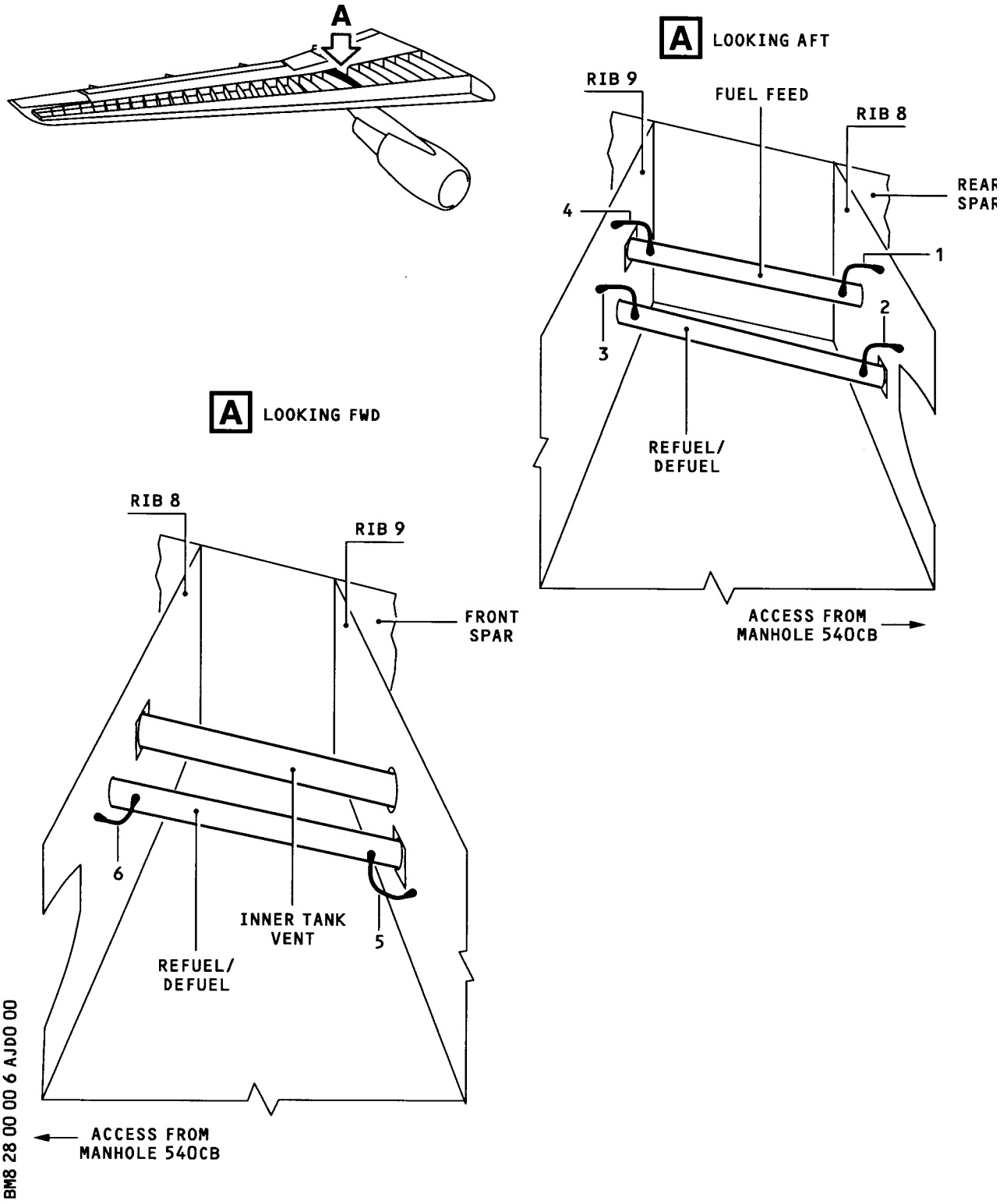
RH Inner Tank between Ribs 5 and 6
Figure 639



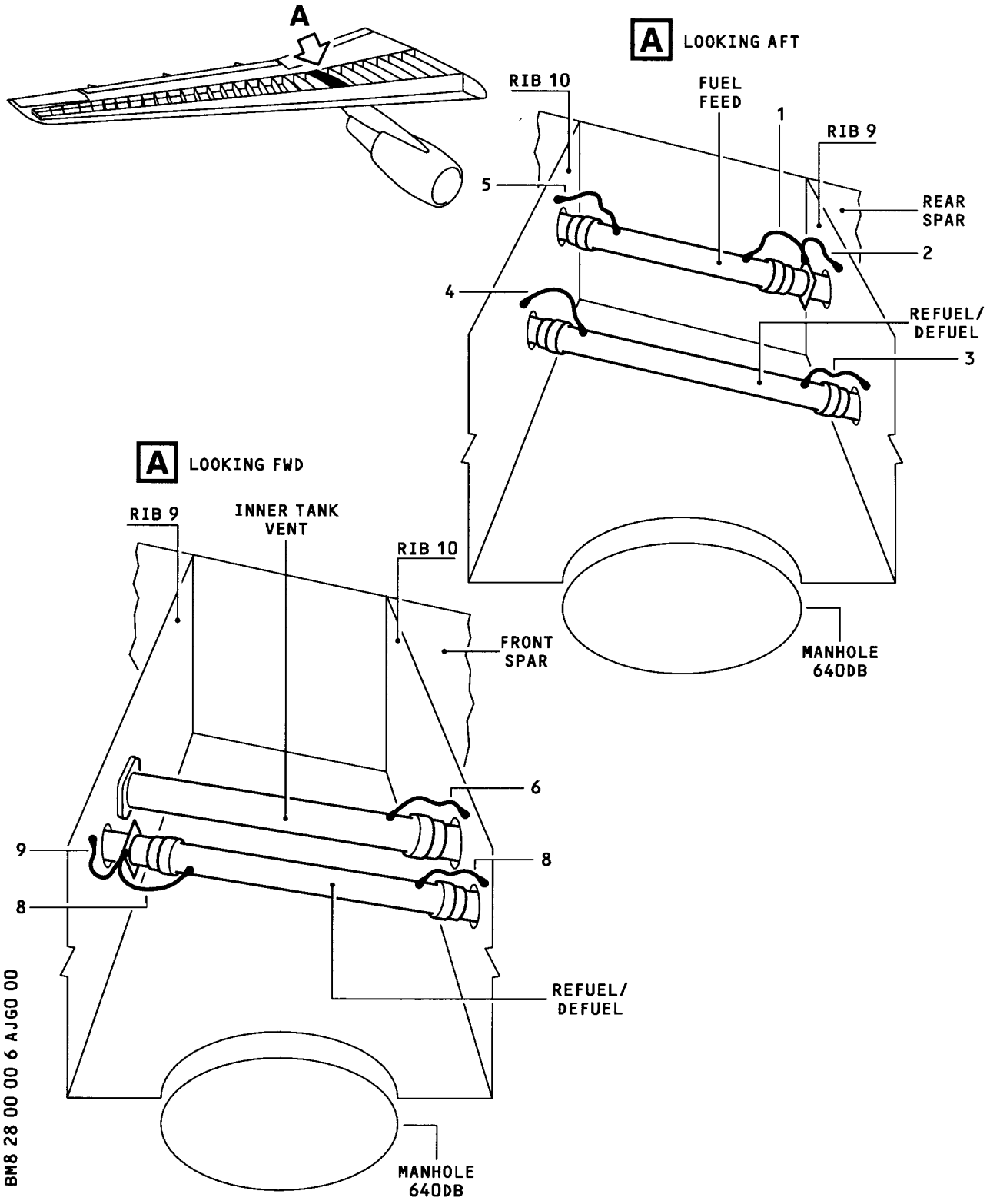
RH Inner Tank between Ribs 6 and 7
Figure 640



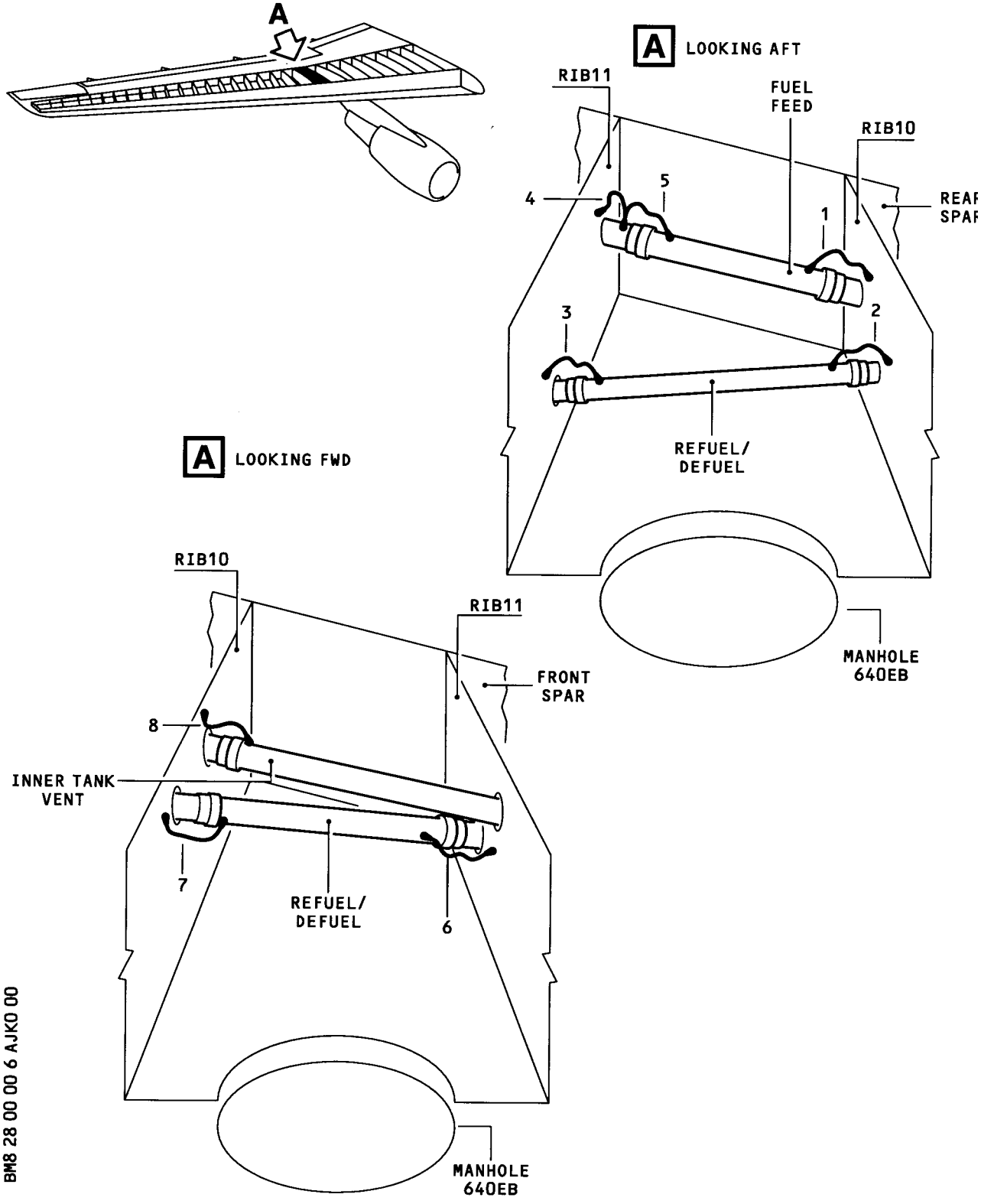
RH Inner Tank between Ribs 7 and 8
Figure 641



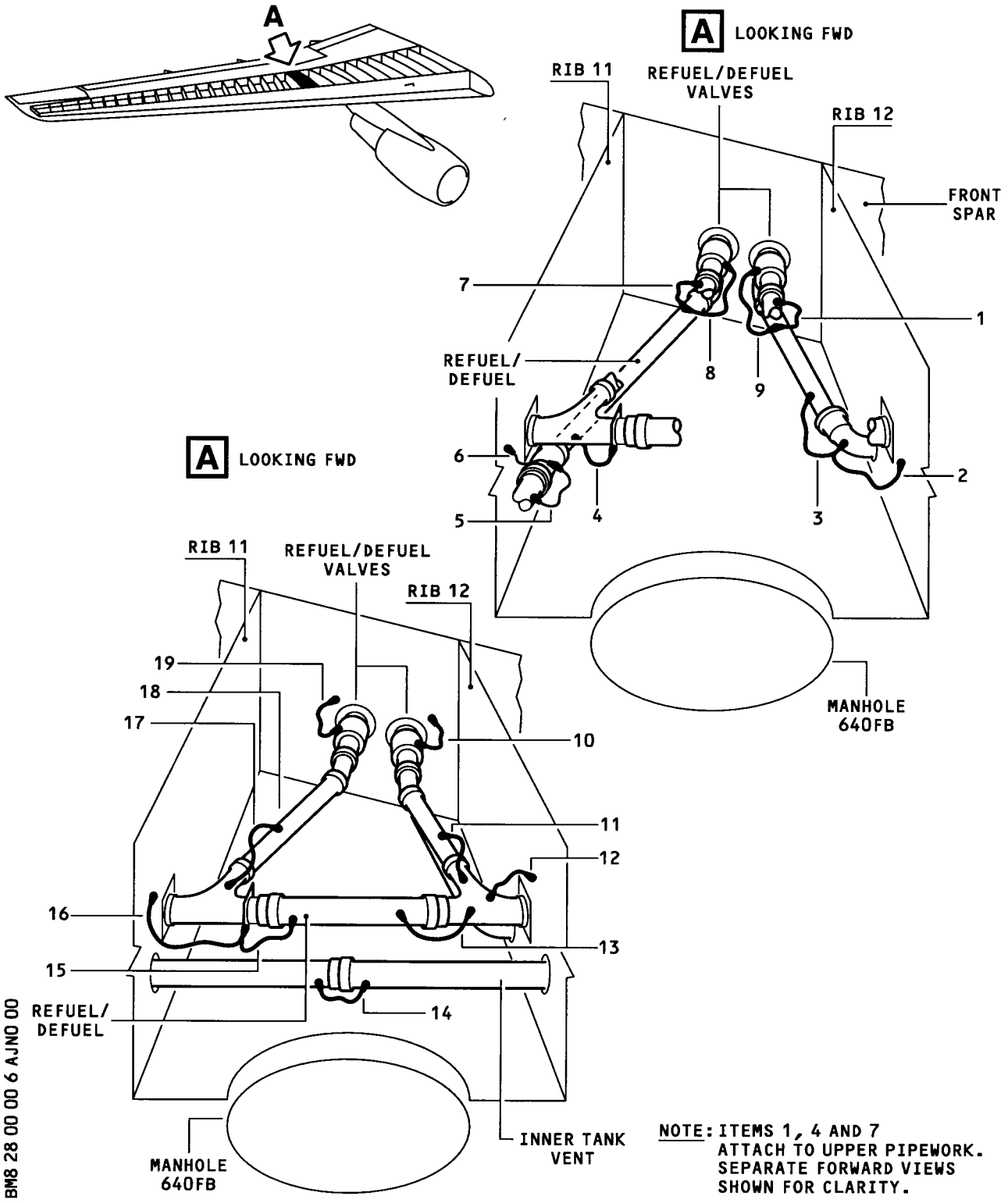
RH Inner Tank between Ribs 8 and 9
Figure 642



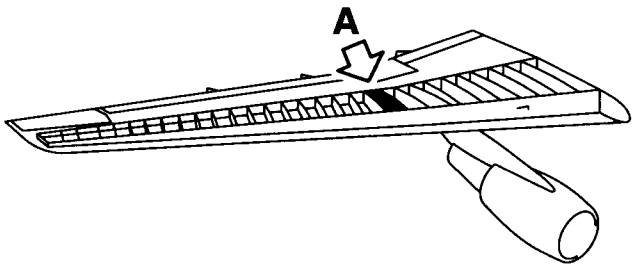
RH Inner Tank between Ribs 9 and 10
Figure 643

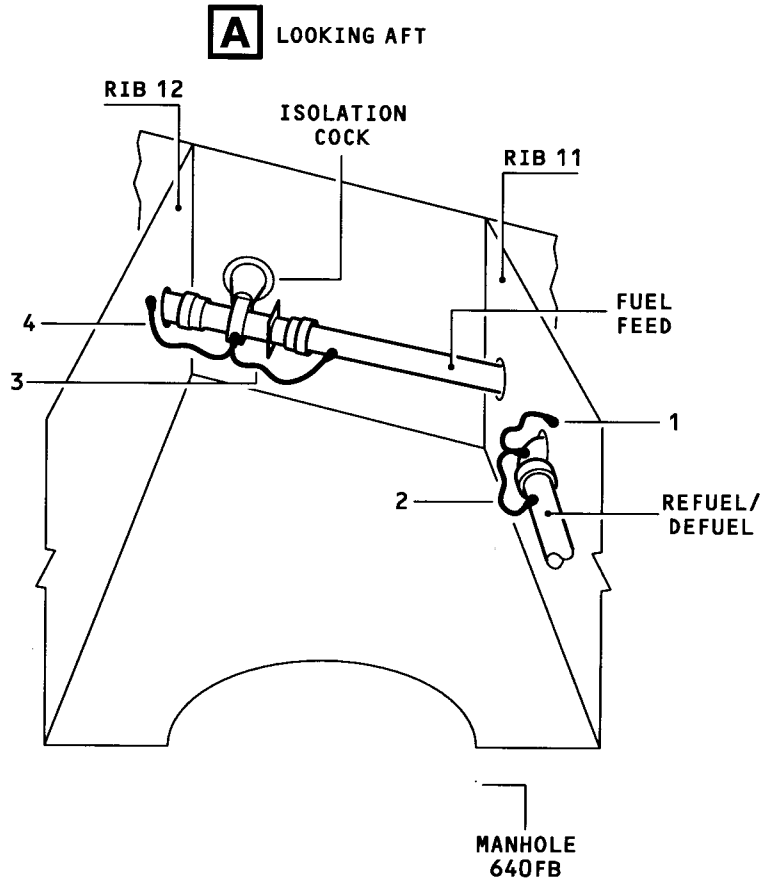


RH Inner Tank between Ribs 10 and 11
Figure 644



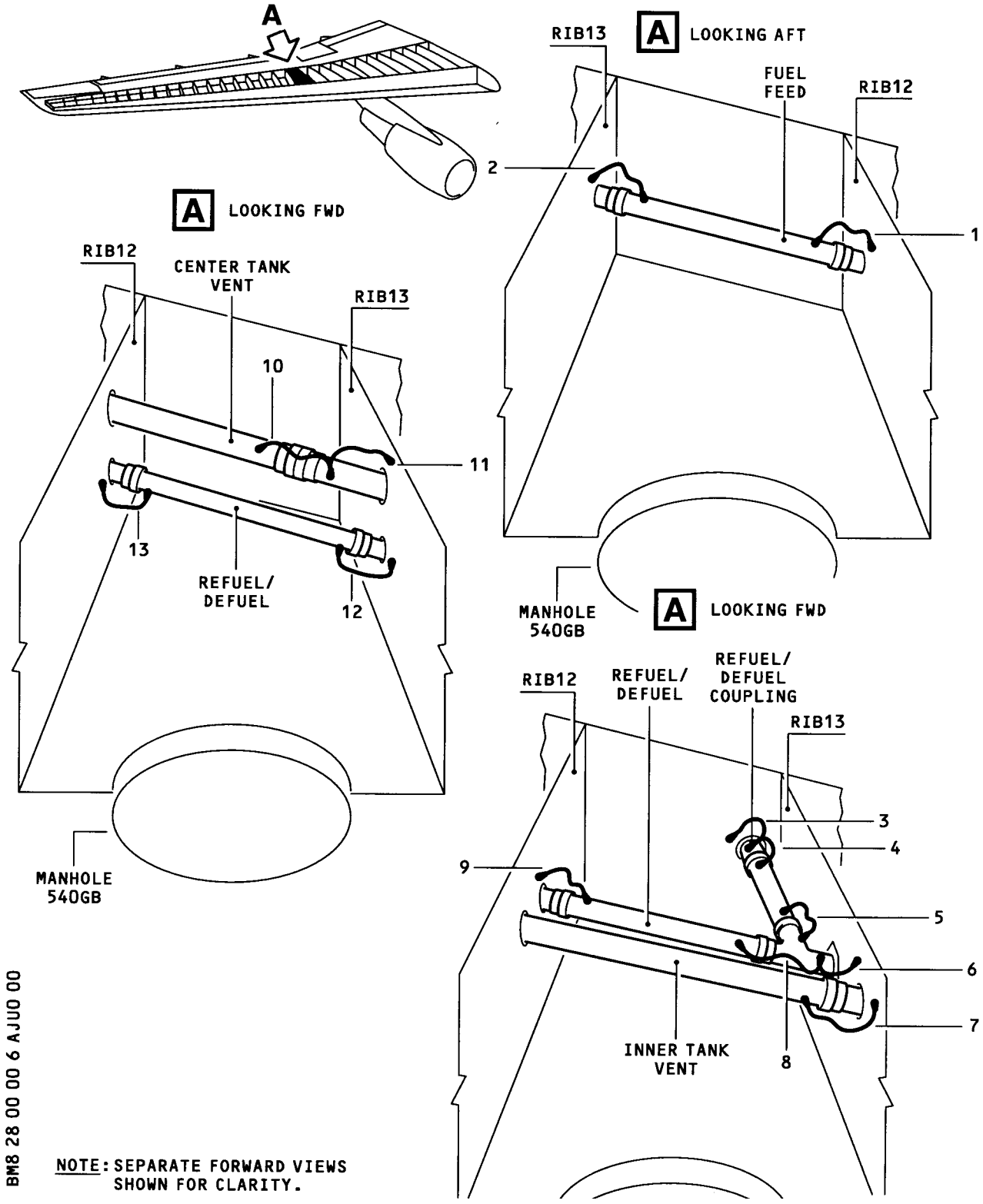
RH Inner Tank between Ribs 11 and 12
Figure 645



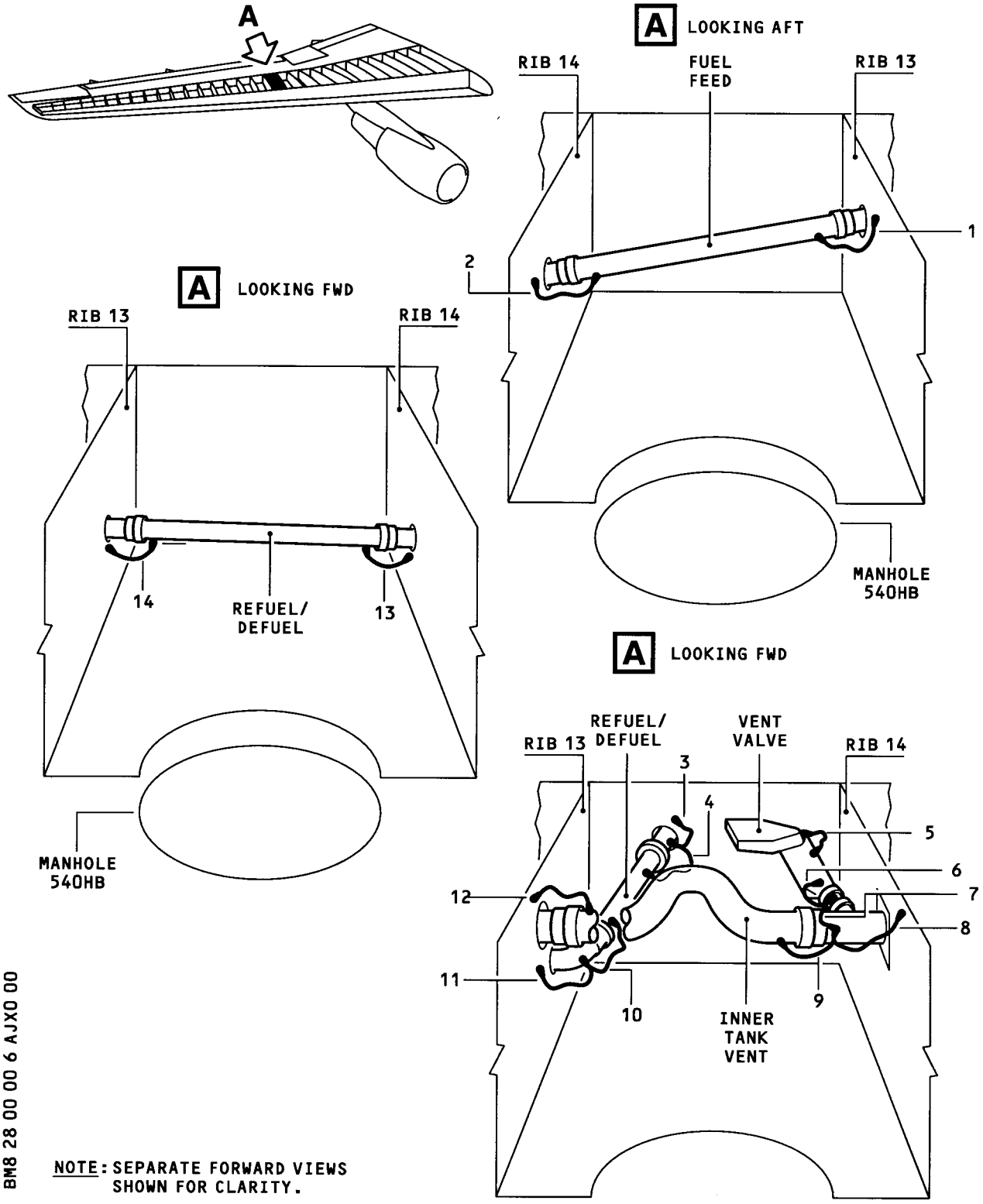


BM8 28 00 00 6 AJR0 00

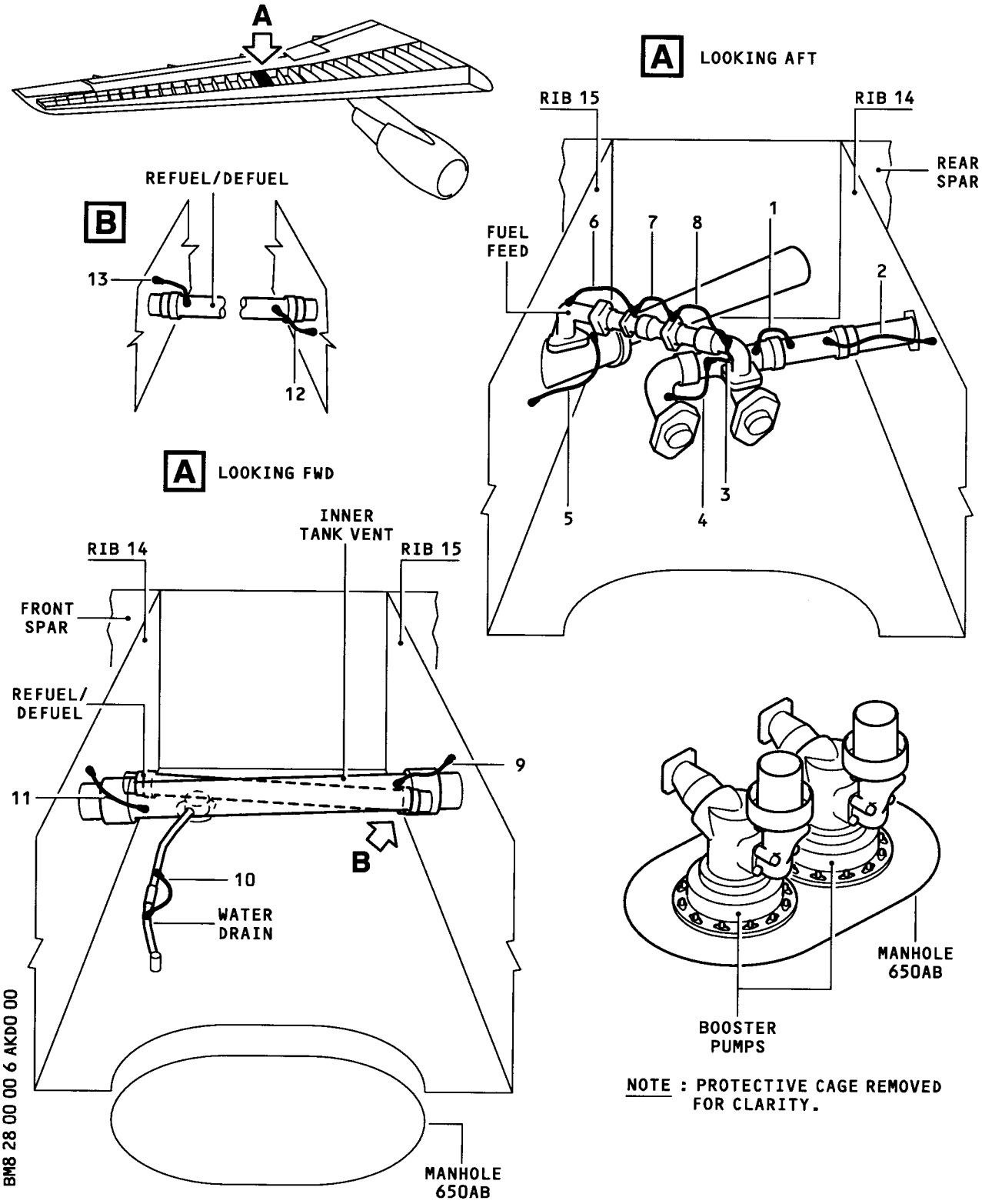
RH Inner Tank between Ribs 11 and 12
Figure 646



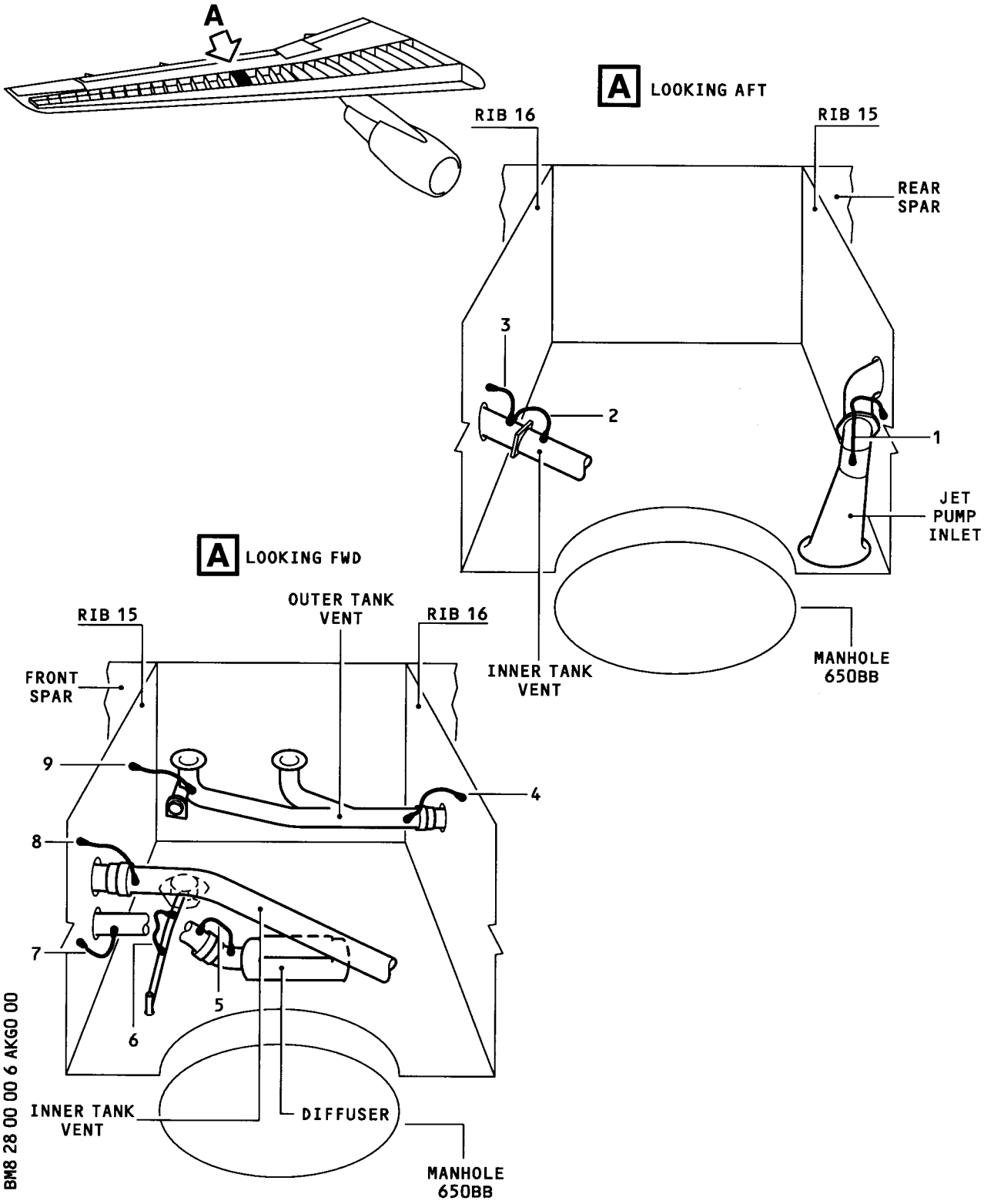
RH Inner Tank between Ribs 12 and 13
Figure 647



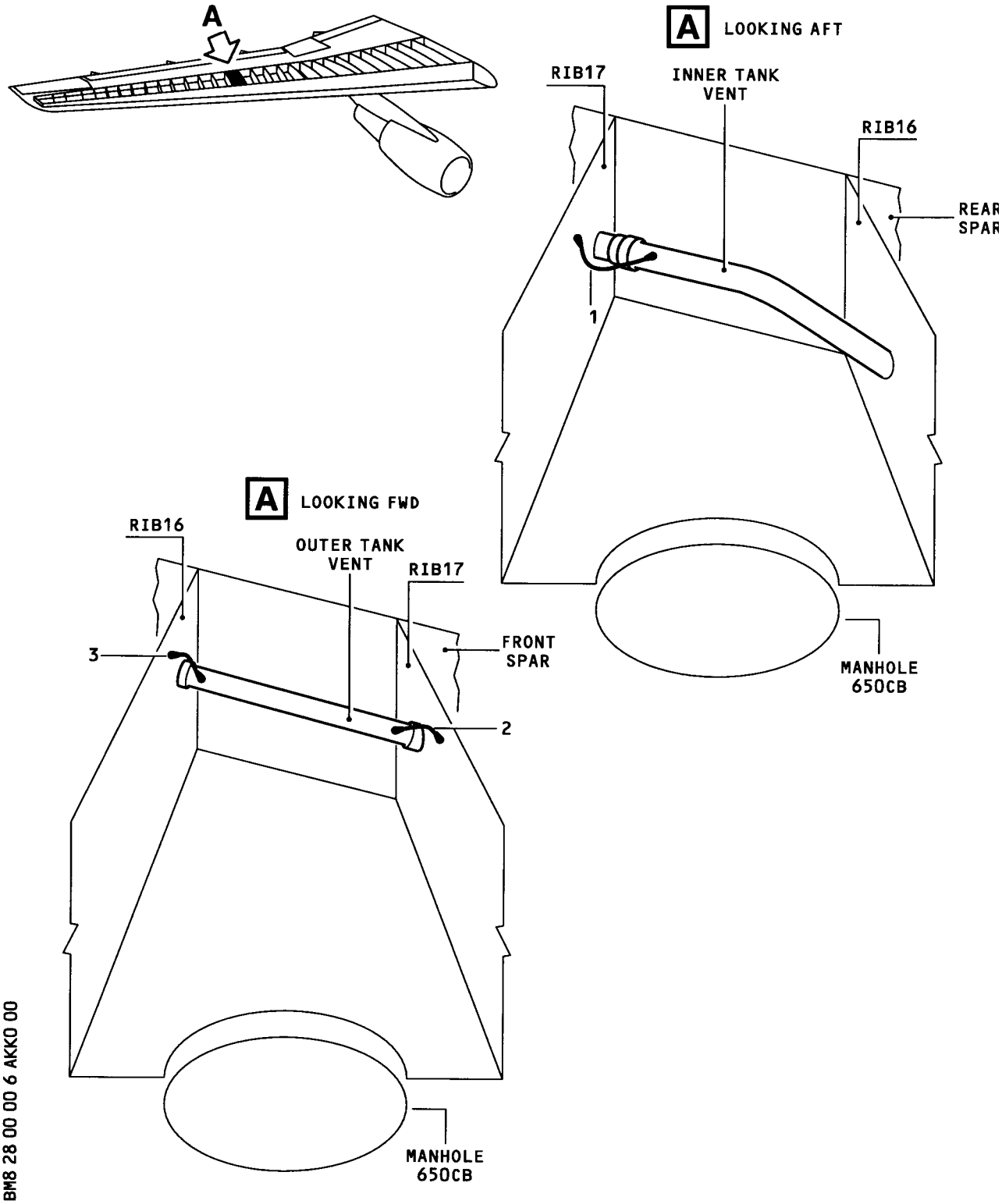
RH Inner Tank between Ribs 13 and 14
Figure 648



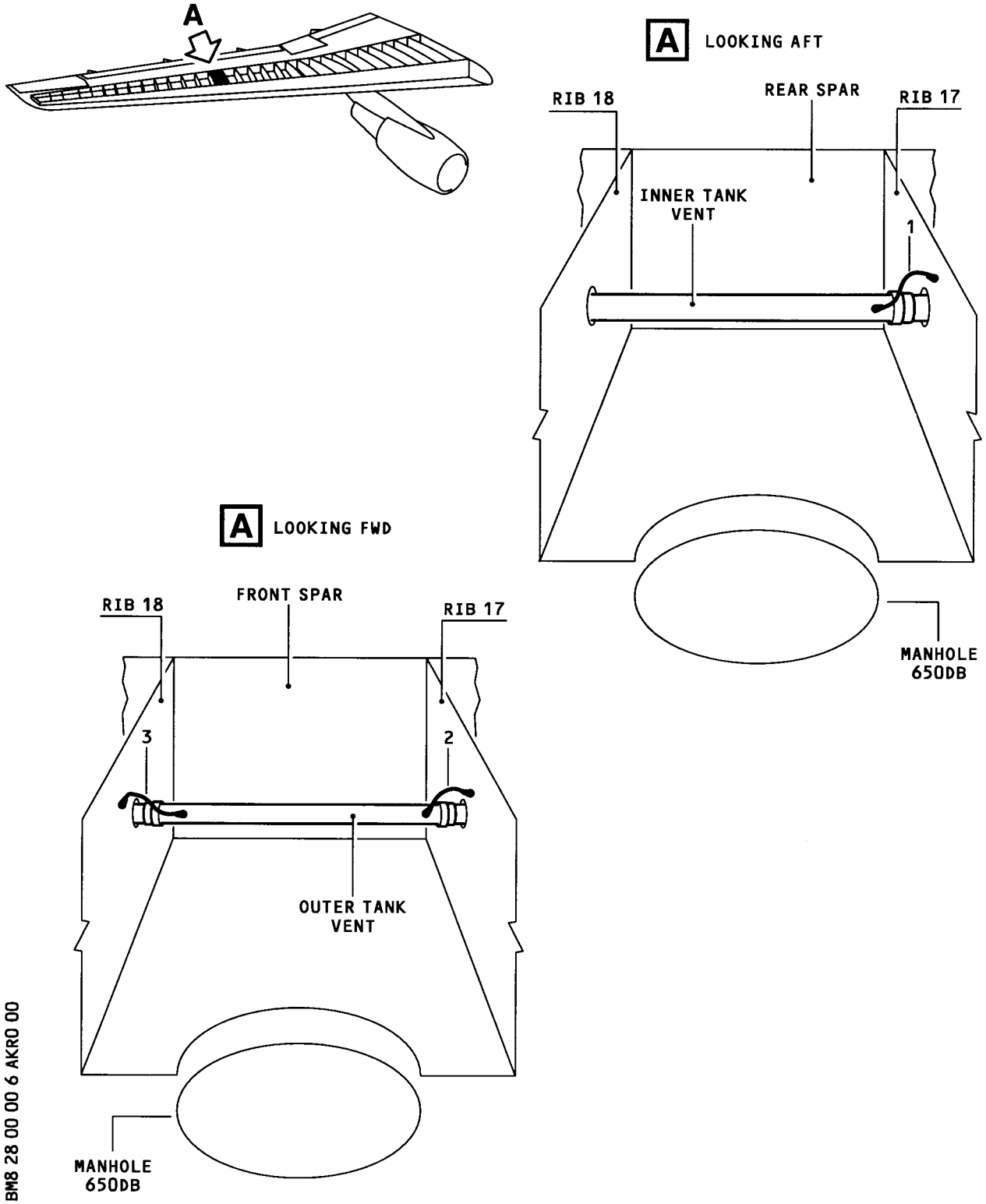
RH Outer Tank between Ribs 14 and 15
Figure 649



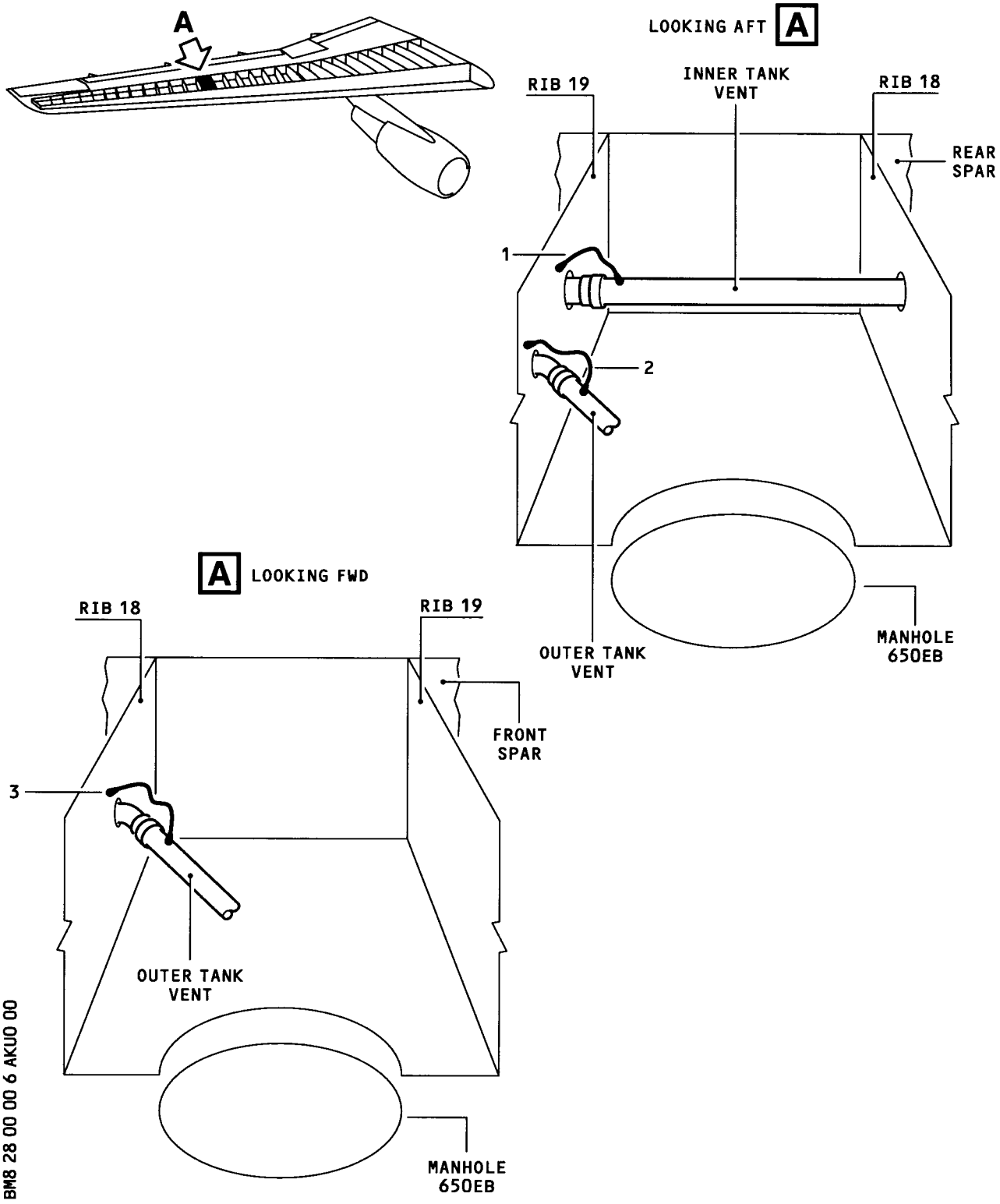
RH Outer Tank between Ribs 15 and 16
Figure 650



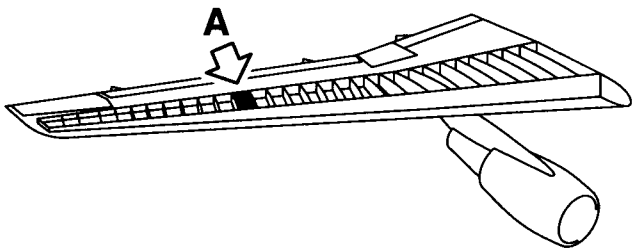
RH Outer Tank between Ribs 16 and 17
Figure 651

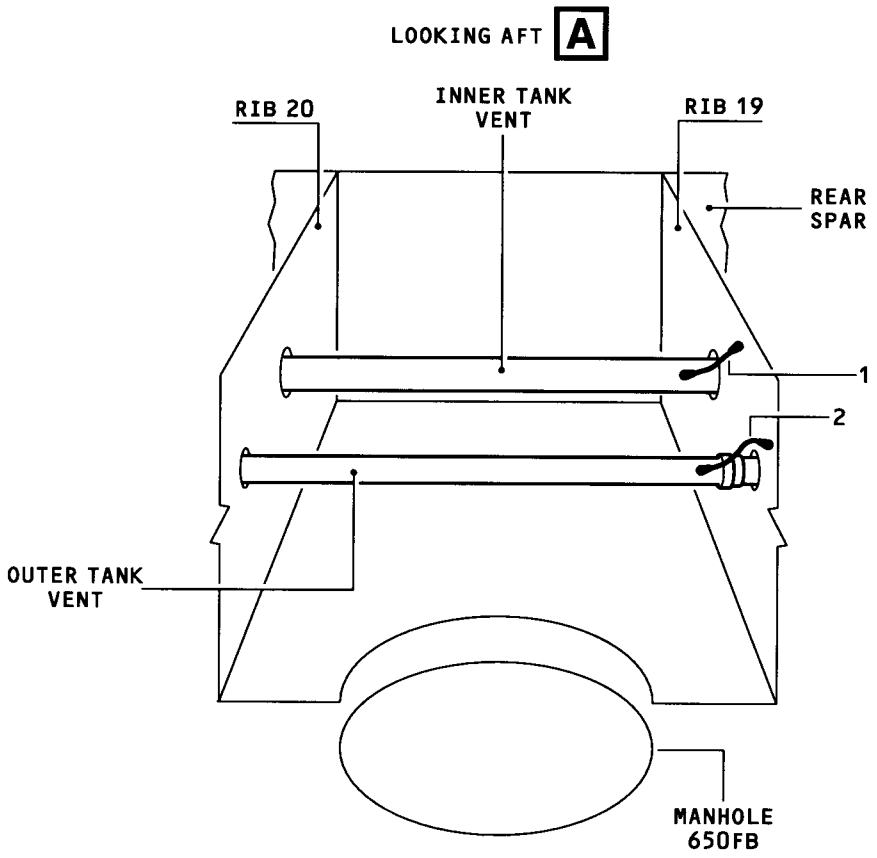


RH Outer Tank between Ribs 17 and 18
Figure 652



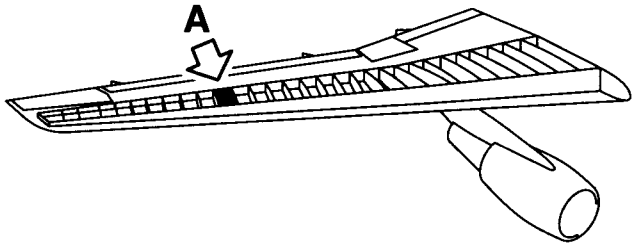
RH Outer Tank between Ribs 18 and 19
Figure 653

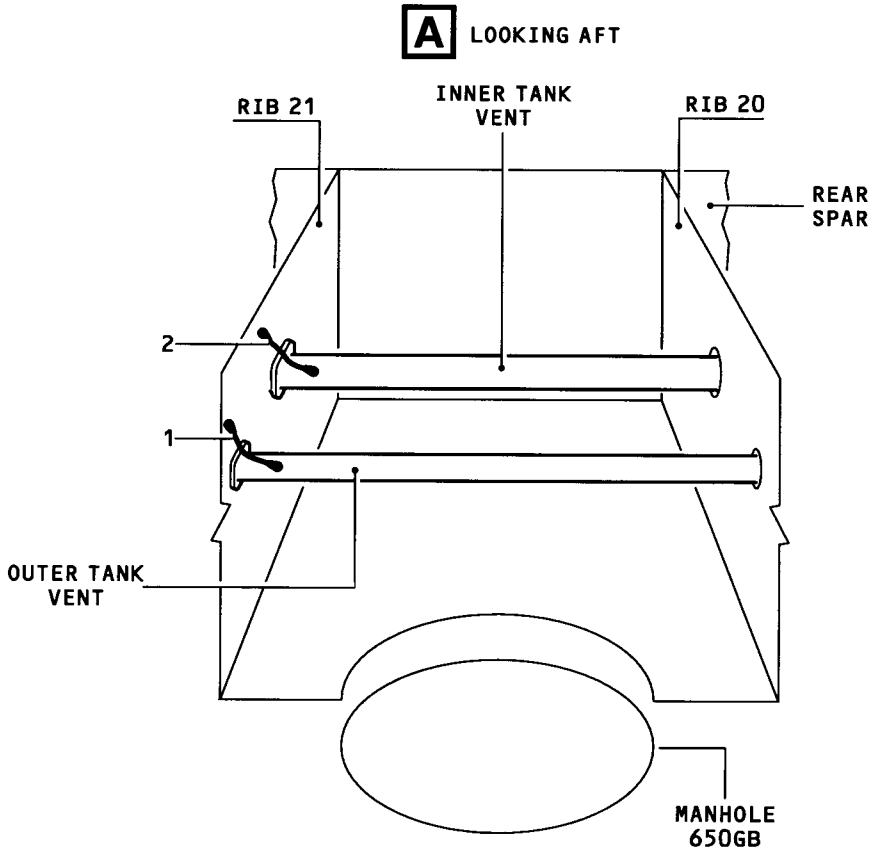




BM8 28 00 00 6 AKX0 00

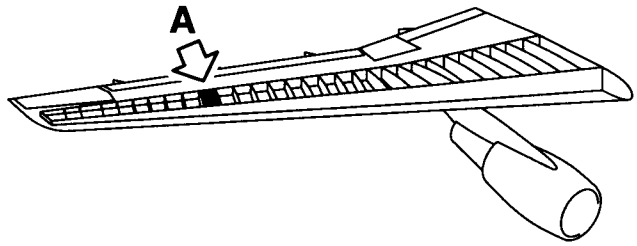
RH Outer Tank between Ribs 19 and 20
Figure 654

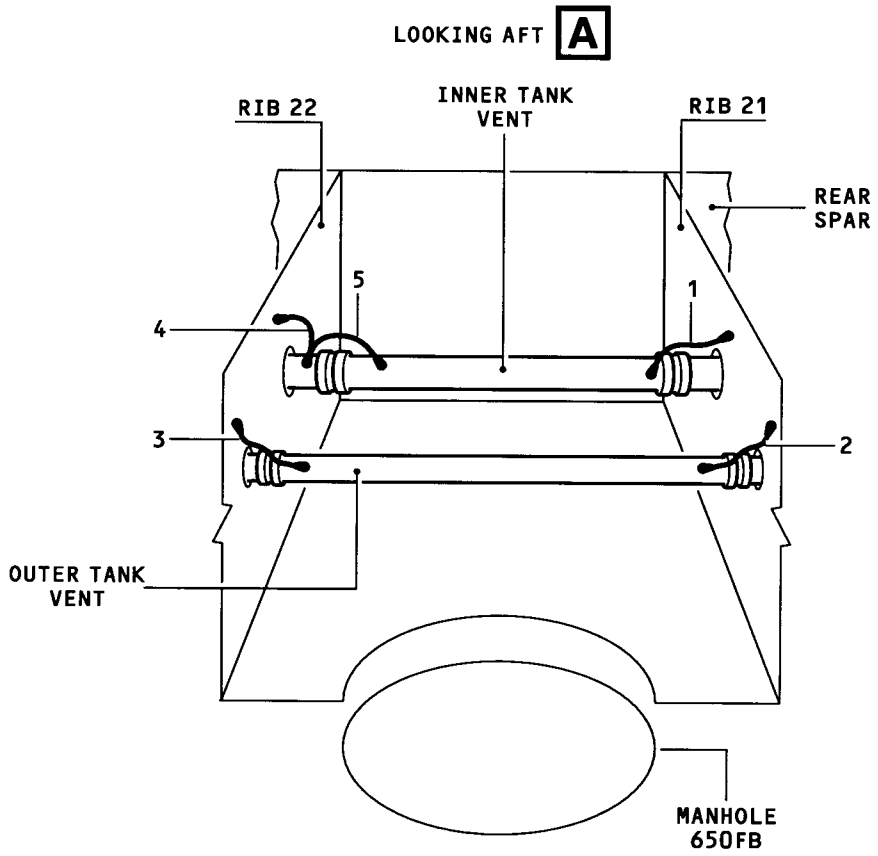




BM8 28 00 00 6 ALA0 00

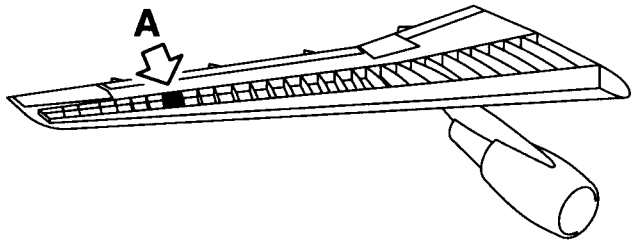
RH Outer Tank between Ribs 20 and 21
Figure 655

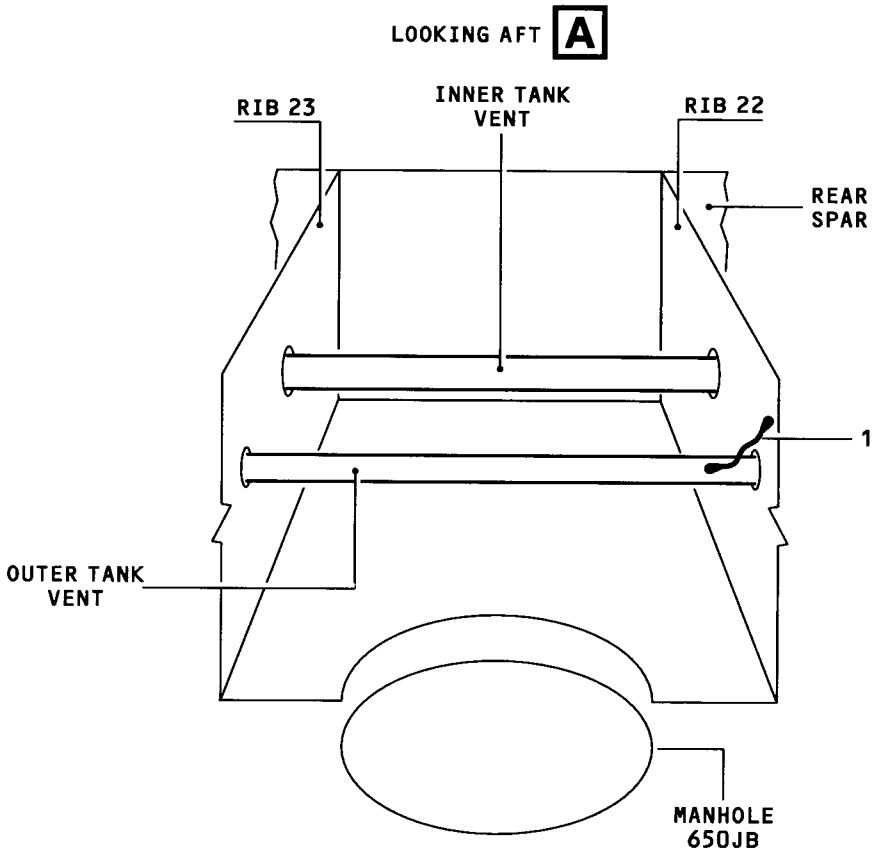




BM8 28 00 00 6 ALD0 00

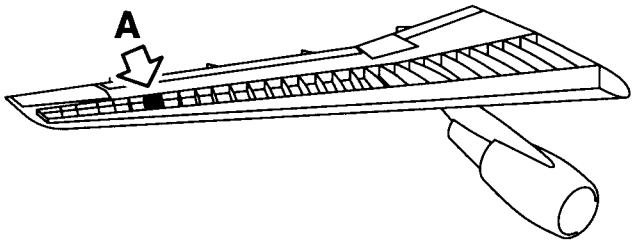
RH Outer Tank between Ribs 21 and 22
Figure 656

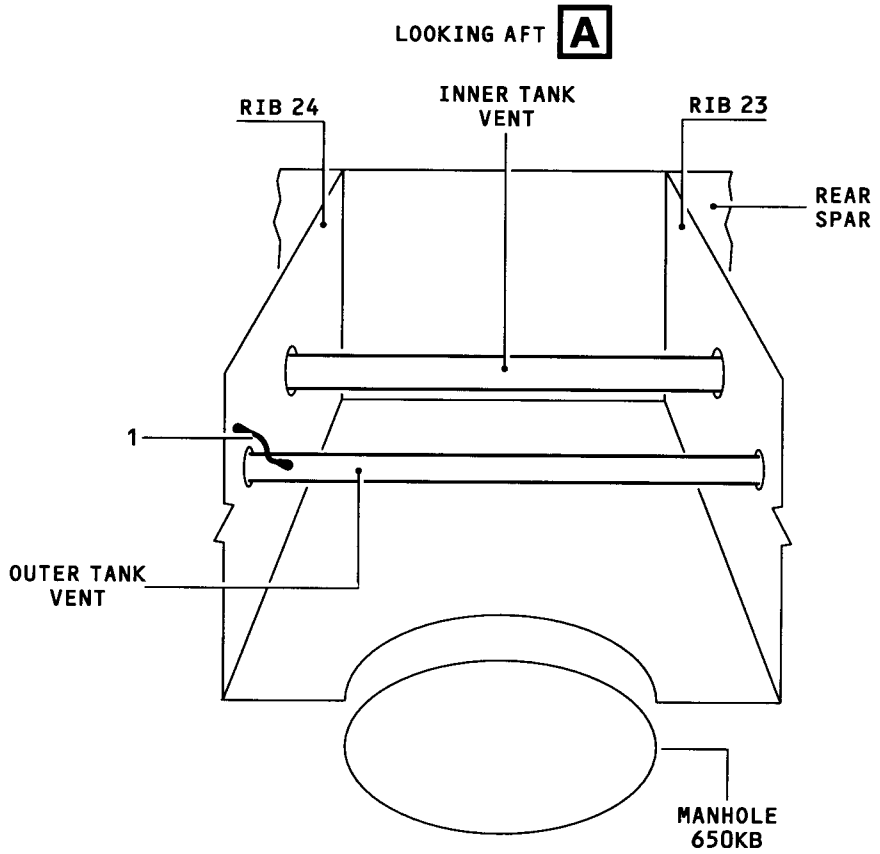




BM8 28 00 00 6 ALG0 00

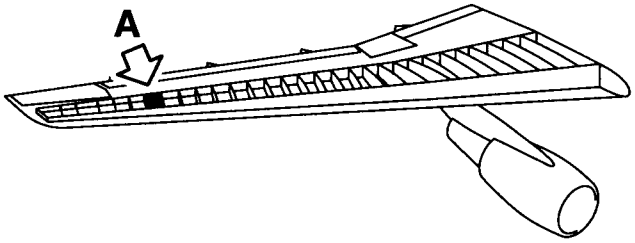
RH Outer Tank between Ribs 22 and 23
Figure 657

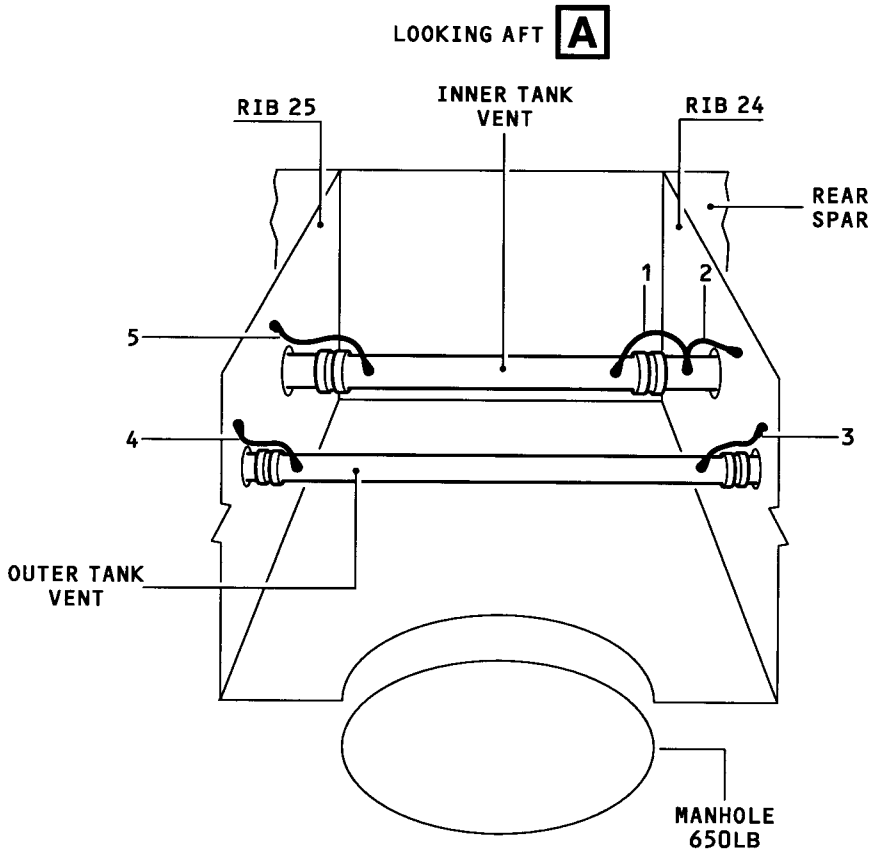




BM8 28 00 00 6 ALK0 00

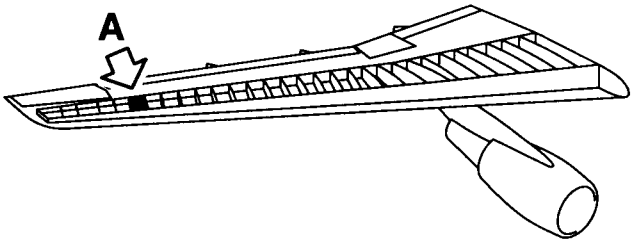
RH Outer Tank between Ribs 23 and 24
Figure 658

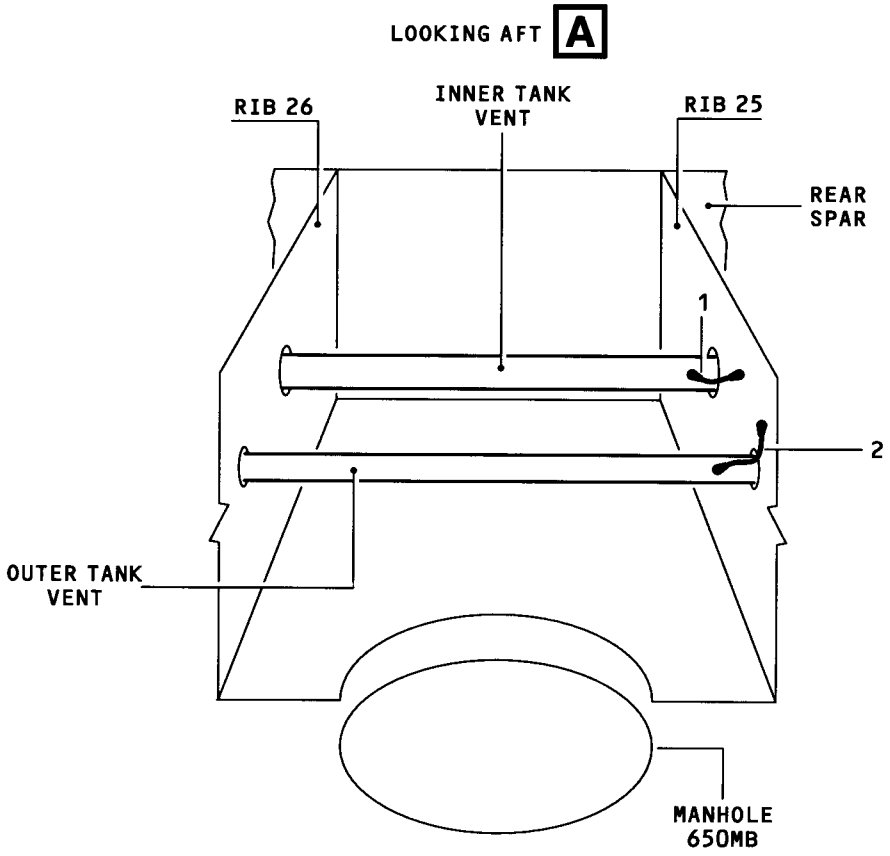




BM8 28 00 00 6 ALNO 00

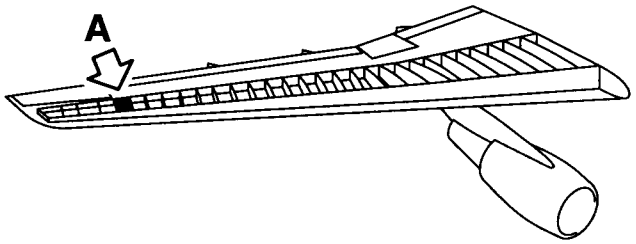
RH Outer Tank between Ribs 24 and 25
Figure 659

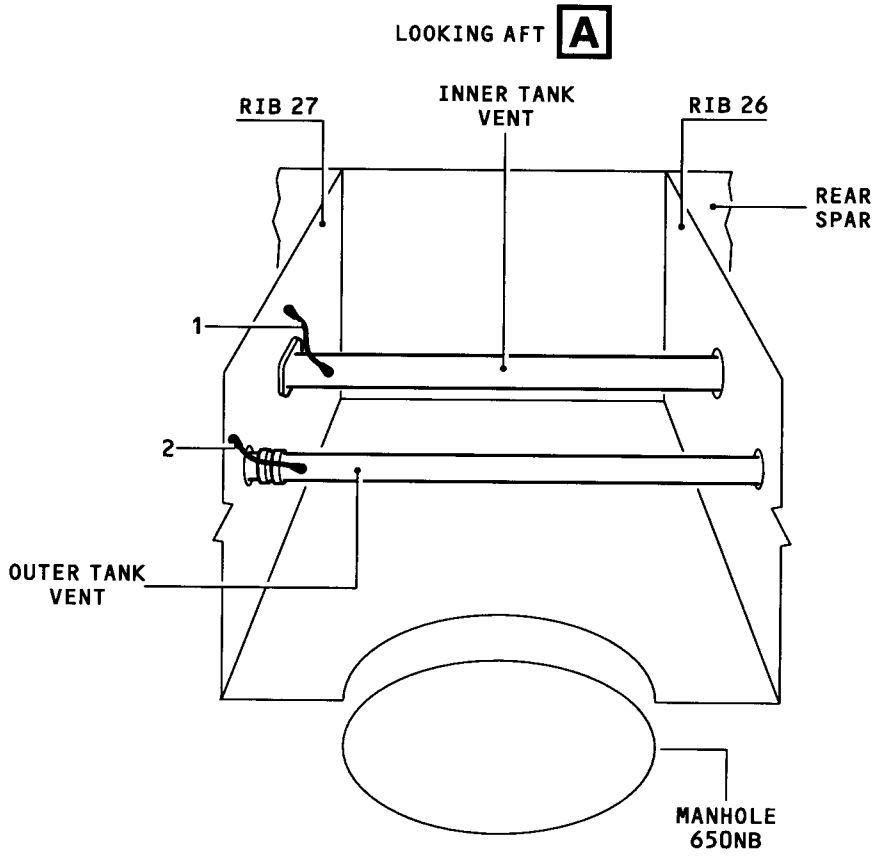




BM8 28 00 00 6 ALRD 00

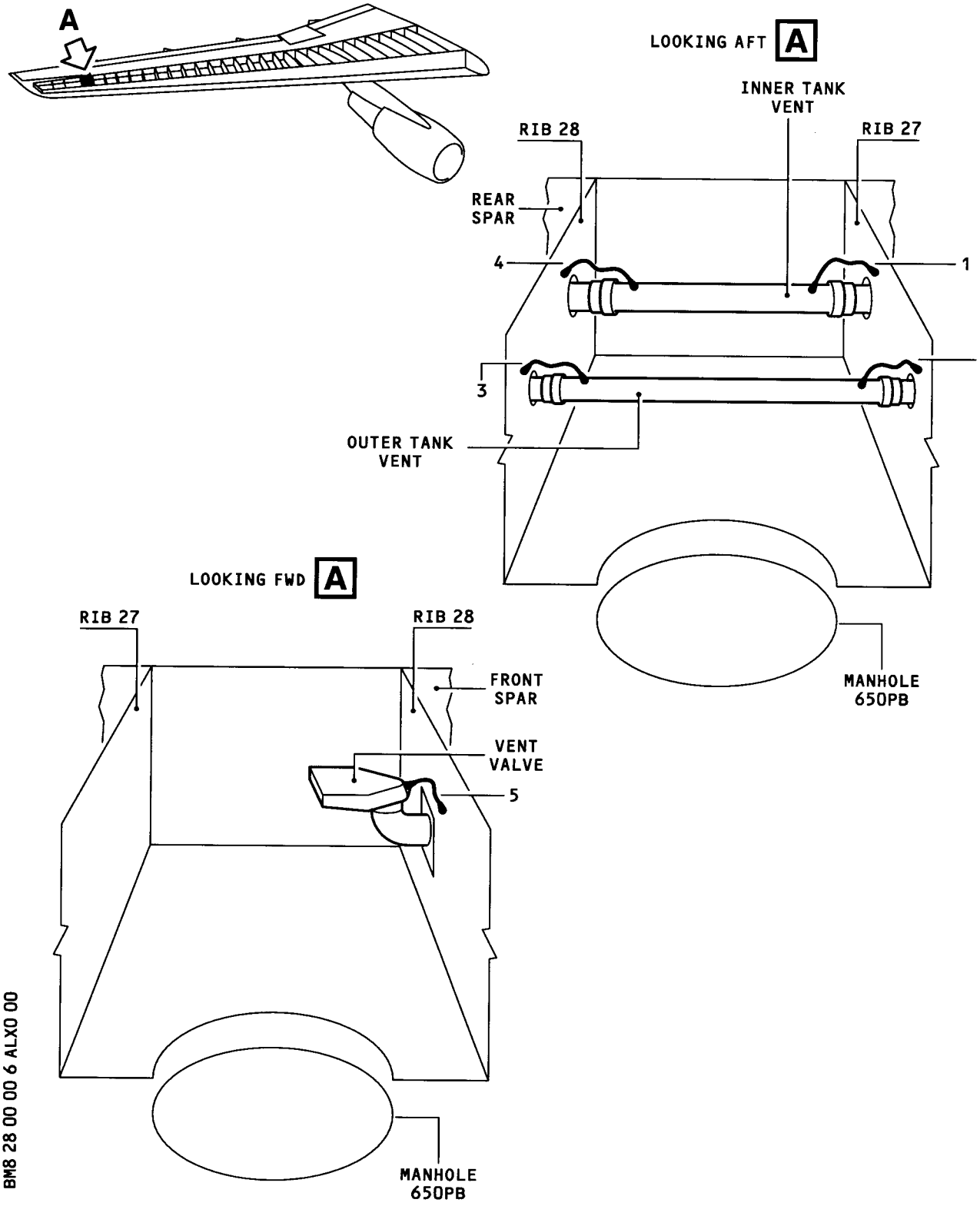
RH Outer Tank between Ribs 25 and 26
Figure 660



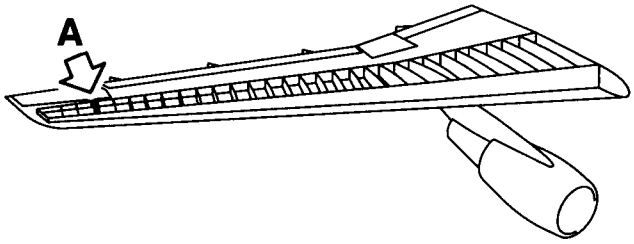


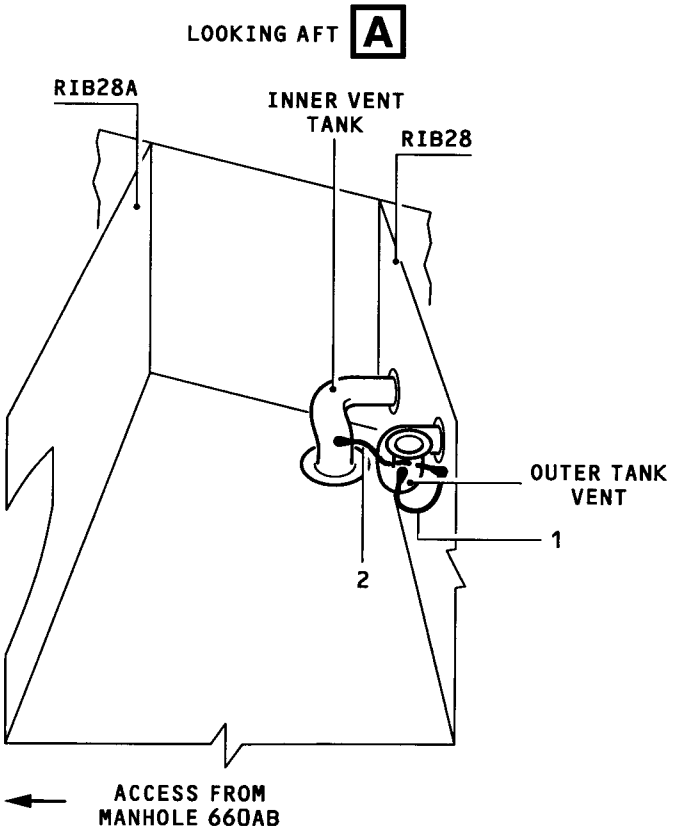
BM8 28 00 00 6 ALU0 00

RH Outer Tank between Ribs 26 and 27
Figure 661



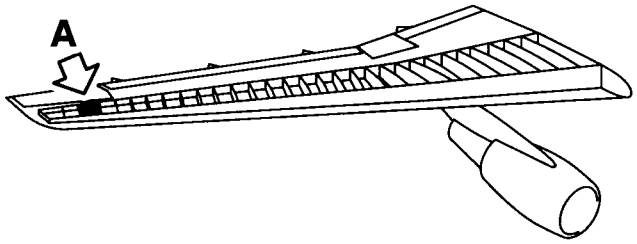
RH Outer Tank between Ribs 27 and 28
Figure 662



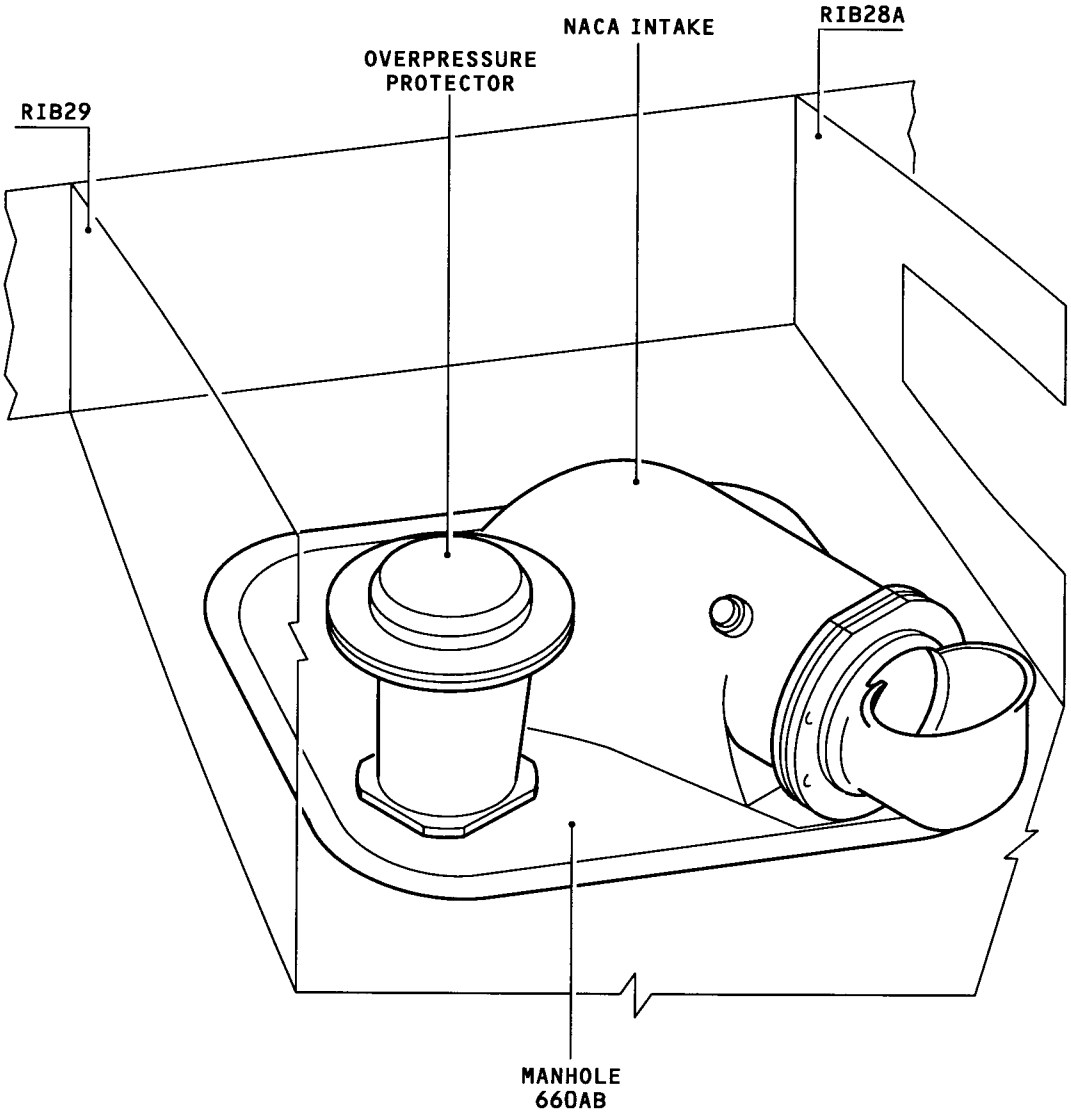


BM8 28 00 00 6 AMA0 00

RH Outer Tank between Ribs 28 and 28A
Figure 663



LOOKING AFT A



NOTE: NO BONDING LEADS IN THIS RIB SPACE

BM8 28 00 00 6 AMD0 00

RH Outer Tank between Ribs 28A and 29
Figure 664

4. Procedure for Center Tank Bonding Straps

A. Job Set-Up
(1)Defuel the center-tank (Ref. 28-25-00, P. Block 301).
(2)Remove the LH center-tank manhole cover 147AZ (Ref. 28-11-29, P. Block 401).
(3)Prepare the center-tank for access (Ref. 28-10-00, P. Block 301).

B. Inspection

NOTE : Use the Bonding Strap Inspection Report Sheet to record the condition of each bonding strap in the center tank (Ref. Fig. 601)
For the general arrangement of the manhole covers (Ref. Fig. 665).
R For the location of the fuel-pipe bonding straps in the center tank
R (Ref. Fig. 666) thru
R (Ref. Fig. A601).

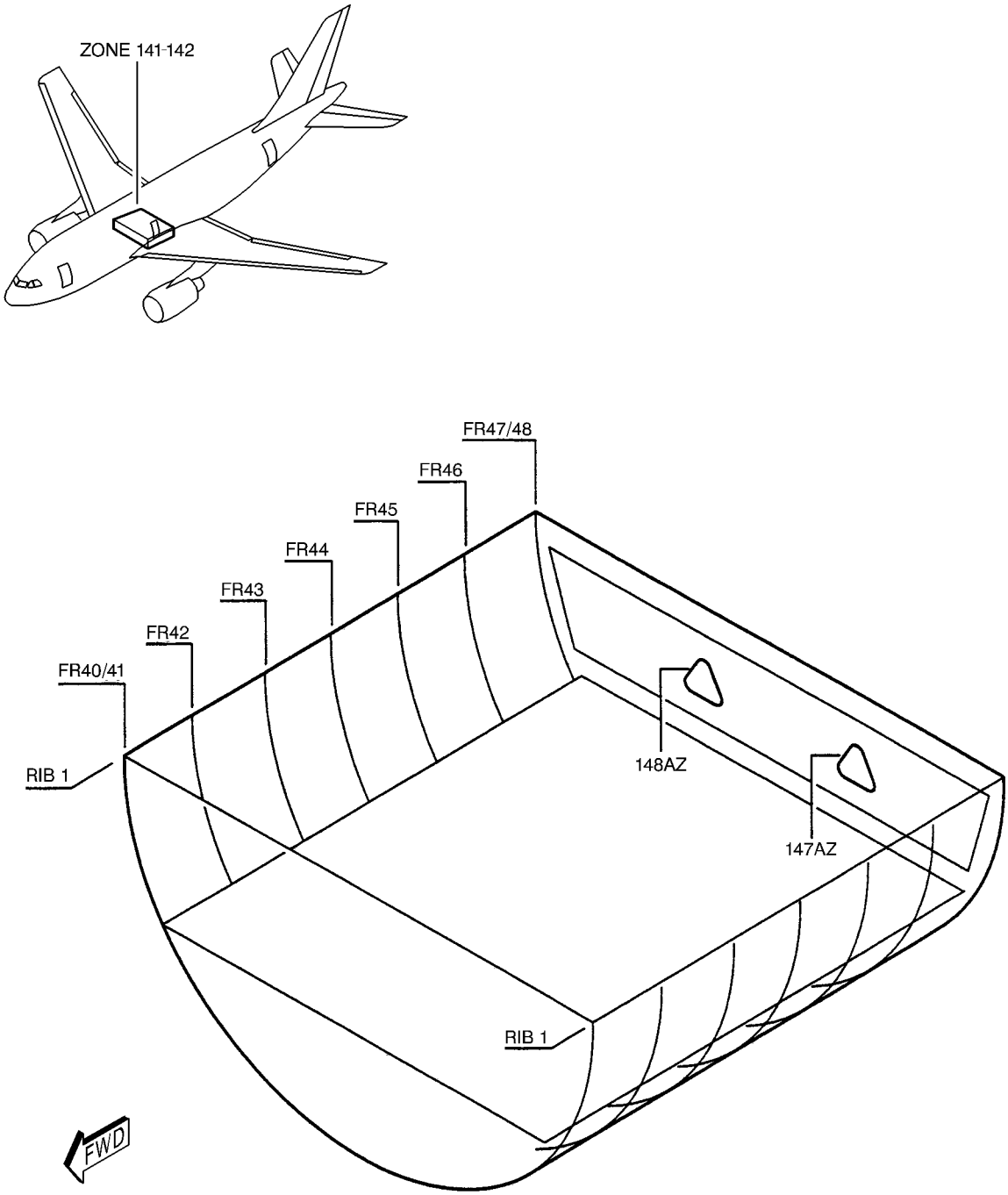
R (1)Use an inspection lamp to make sure that all the bonding straps are
R installed.
R (2)Visually examine the bonding straps and make sure that:
R - they are not broken
R - there are no broken strands
R - the outer braid sheaths are not loose in the end crimps
R - there is no corrosion.

R NOTE : Bonding straps which only show signs of tarnish should be kept in
R position until the next scheduled in-tank inspection.

R (3)Carefully pull each bonding strap to make sure that the end crimps are
R correctly attached.
R (4)Make sure that the bonding strap connections are in good condition.
R (5)Replace all defective bonding straps (Ref. 20-28-11, P. Block 1).
R (6)Repair all defective bonding strap attachments (Ref. 28-00-00,
R P. Block 801).

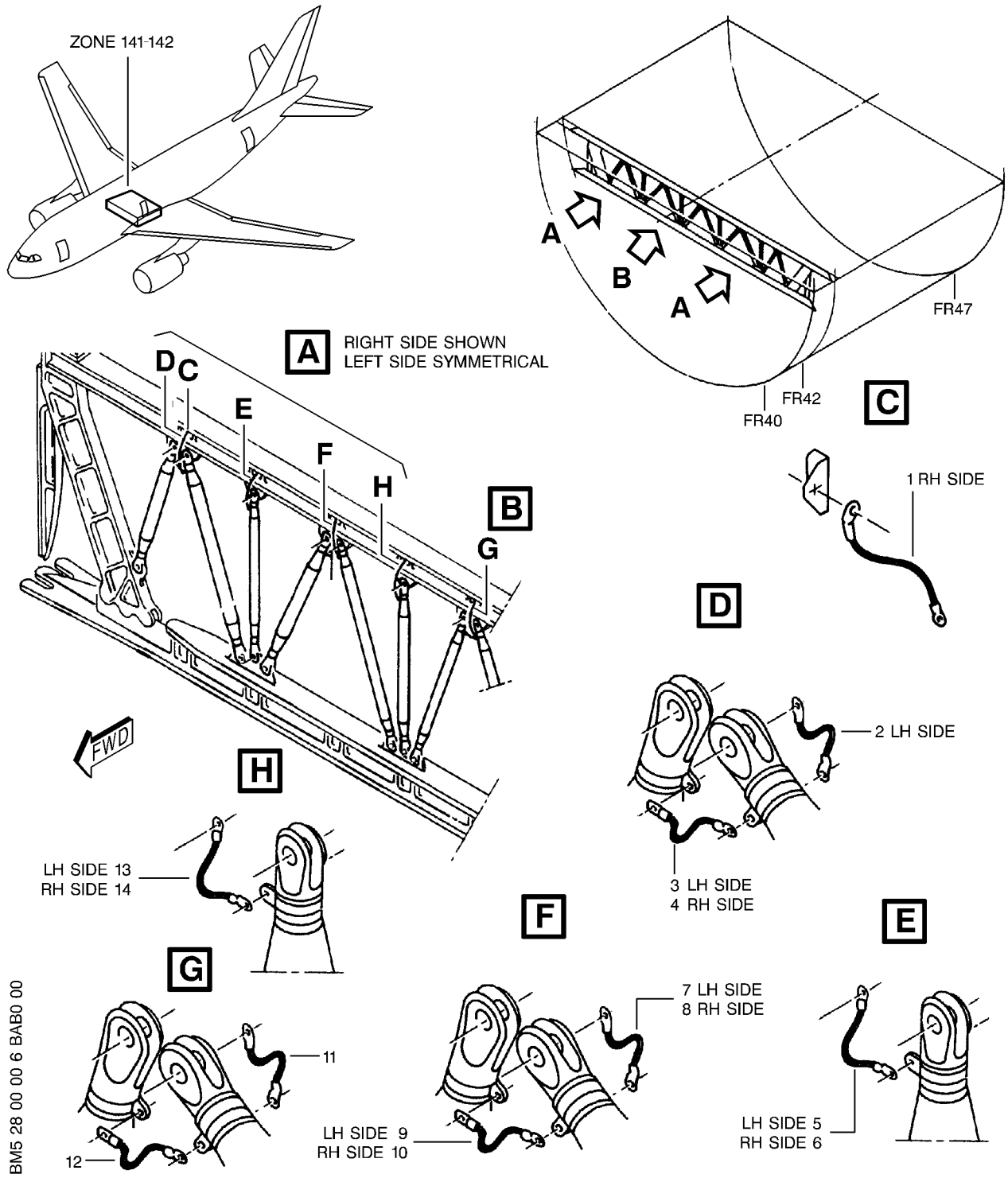
C. Close-Up
(1)Make sure that the work area is clean and clear of tools and all other items of equipment.
(2)Do the procedure for when you come out of a fuel tank (Ref. 28-10-00, P. Block 301).
(3)Remove all the ground handling and maintenance equipment, standard and special tools, ground power, all access equipment and miscellaneous items.
(4)Install the LH center-tank manhole cover 147AZ (Ref. 28-11-29, P. Block 401).
(5)Refuel the fuel tank(s) as necessary (Ref. 12-11-28, P. Block 301).

(Ref. Fig. 665)
(Ref. Fig. 666)
(Ref. Fig. 667)
(Ref. Fig. 668)
(Ref. Fig. 669)

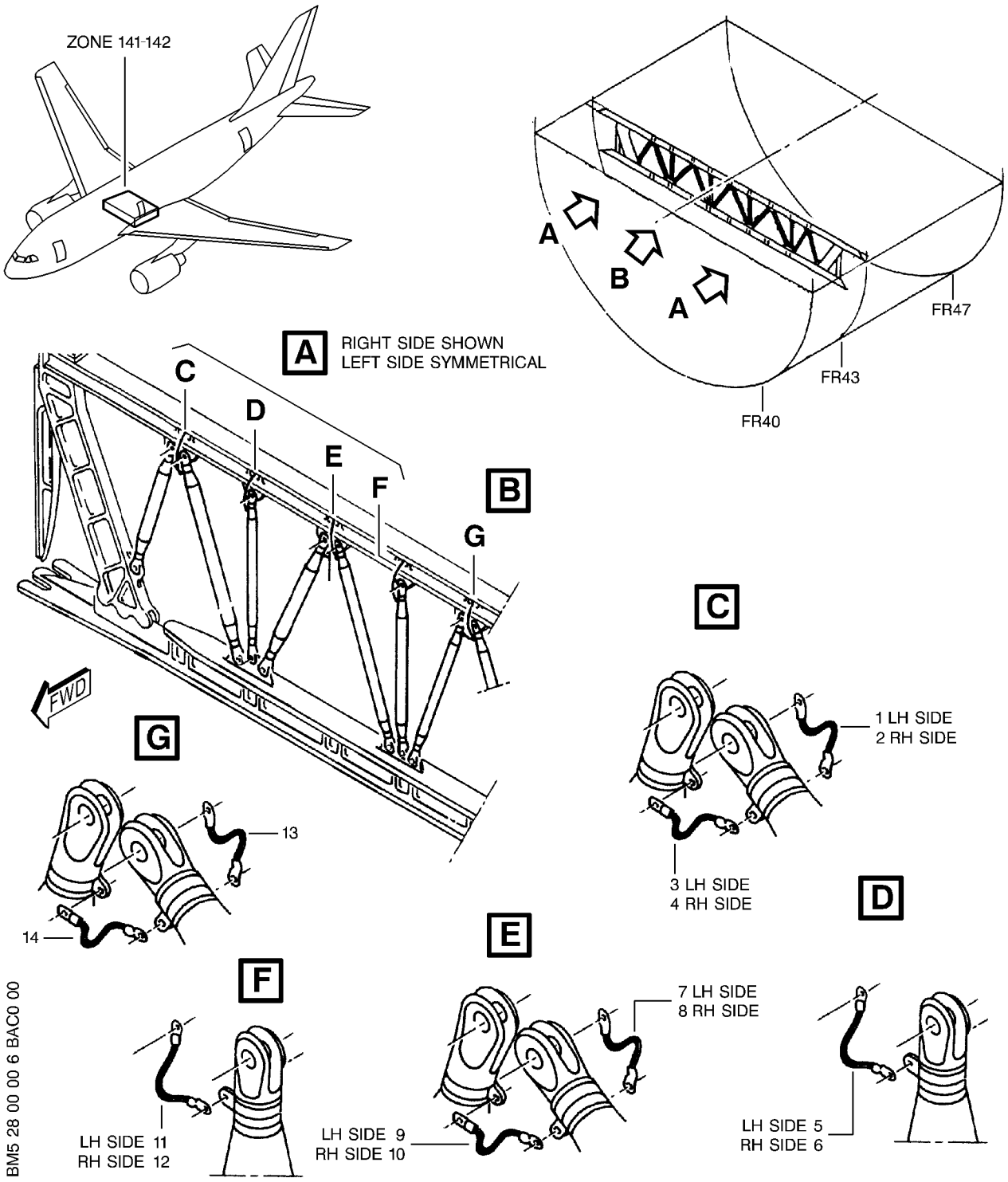


BM5 28 00 00 6 BAA0 00

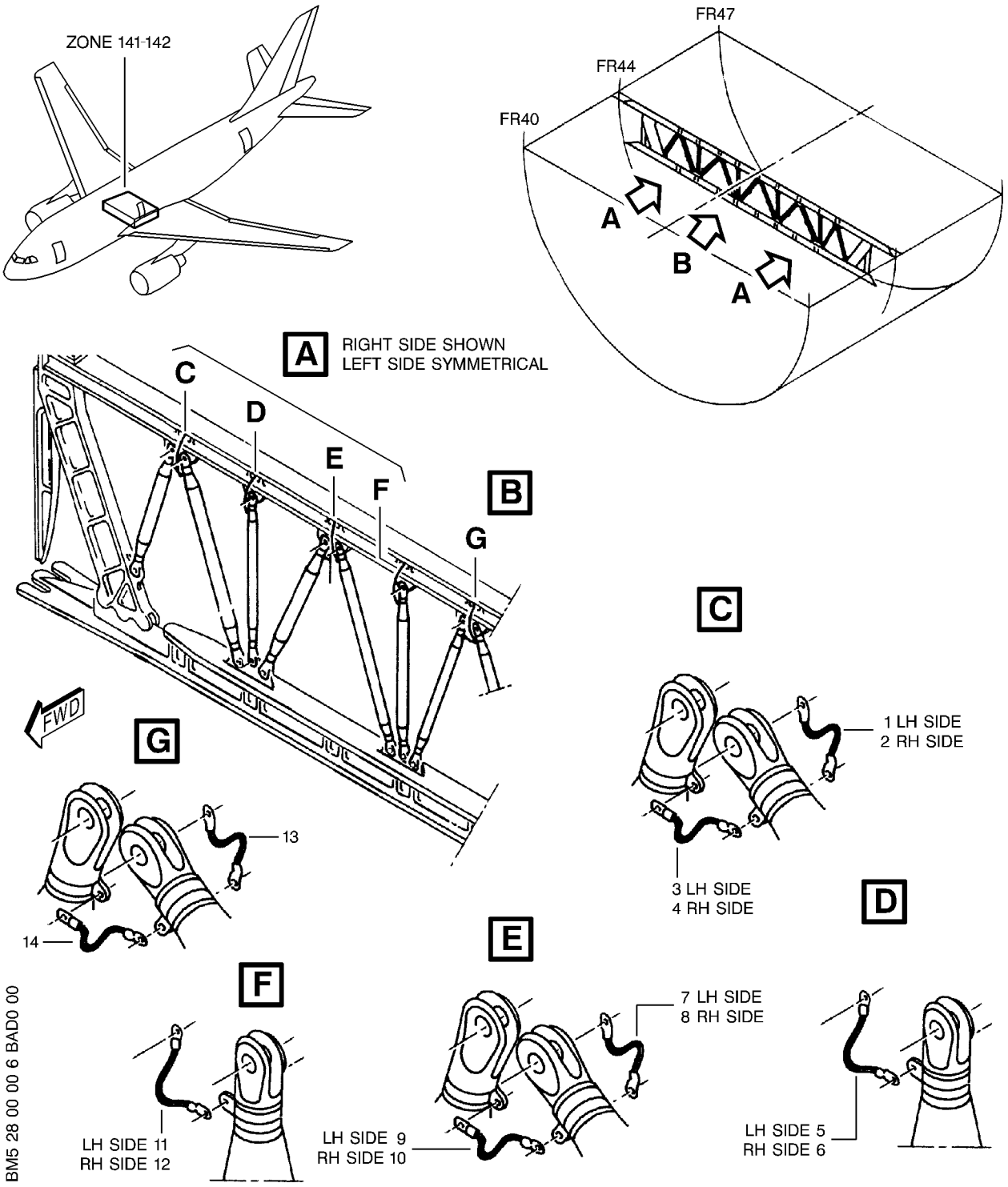
General Arrangement of Manholes - Center Tank
Figure 665



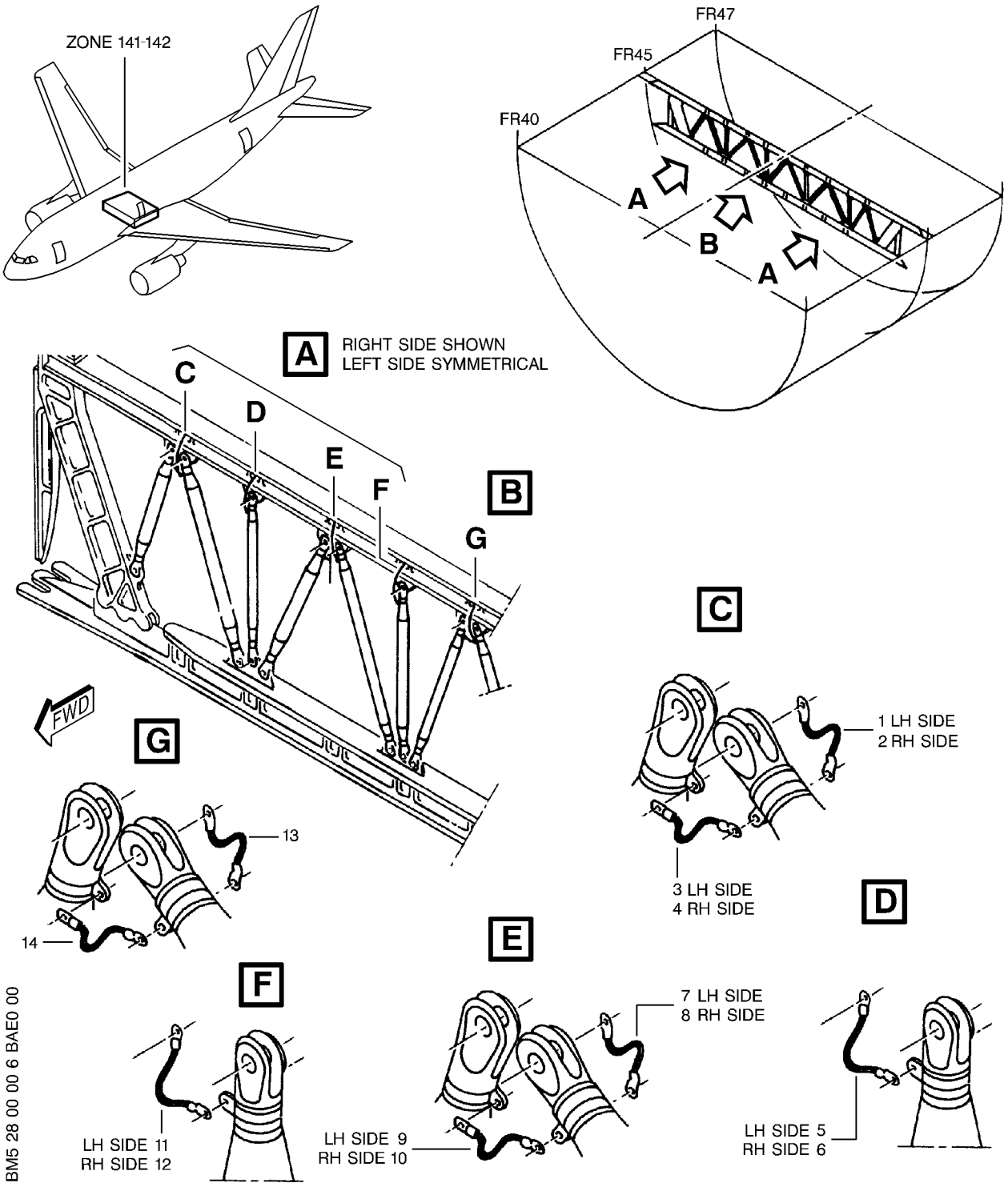
Box Structure Assy at FR42
Figure 666



Box Structure Assy at FR43
Figure 667



Box Structure Assy at FR44
Figure 668

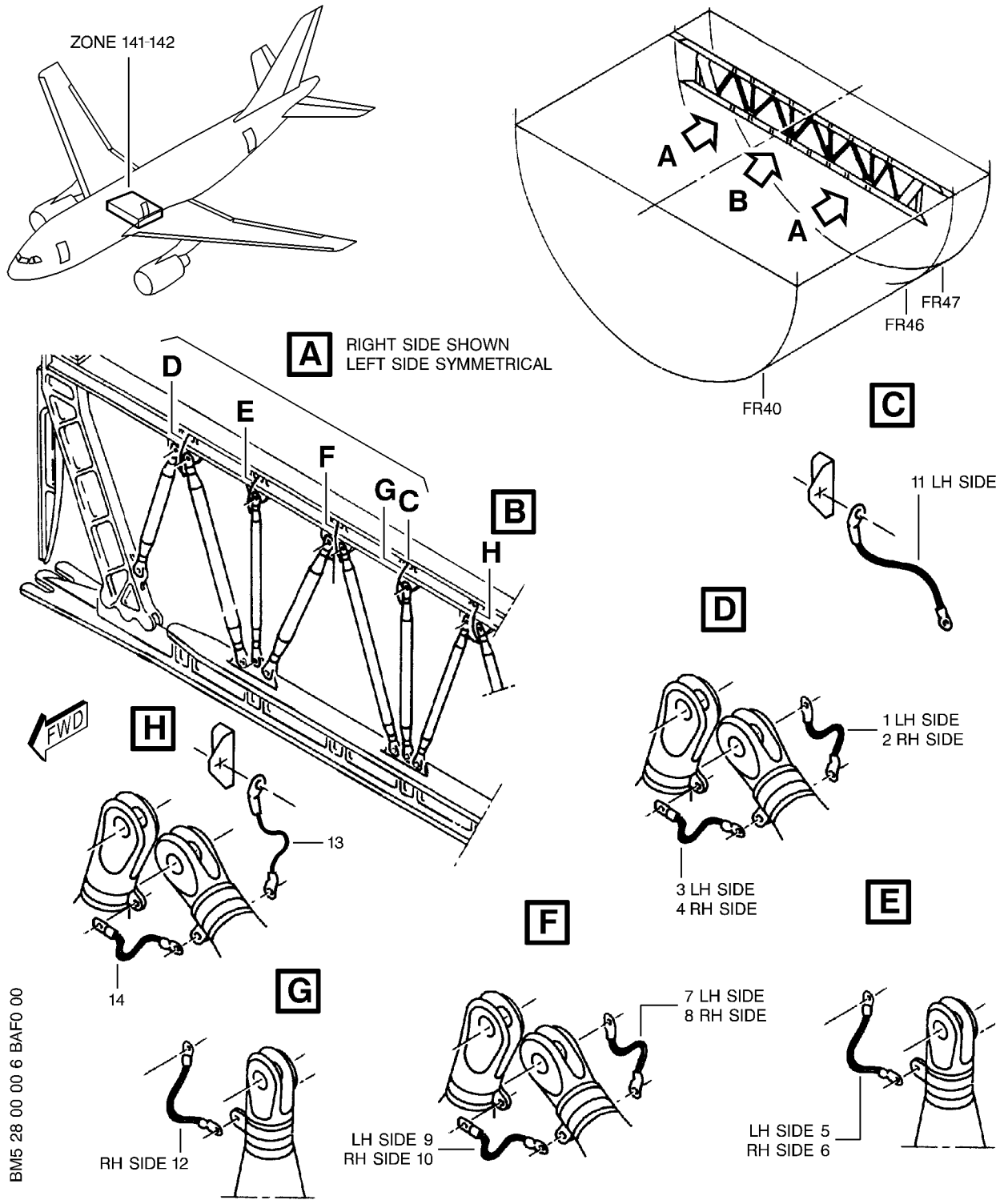


Box Structure Assy at FR45
Figure 669

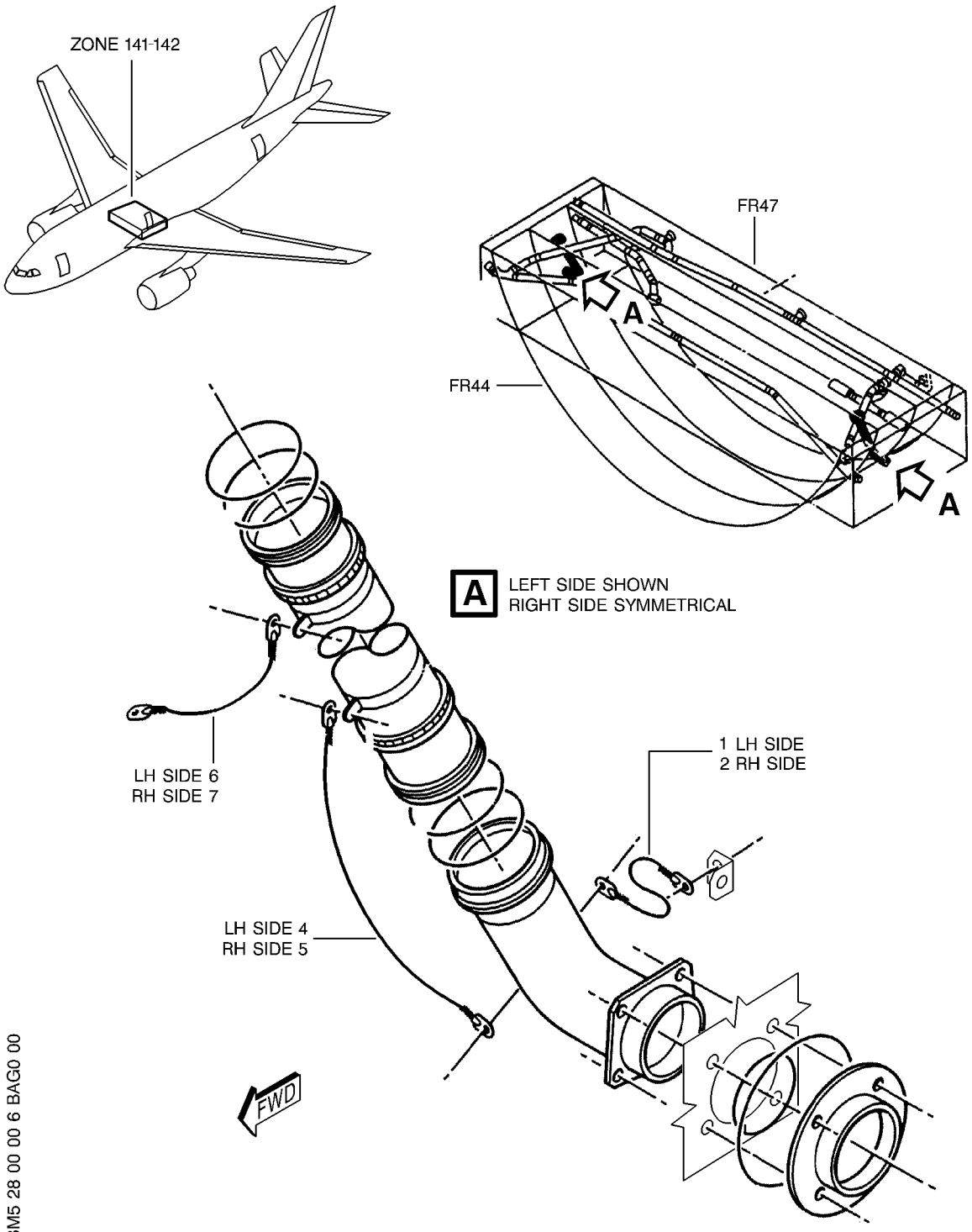
(Ref. Fig. 670)
(Ref. Fig. 671)
(Ref. Fig. 672)
(Ref. Fig. 673)
(Ref. Fig. 674)
(Ref. Fig. 675)
(Ref. Fig. 676)
(Ref. Fig. 677)
(Ref. Fig. 678)
(Ref. Fig. 679)
(Ref. Fig. 680)
(Ref. Fig. 681)
(Ref. Fig. 682)
(Ref. Fig. 683)
(Ref. Fig. 684)
(Ref. Fig. 685)
(Ref. Fig. 686)
(Ref. Fig. 687)
(Ref. Fig. 688)
(Ref. Fig. 689)
(Ref. Fig. 690)
(Ref. Fig. 691)
(Ref. Fig. 692)
(Ref. Fig. 693)
(Ref. Fig. 694)
(Ref. Fig. 695)
(Ref. Fig. 696)
(Ref. Fig. 697)
(Ref. Fig. 698)
(Ref. Fig. 699)
(Ref. Fig. A600)
(Ref. Fig. A601)

R **ON A/C 001-100,

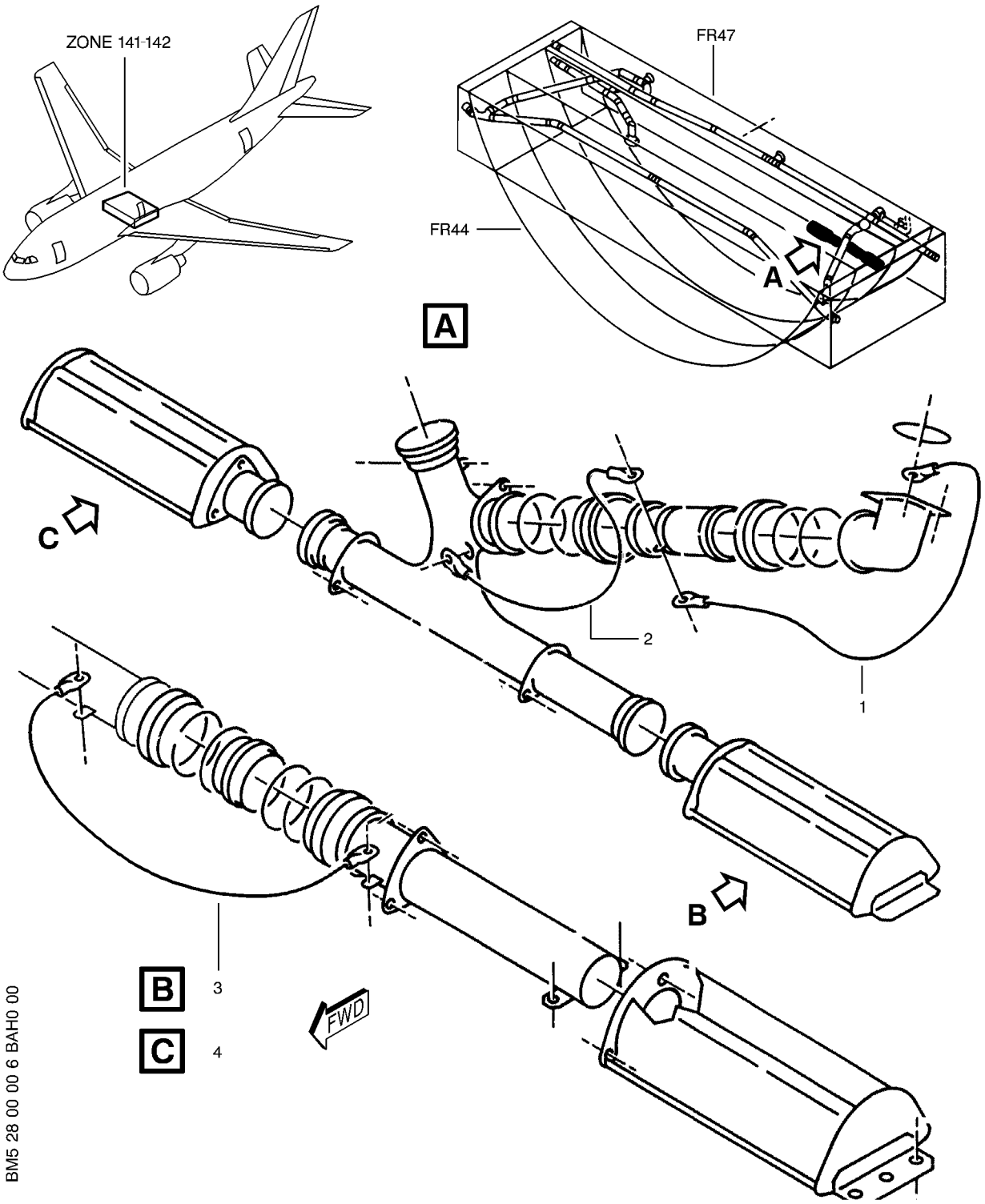
5. Not applicable.



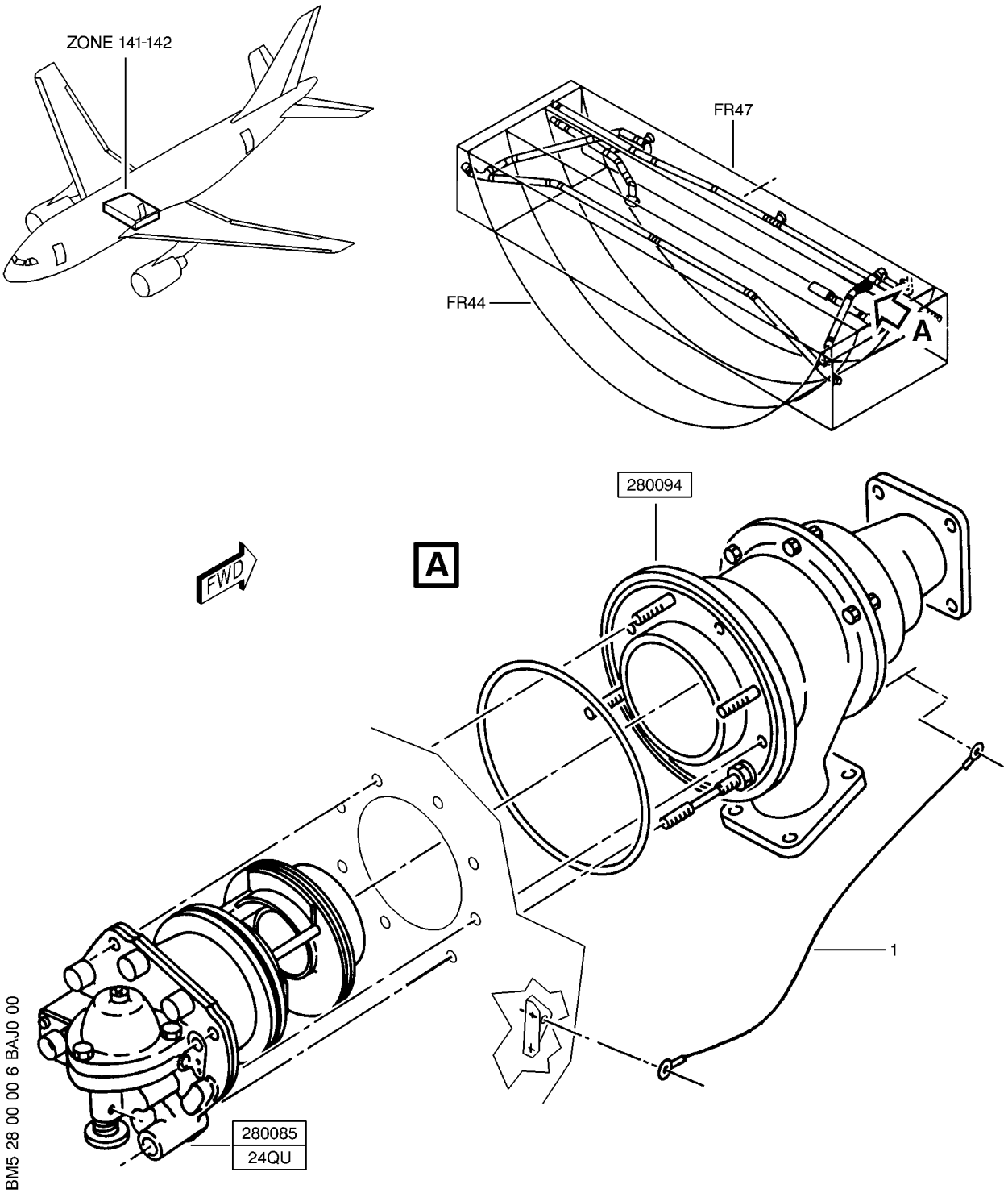
Box Structure Assy at FR46
Figure 670



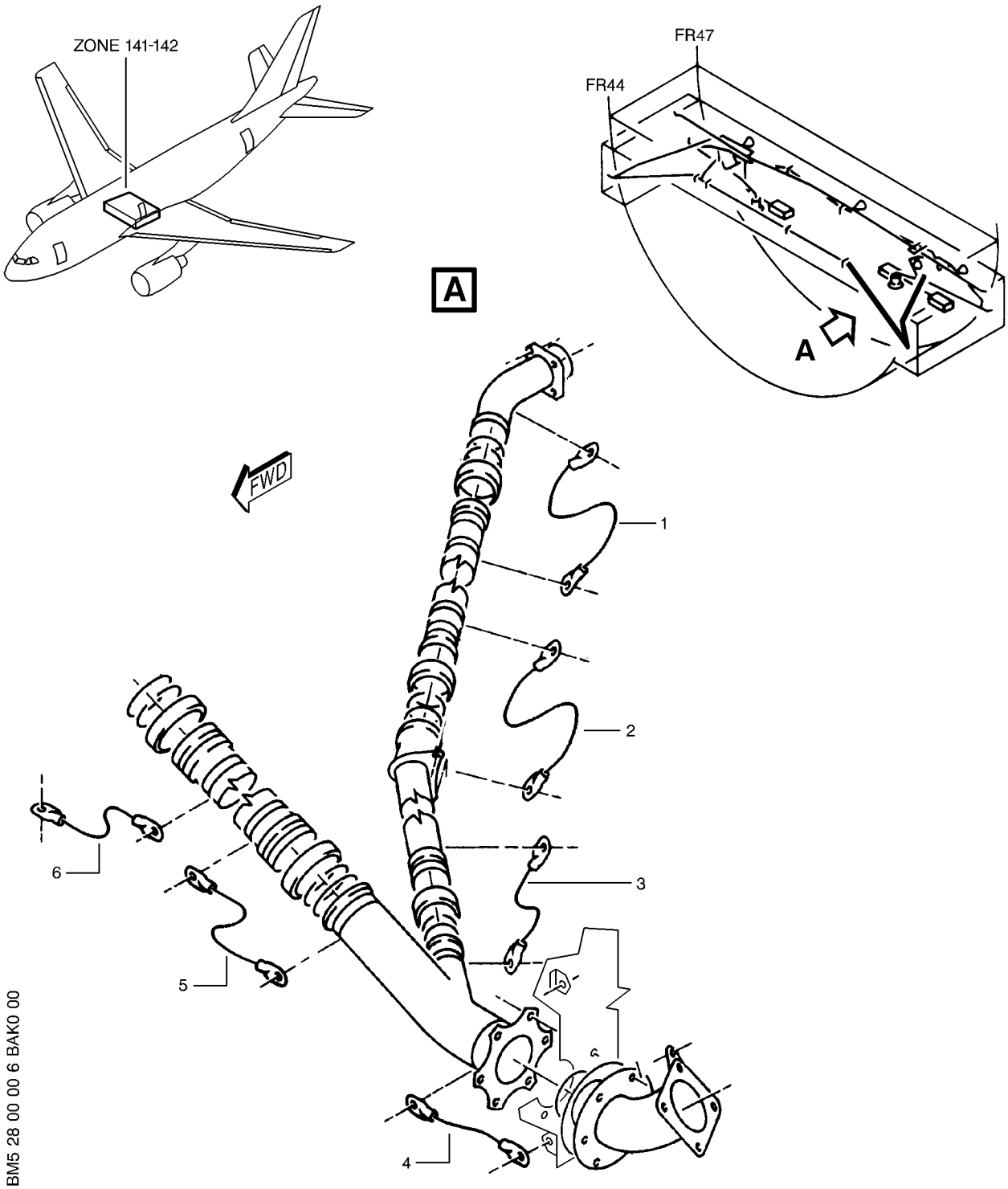
Overpressure System
Figure 671



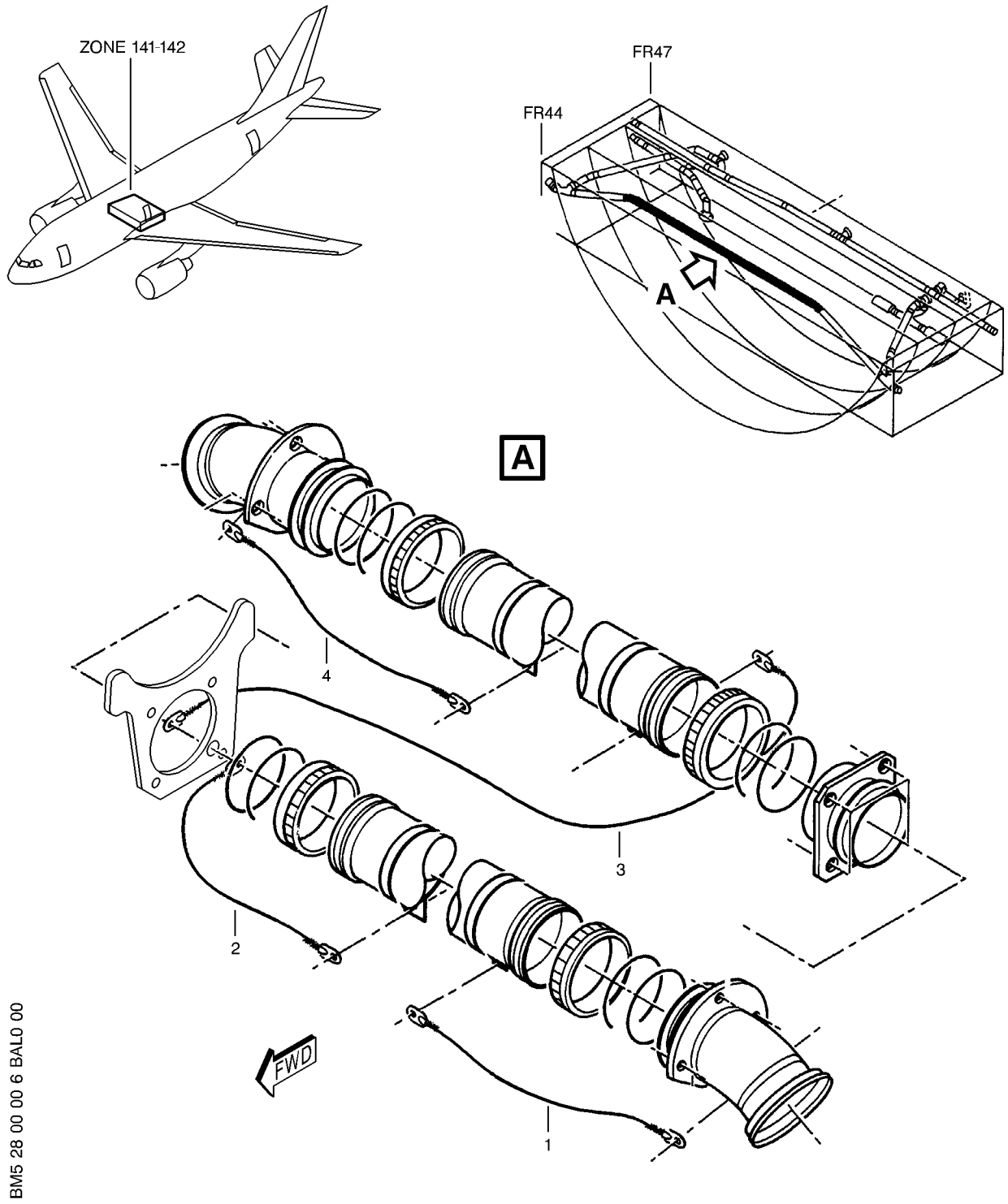
Refuel/Defuel System
Figure 672



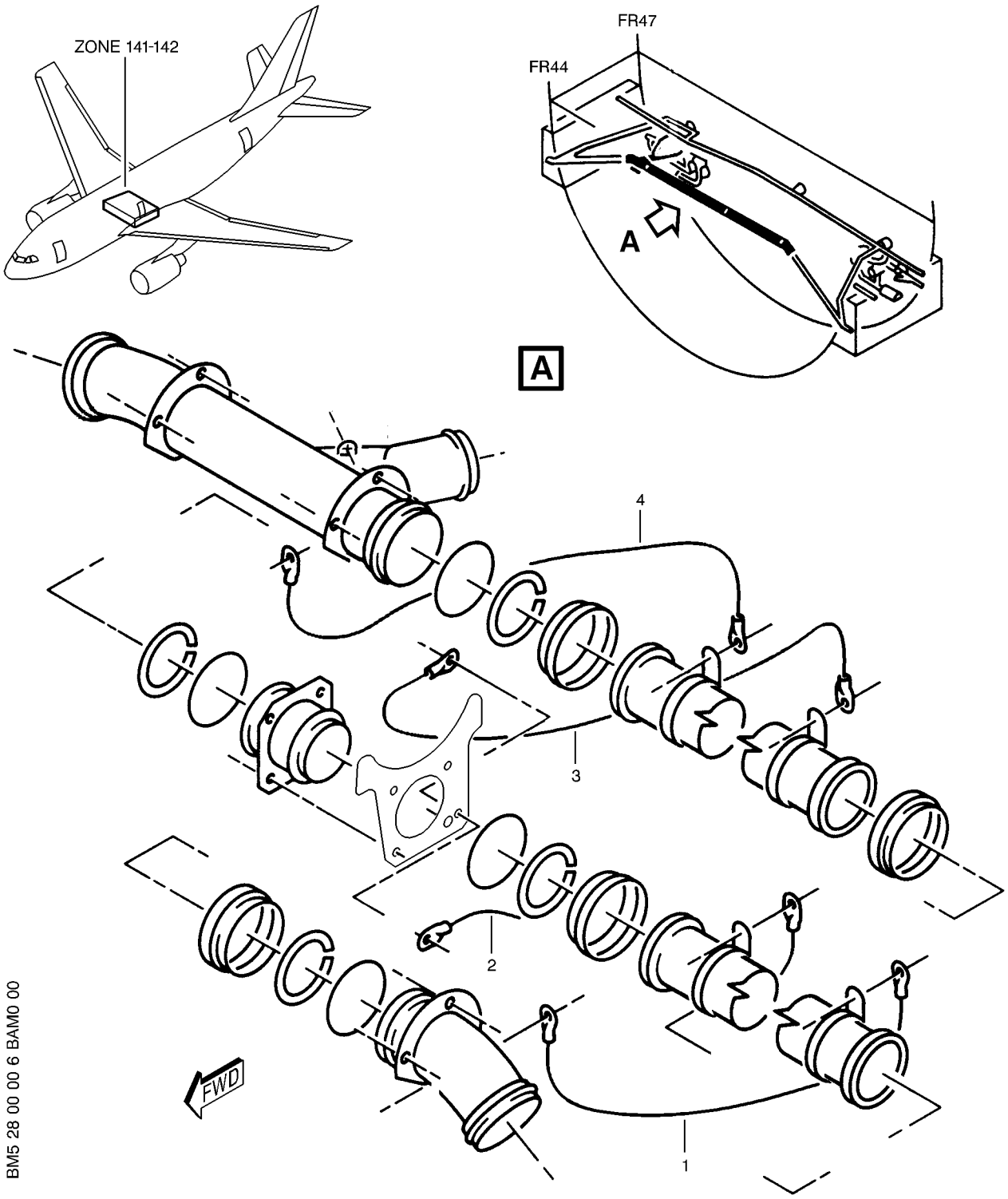
Refuel/Defuel System
Figure 673



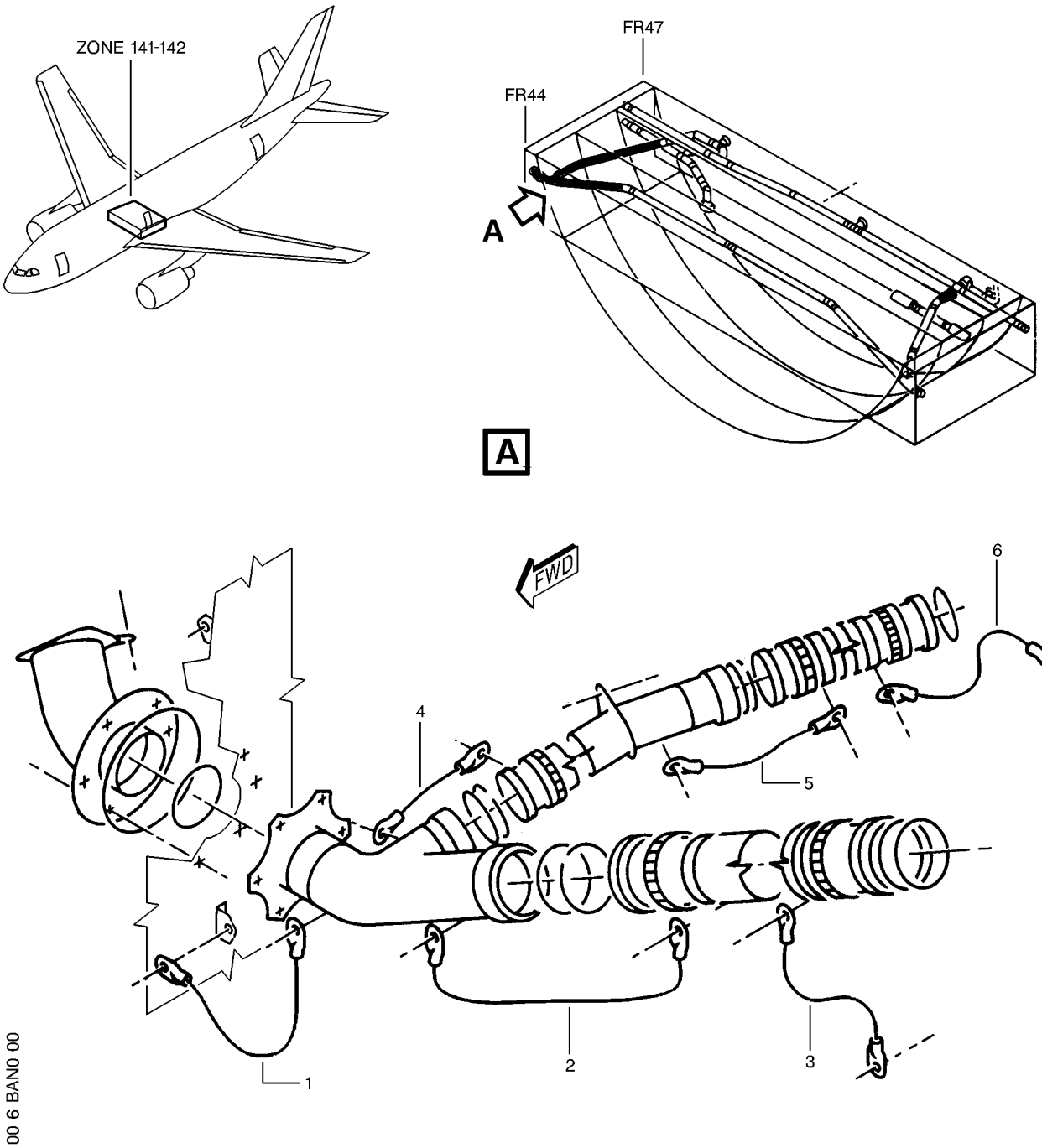
Refuel/Defuel System
Figure 674



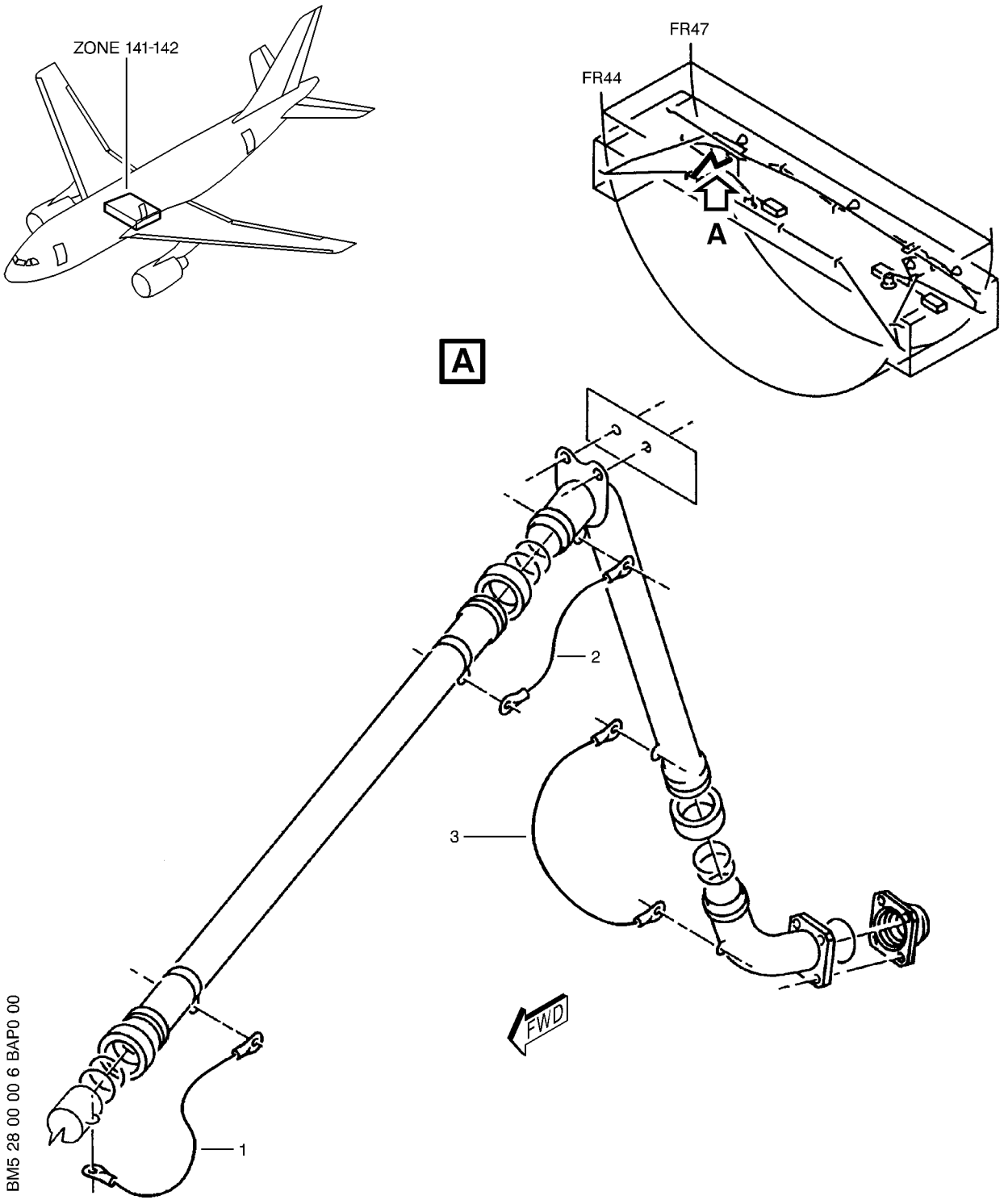
Refuel/Defuel System
Figure 675



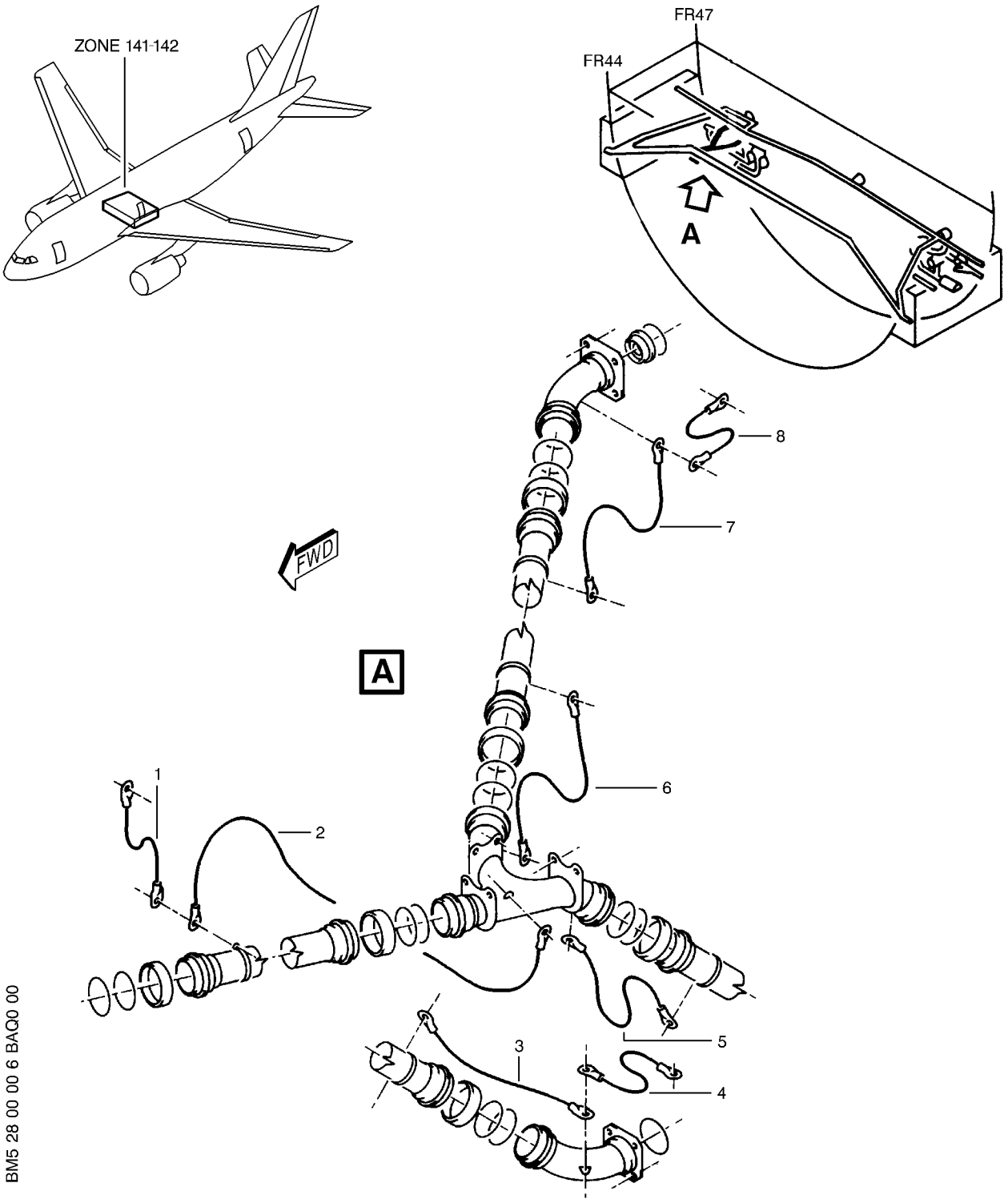
Refuel/Defuel System
Figure 676



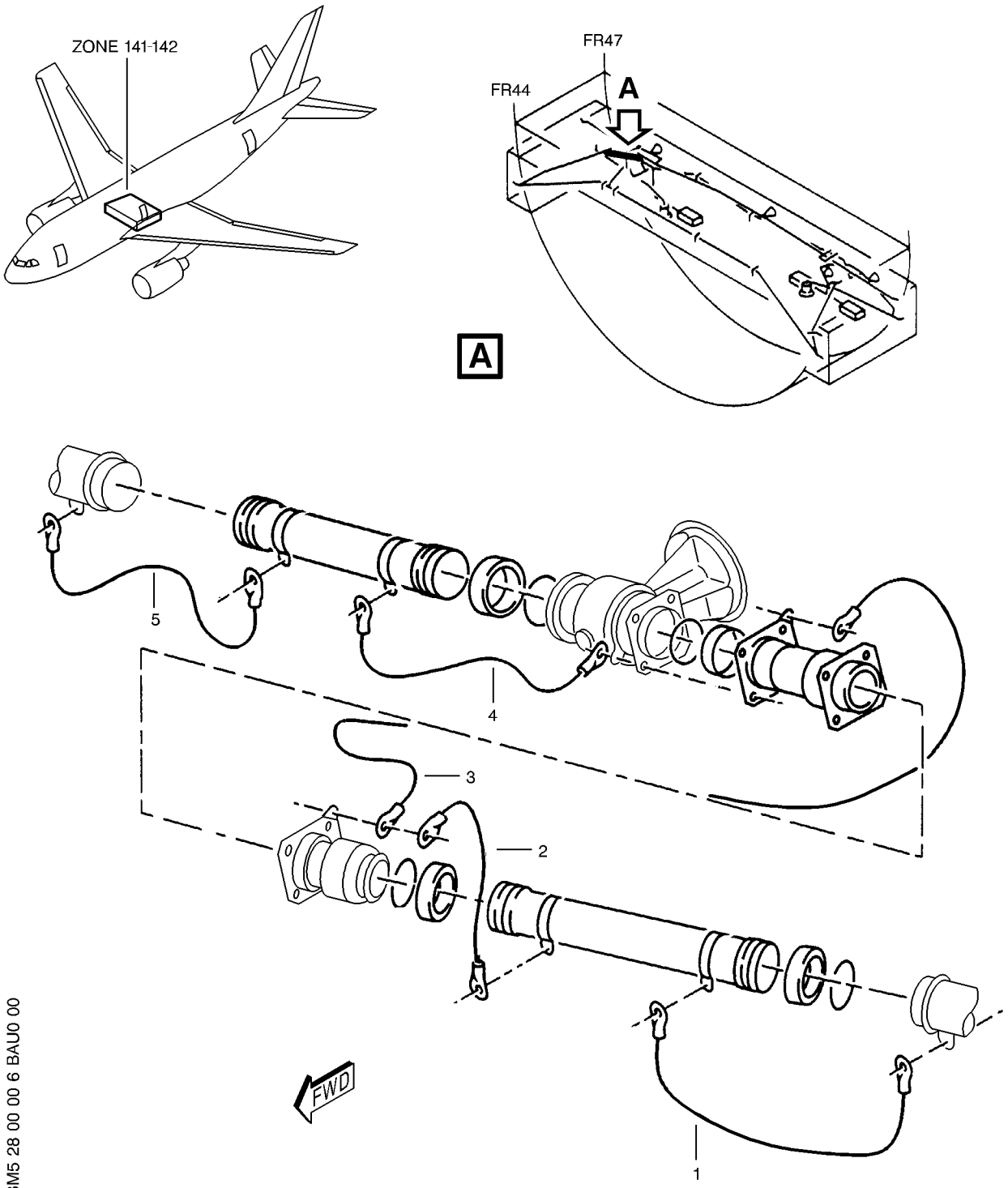
Refuel/Defuel System
Figure 677



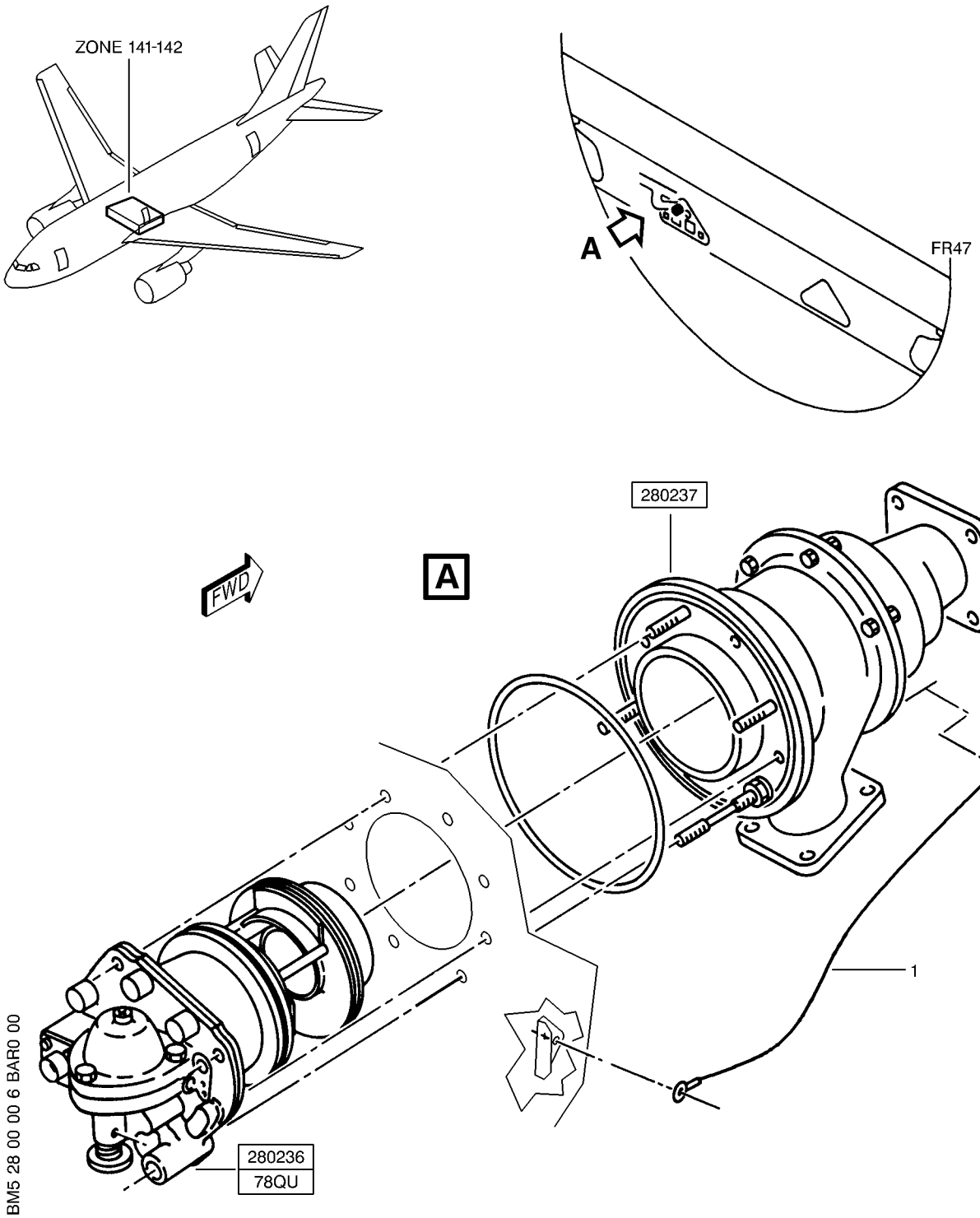
Refuel/Defuel System
Figure 678



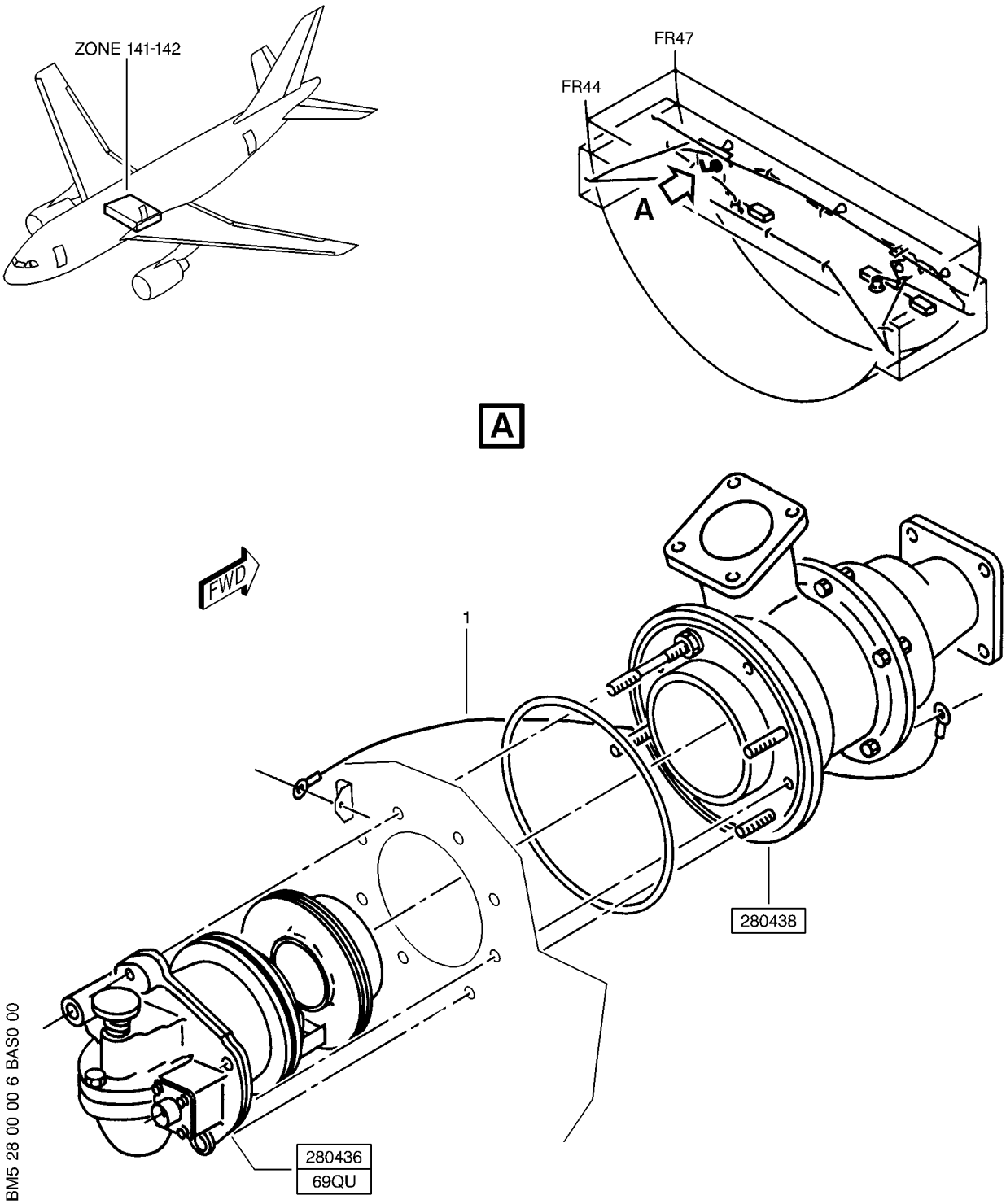
Refuel/Defuel System
Figure 679



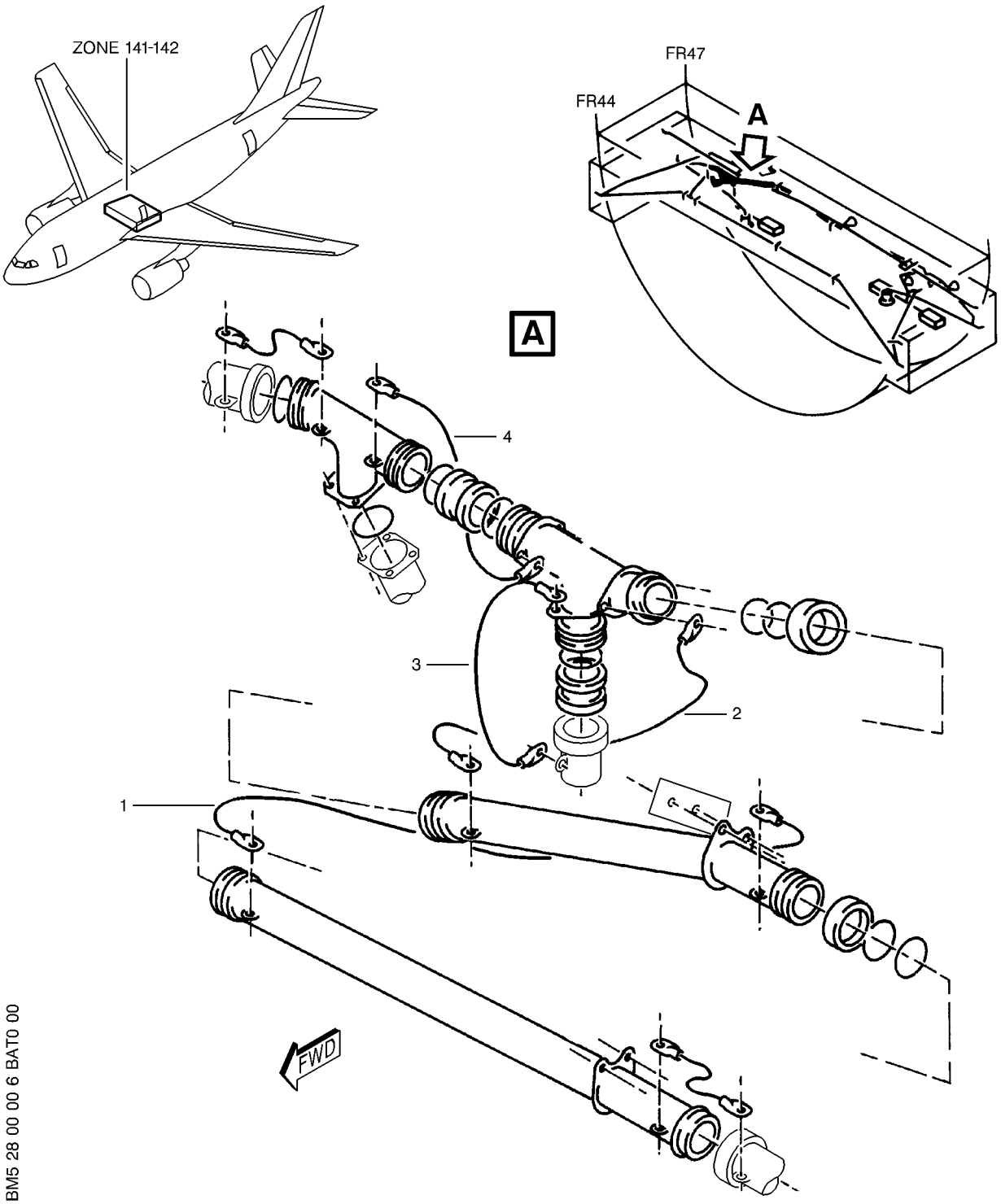
Refuel/Defuel System
Figure 680



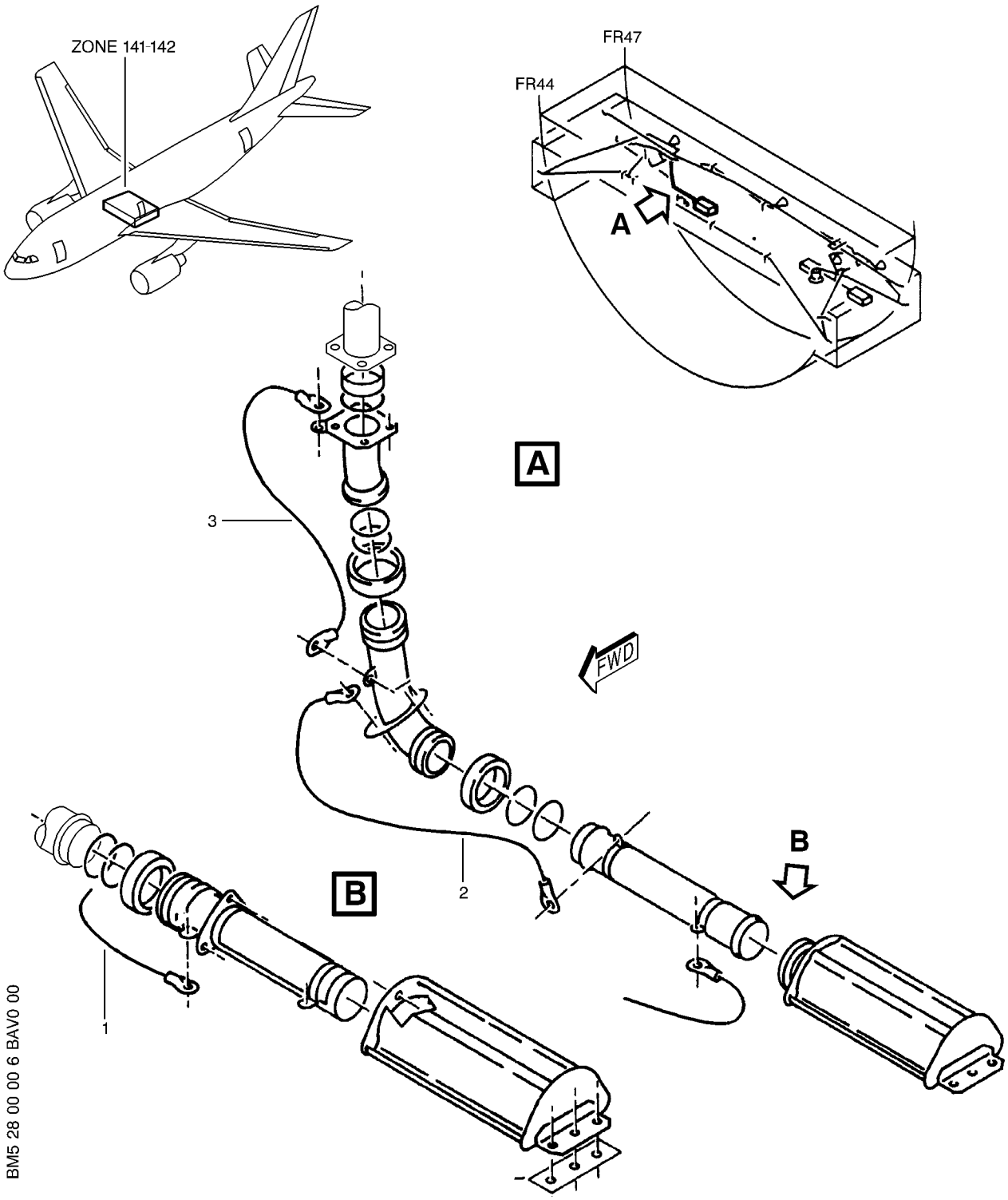
Refuel/Defuel System
Figure 681



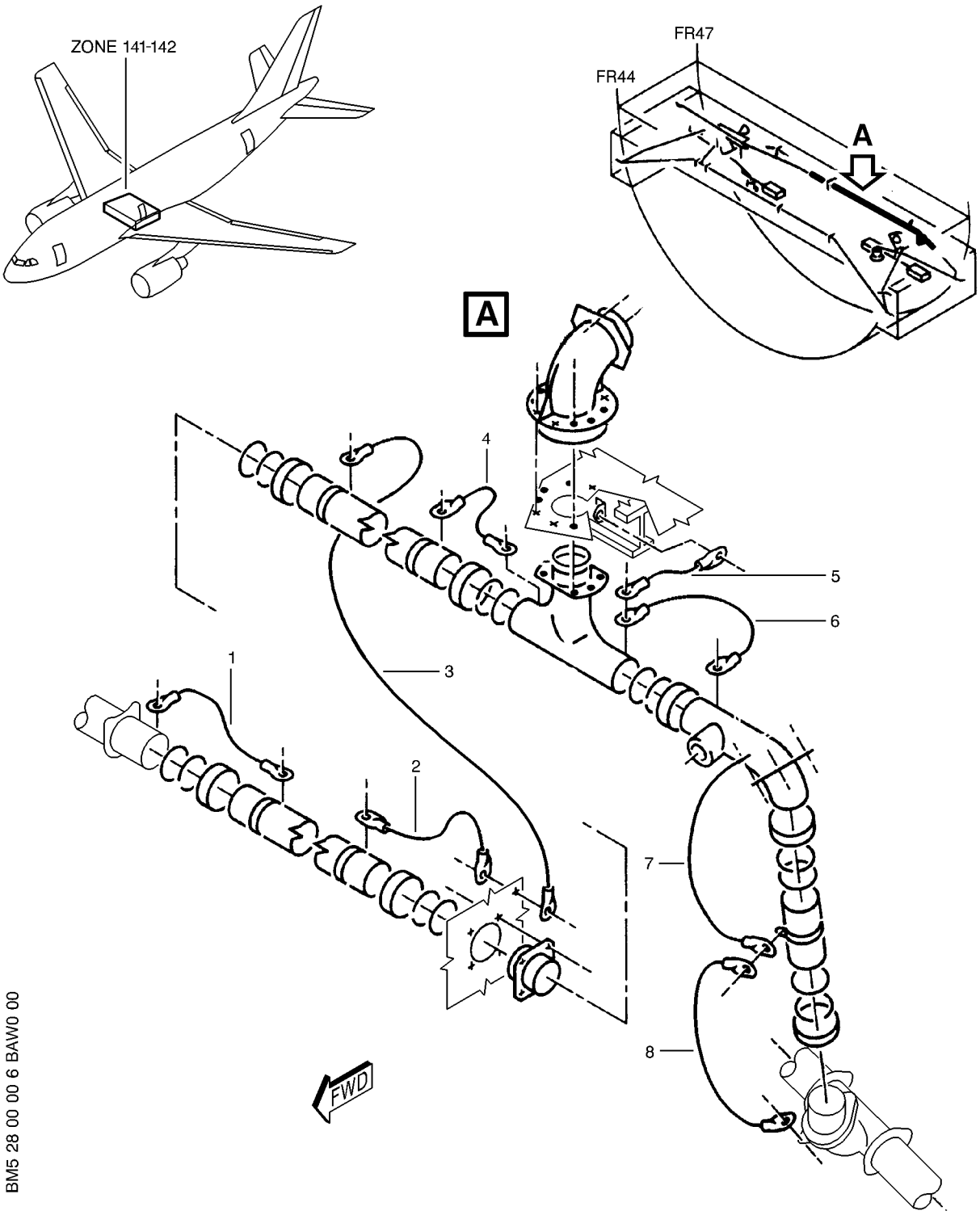
Refuel/Defuel System
Figure 682



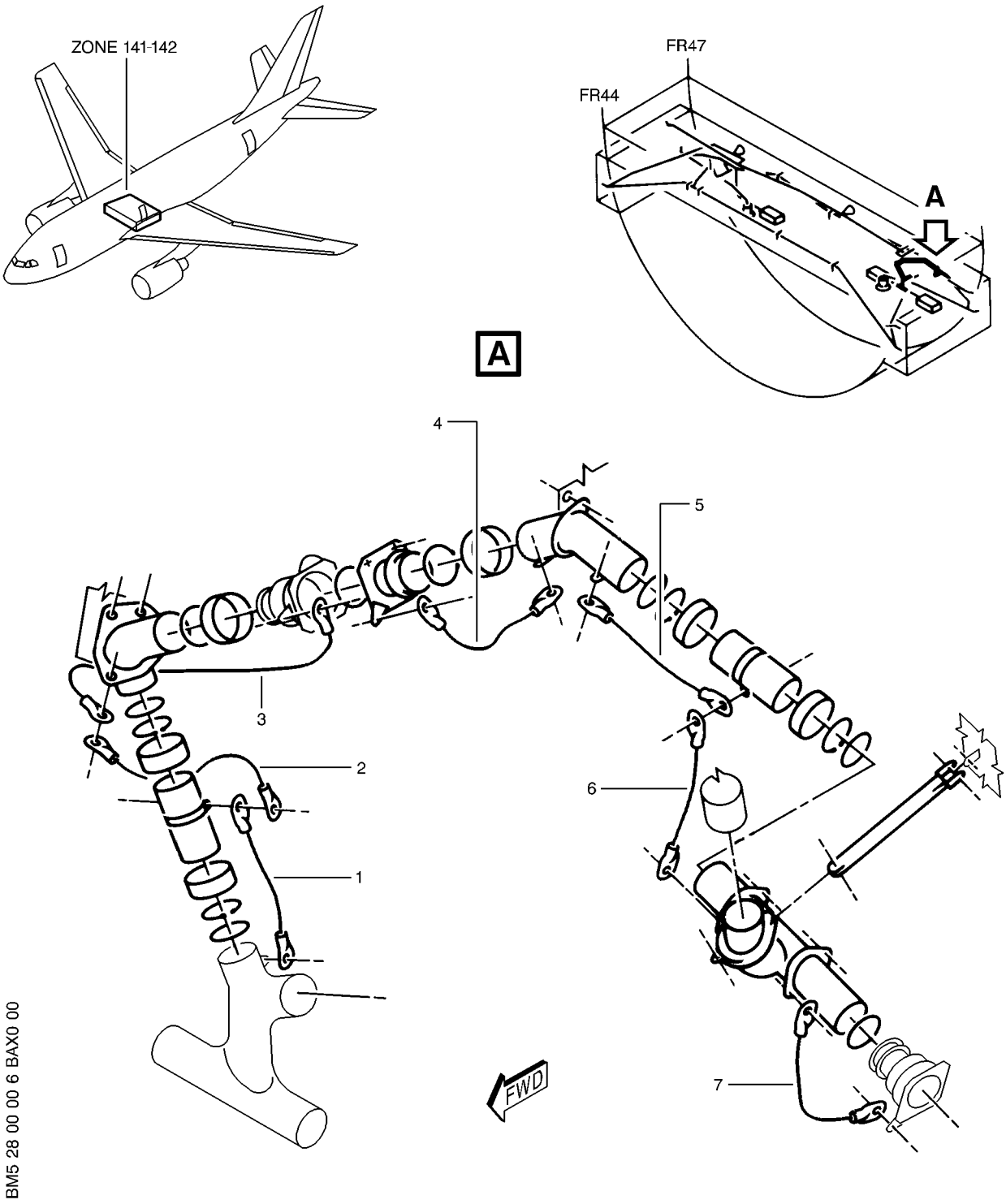
Trim Tank System
Figure 683



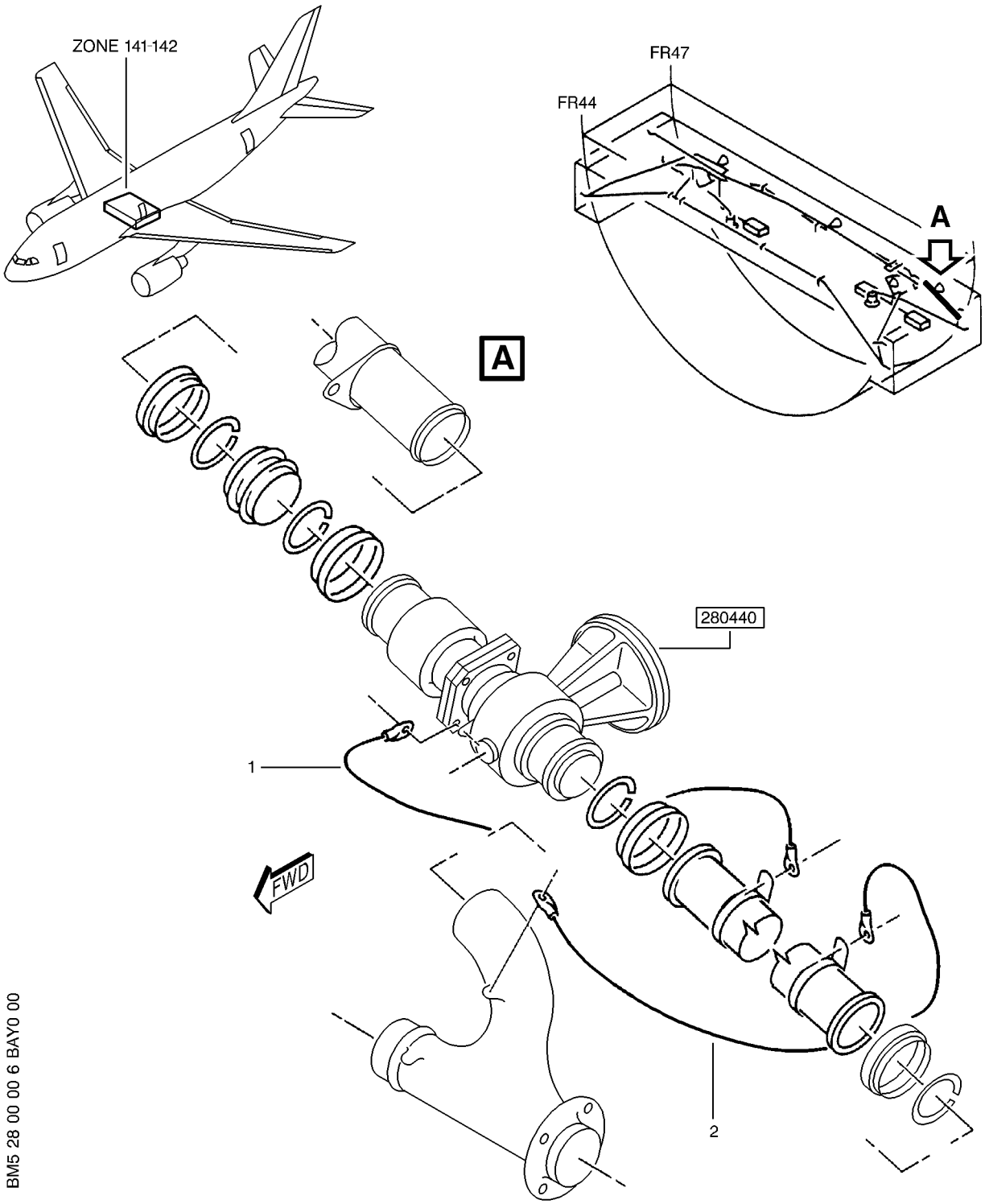
Trim Tank System
Figure 684



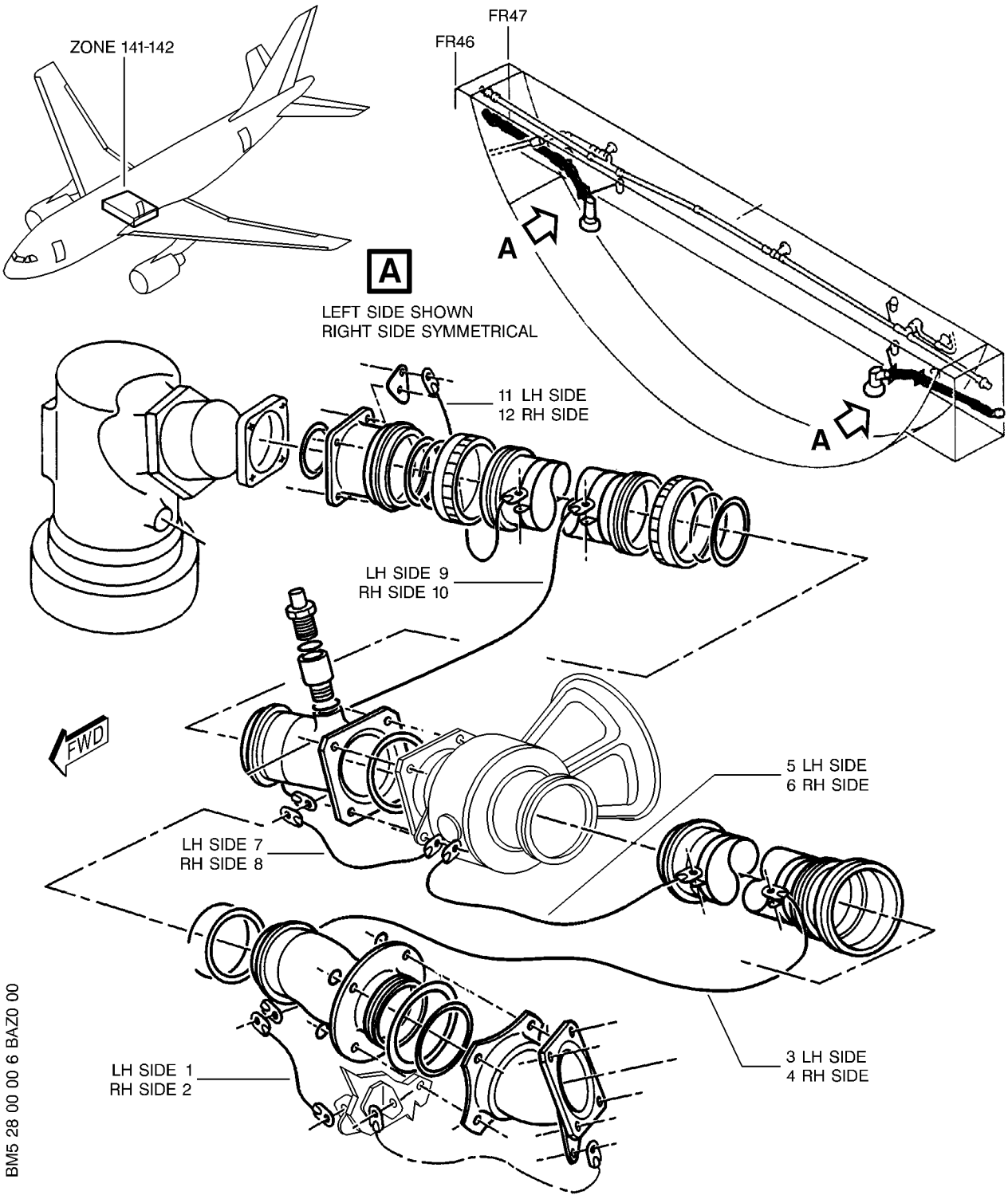
Trim Tank System
Figure 685



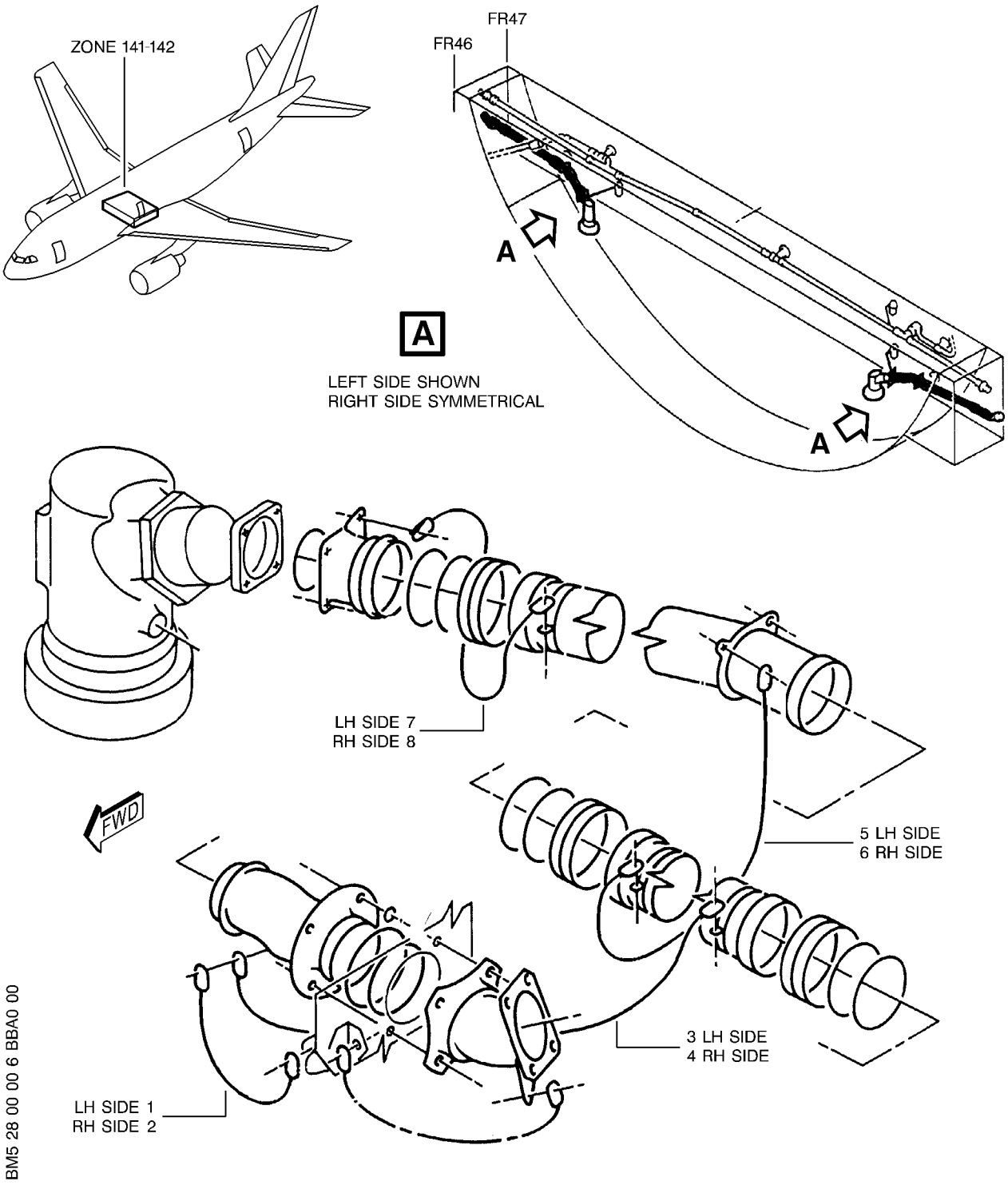
Trim Tank System
Figure 686



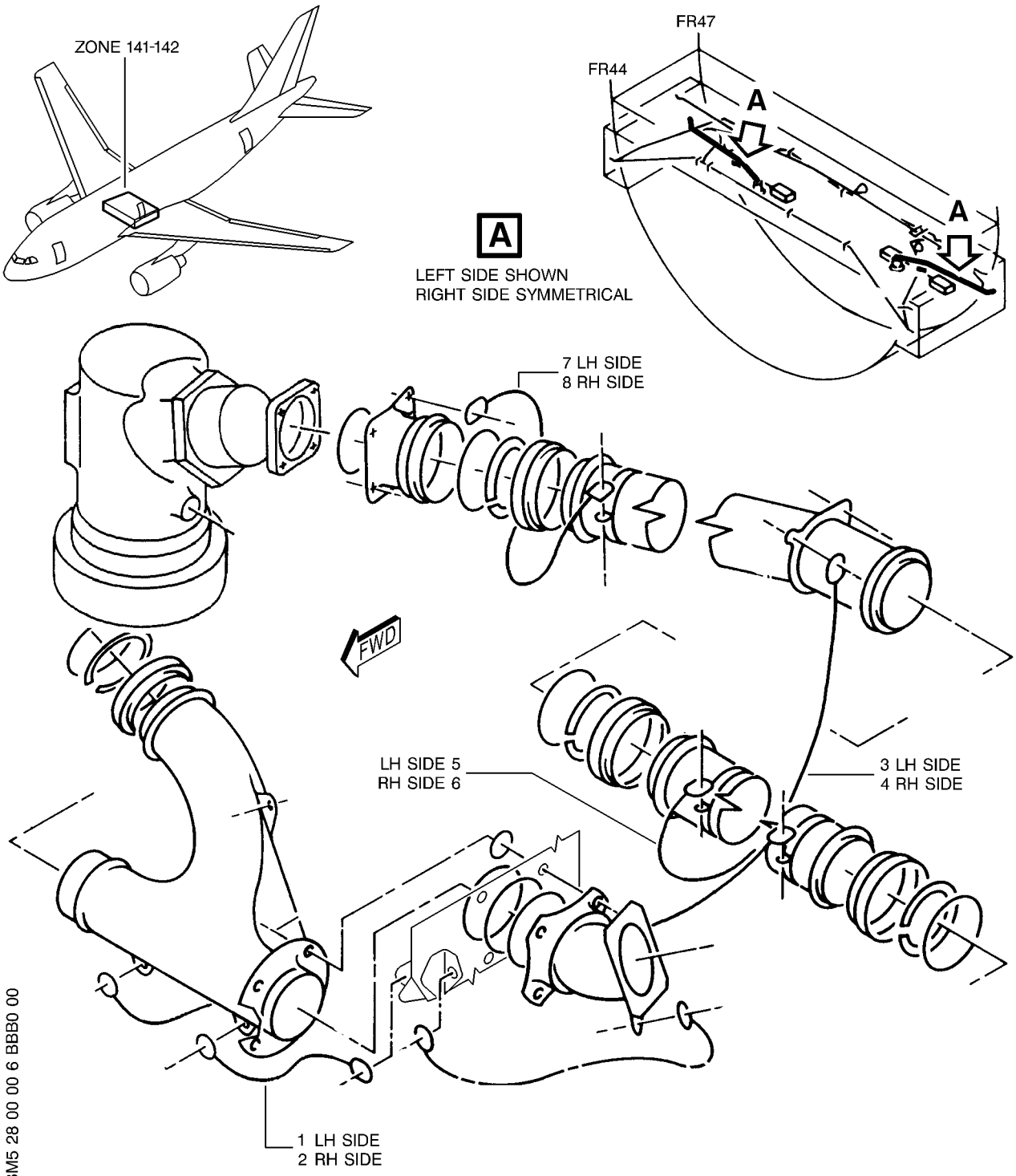
Trim Tank System
Figure 687



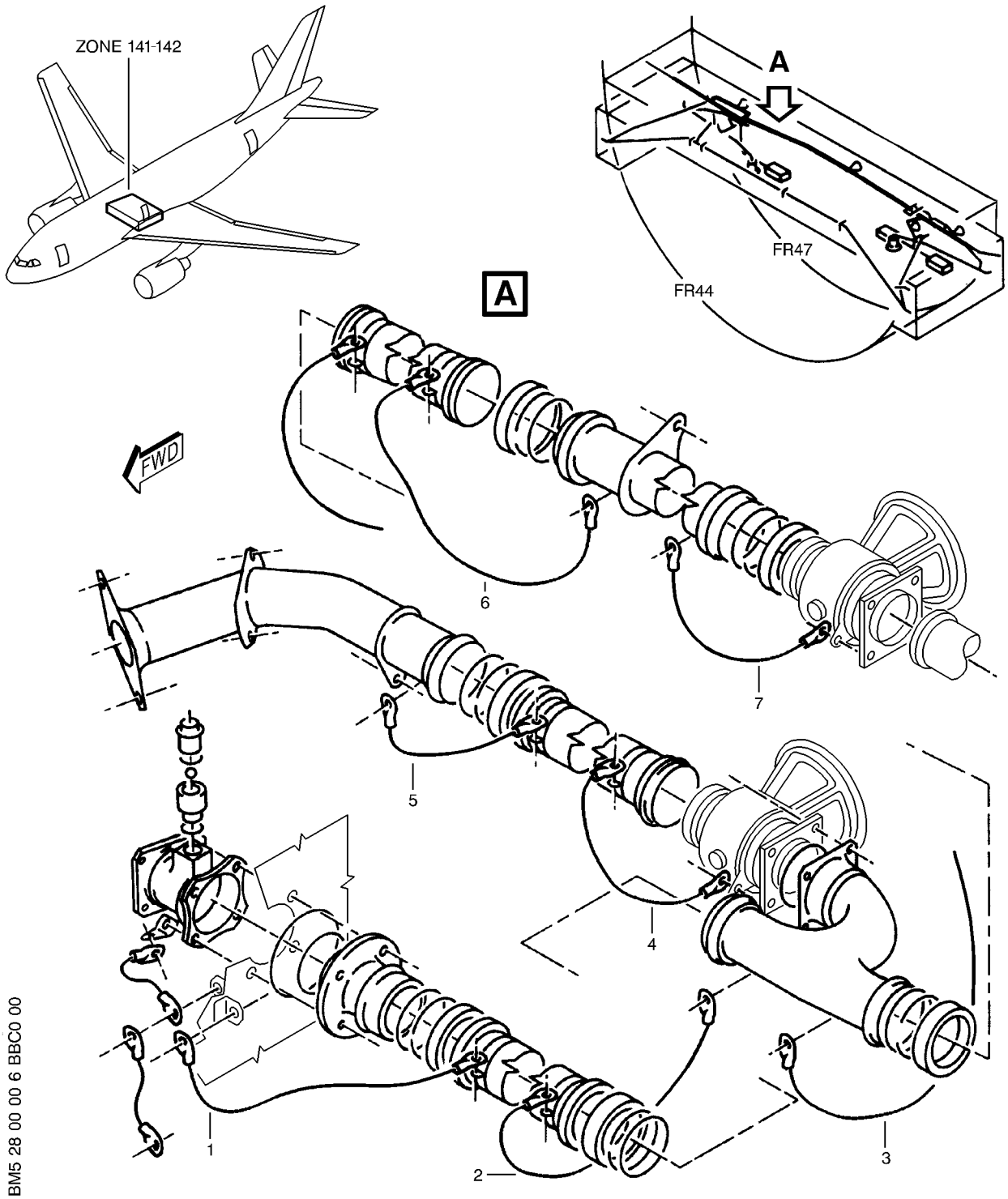
Fuel Pump System
Figure 688



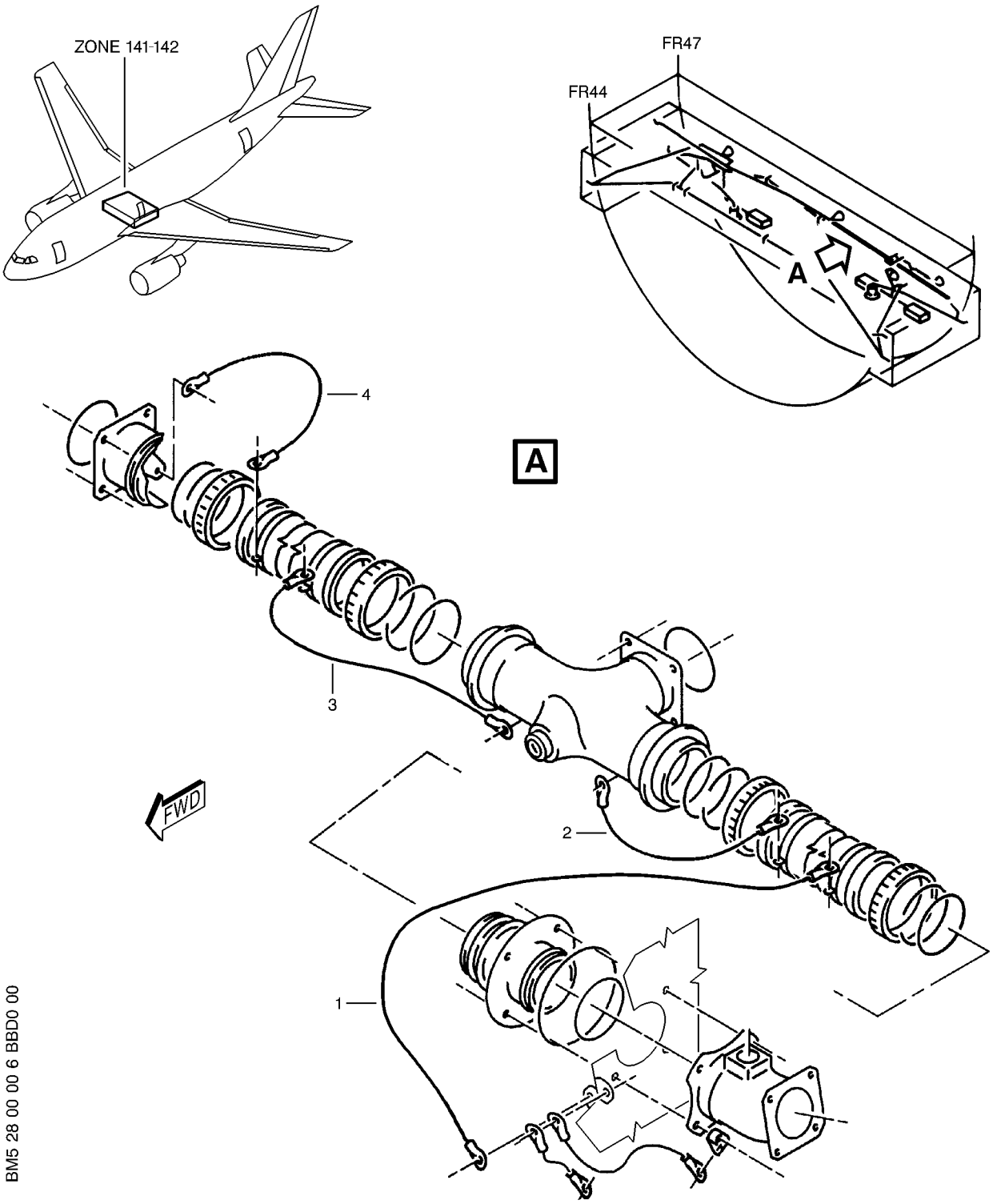
Fuel Pump System
Figure 689



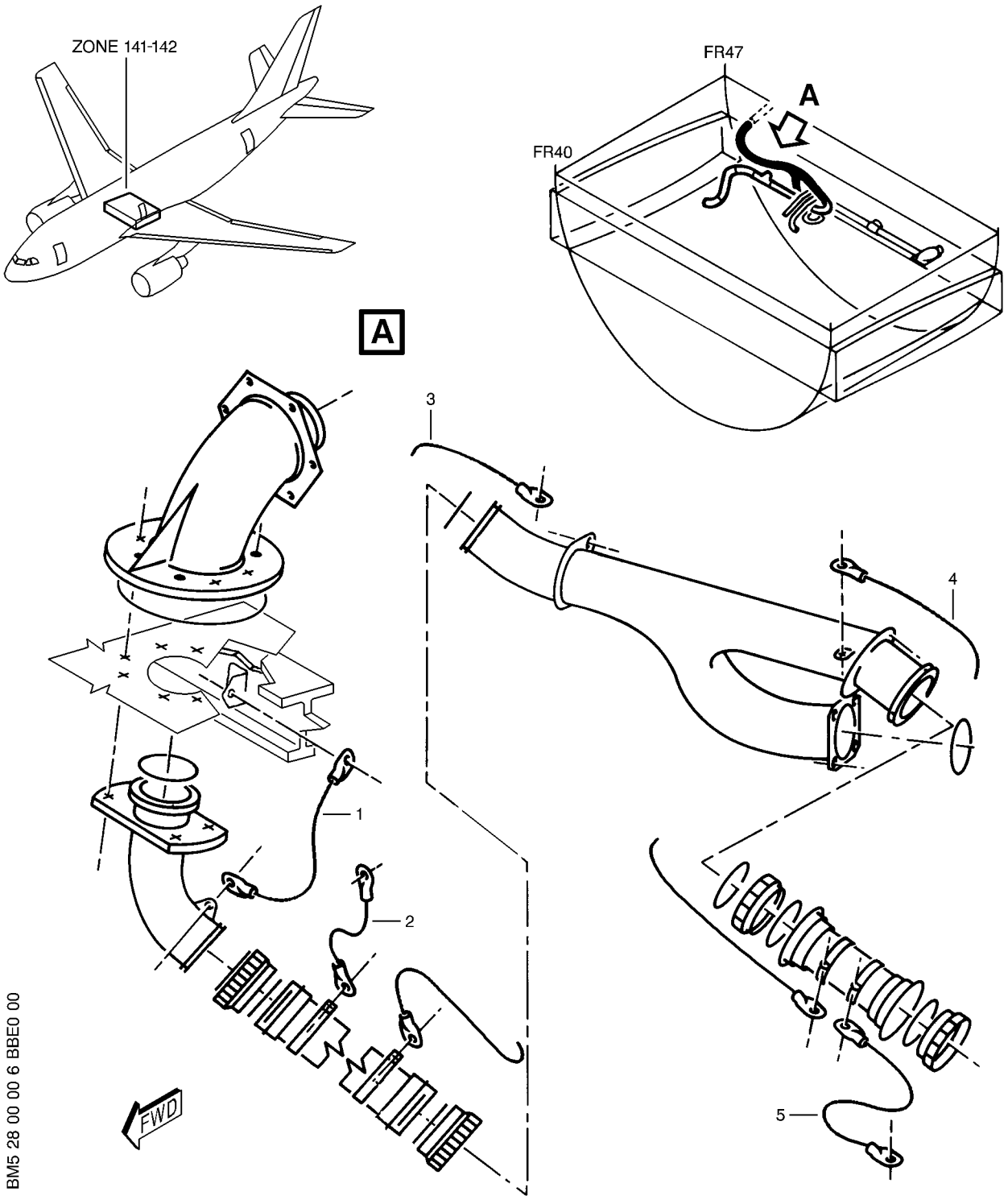
Fuel Pump System
Figure 690



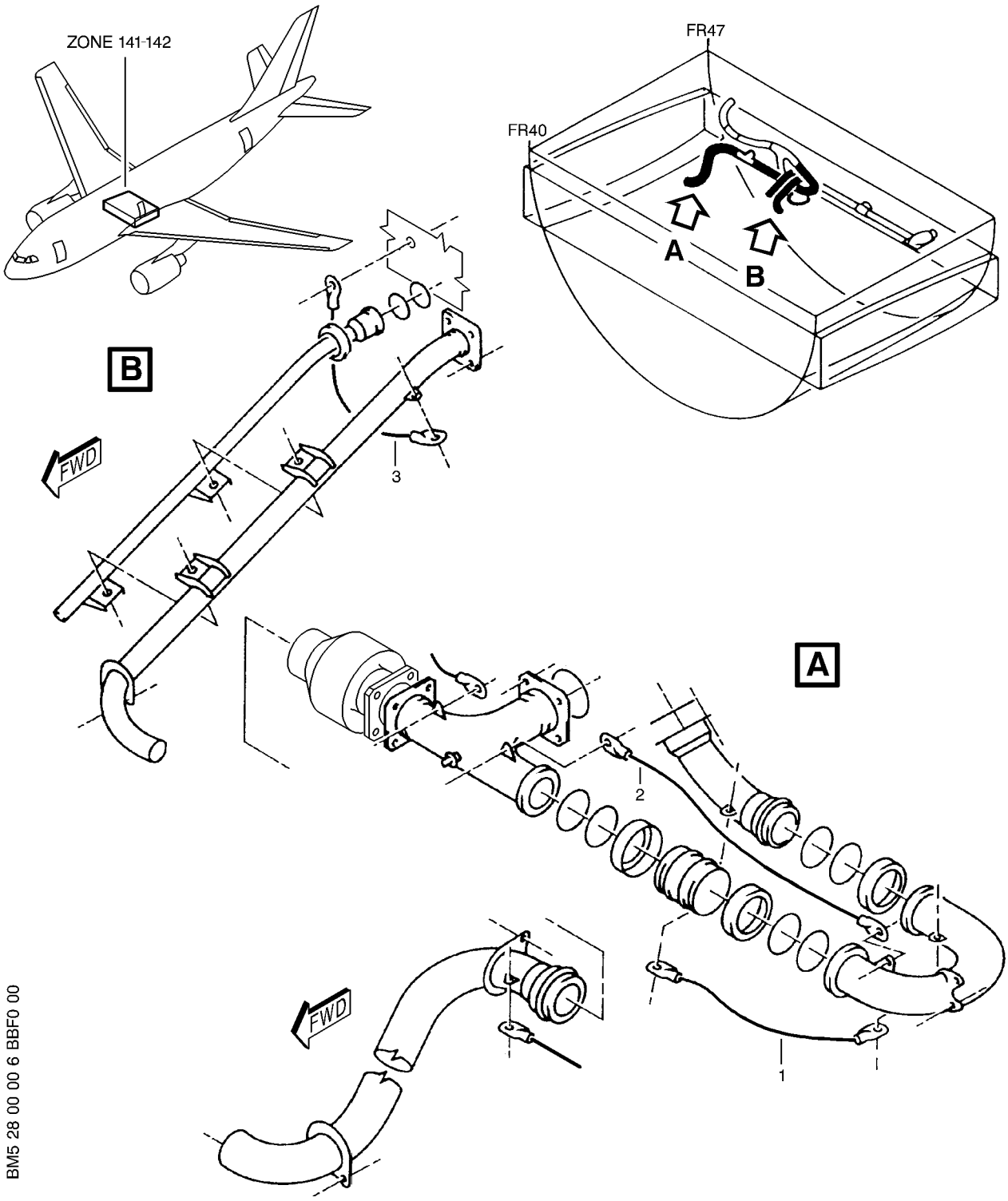
Crossfeed System
Figure 691



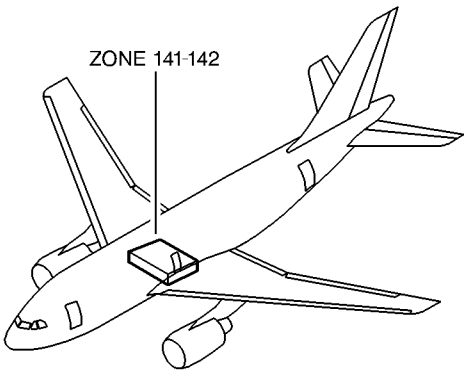
Crossfeed System
Figure 692

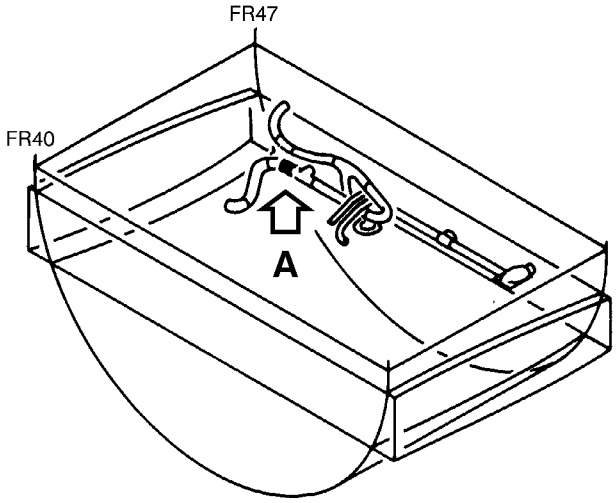


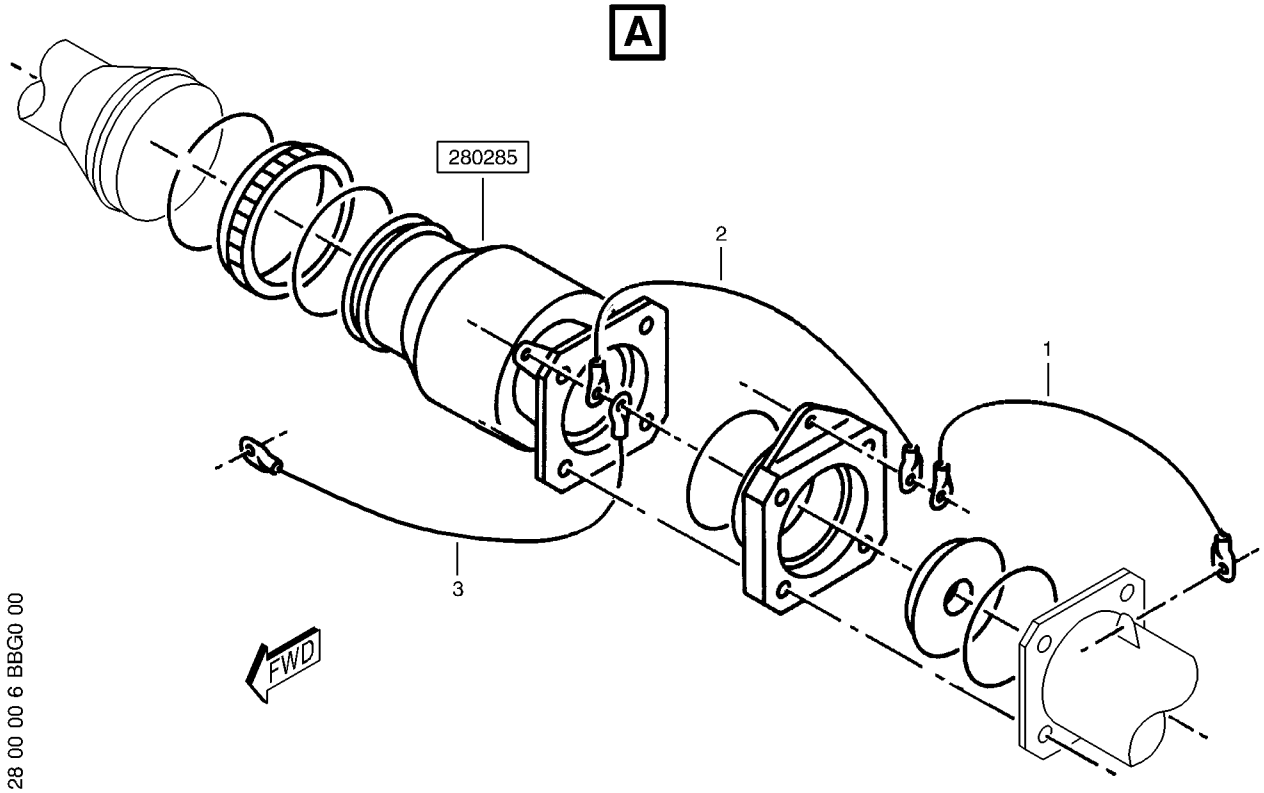
Fuel Transfer System
Figure 693



Fuel Transfer System
Figure 694







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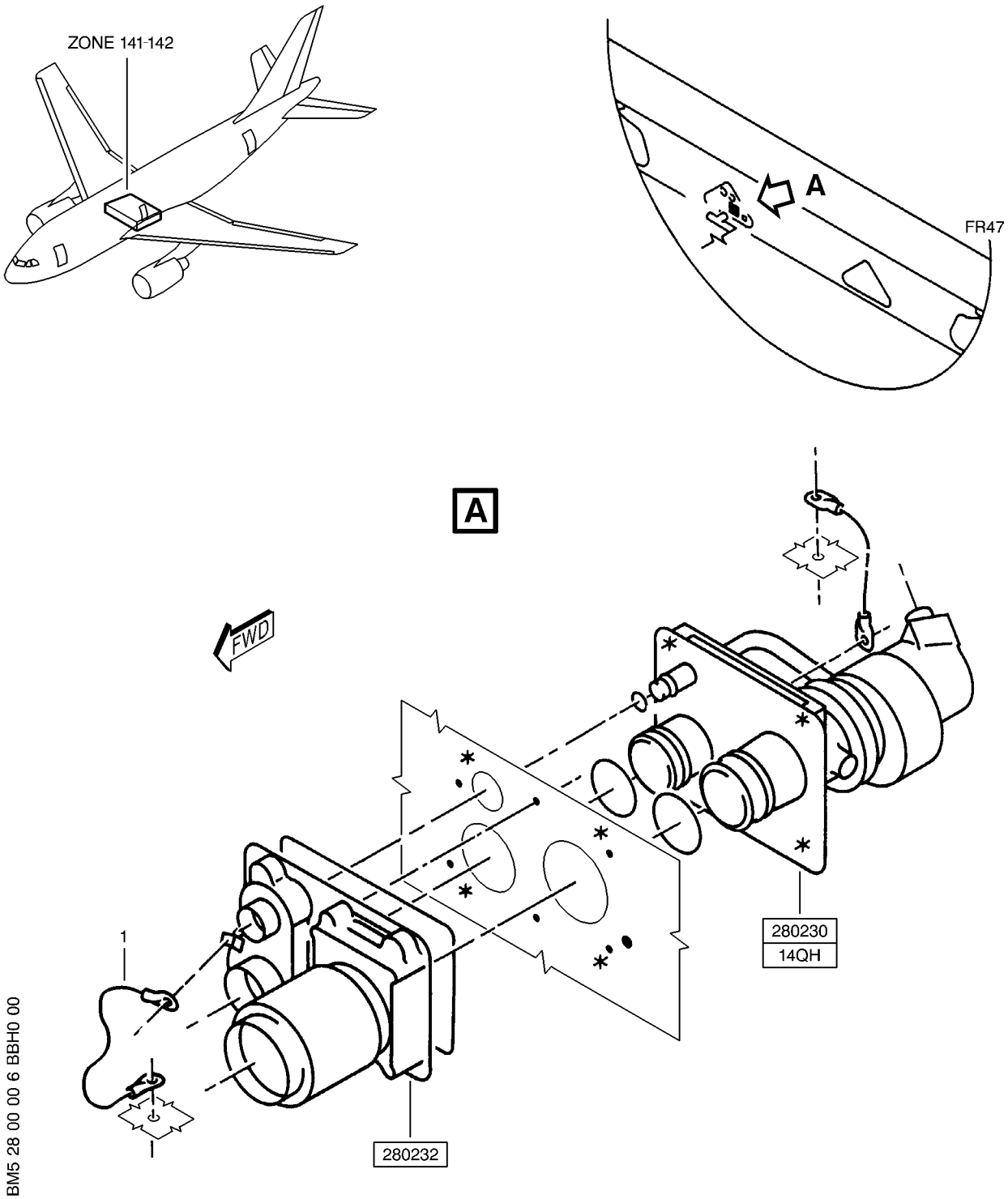
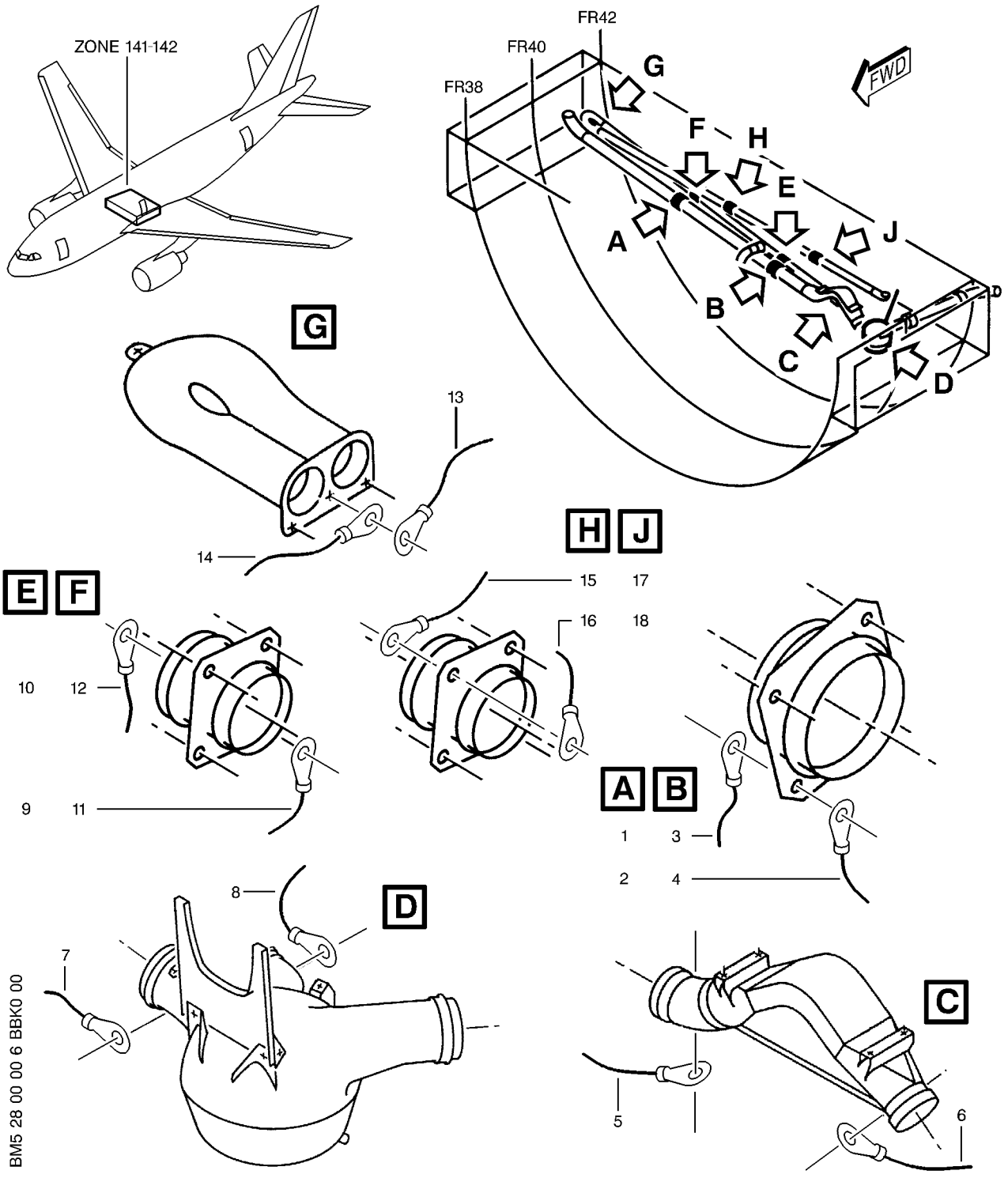
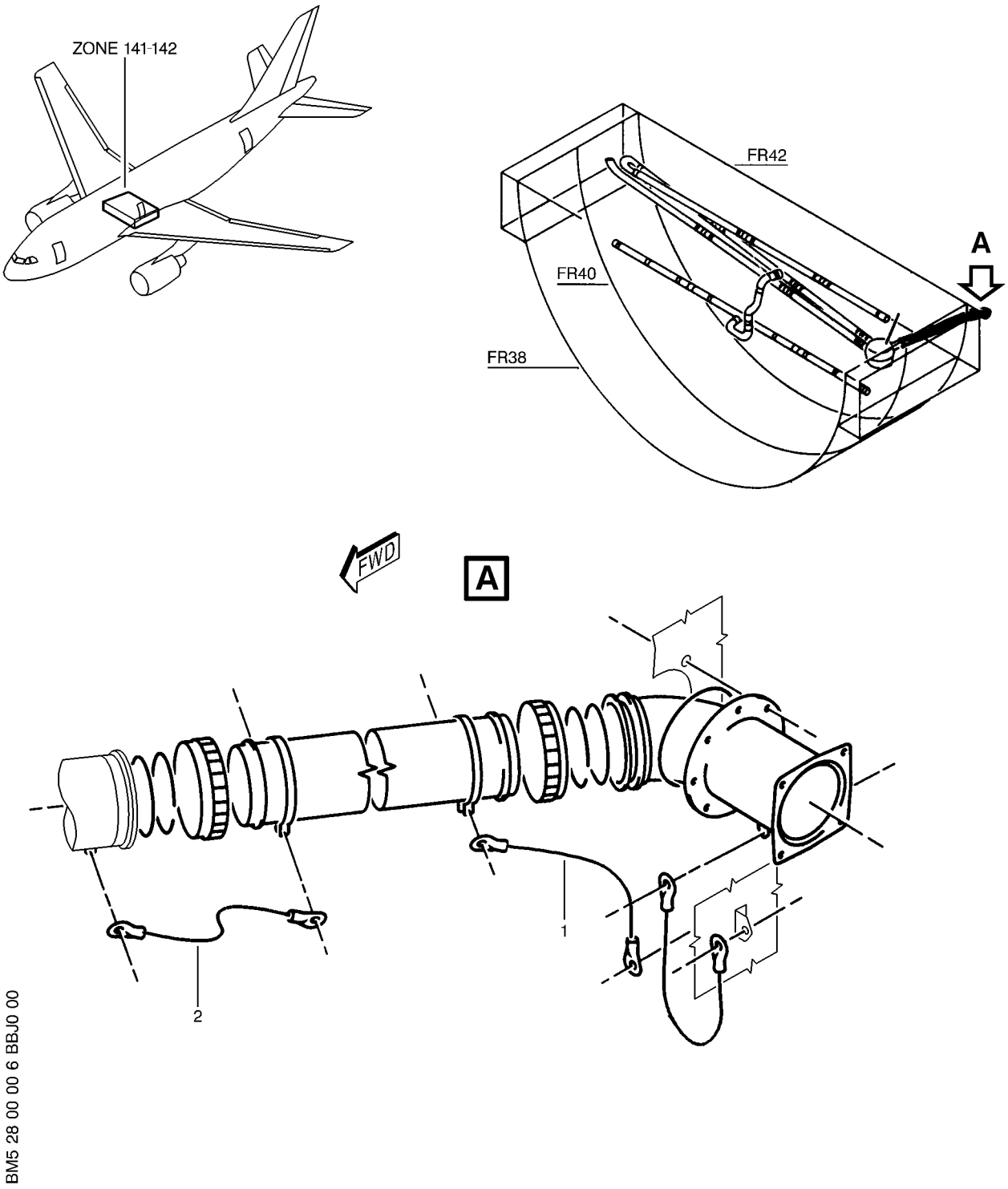
Fuel - Transfer System - Valve
Figure 695



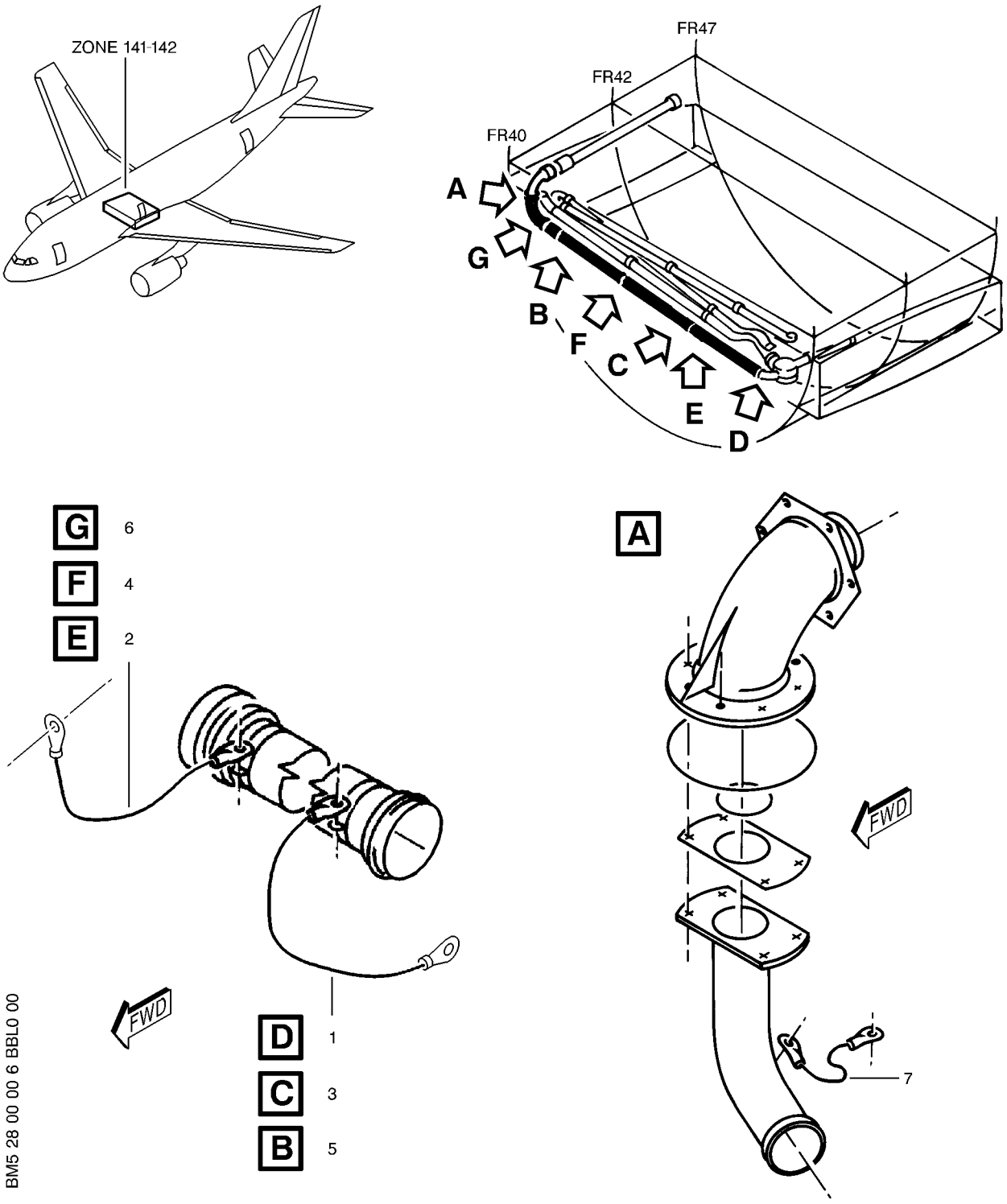
Fuel - Transfer System - Valve
Figure 696



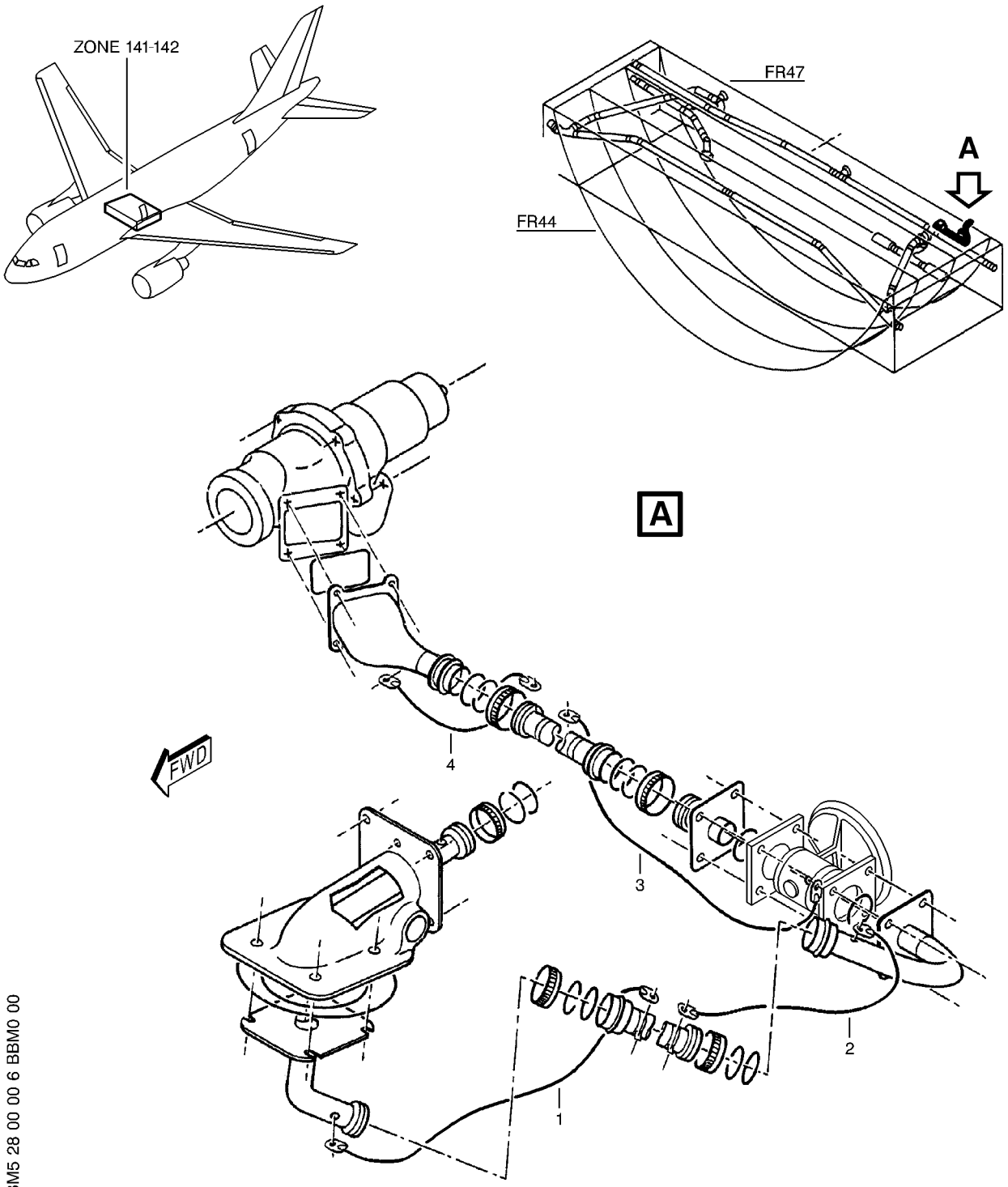
Venting System Connection
Figure 697



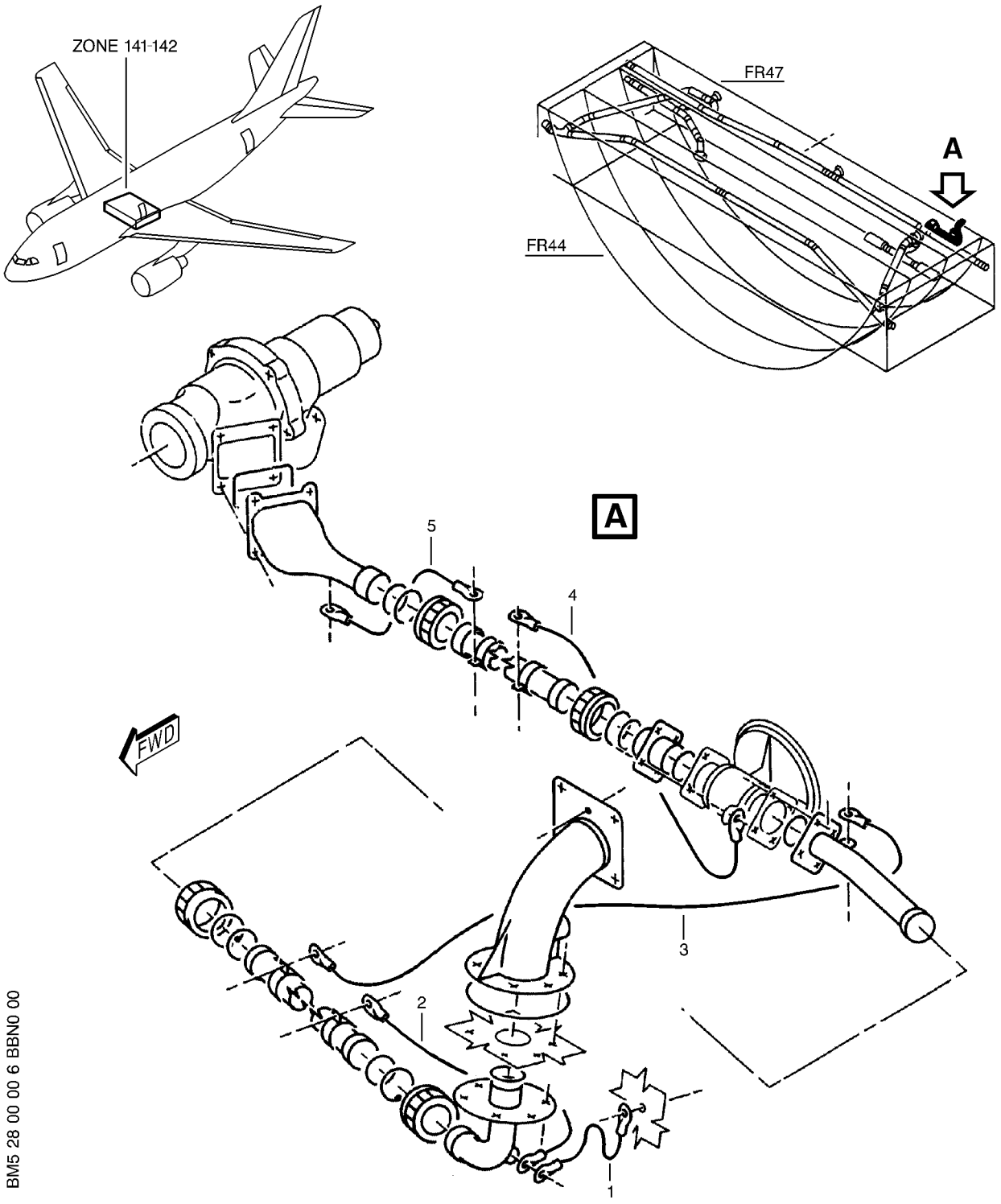
Venting System
Figure 698



Venting System
Figure 699



APU, Fuel Feed System
Figure A600



APU, Fuel Feed System
Figure A601

R **ON A/C 101-200,

5. Procedure for Additional Center Tank(s) (ACT) Bonding Straps

A. Job Set-Up

R **ON A/C 101-200,

R Post SB 28-2105 For A/C 101-200,

A. Job Set-Up

NOTE : If two ACT are installed, the procedure is the same for each ACT, therefore, only one ACT is given. When you need to gain access to the FWD ACT, then you must first remove the AFT ACT (Ref. 28-11-36, P. Block 401).

R **ON A/C 101-200,

(1)Defuel the ACT (Ref. 28-25-00, P. Block 301).
(2)Put the access platform in position at the AFT cargo compartment door.
(3)Open, safety and tag the circuit breakers that follow:

PANEL	SERVICE	IDENT.	LOCATION
101VU	FUEL/CARGO TK PUMP SUPPLY	1QH	GEN1/B02
132VU	FUEL/AUX TK/VENT & PRESS VALVE	3QH	325/K57
132VU	FUEL/AUX TK/XFR VALVE/MOTOR 1	4QH	325/K58
132VU	FUEL/AUX TK/PUMP CTL/XFR VALVE/MOTOR 2	5QH	325/K59

(4)Prepare the ACT for access (Ref. 28-11-37, P. Block 401).

B. Inspection (Ref. Fig. 601, A602)

NOTE : Use the Bonding Strap Inspection Report Sheet to record the condition of each bonding strap in the ACT (Ref. Fig. 601).
For the general arrangement of the manhole cover (Ref. Fig. A603).
R For the location of the fuel-pipe bonding straps in the ACT
R (Ref. Fig. A602, A604) thru
R (Ref. Fig. A610).

R (1)Use an inspection lamp to make sure that all the bonding straps are
R installed.
R (2)Visually examine the bonding straps and make sure that:
R - they are not broken
R - there are no broken strands

R - the outer braid sheaths are not loose in the end crimps
R - there is no corrosion.

R NOTE : Bonding straps which only show signs of tarnish should be kept in
R position until the next scheduled in-tank inspection.

R (3)Carefully pull each bonding strap to make sure that the end crimps are
R correctly attached.
R (4)Make sure that the bonding strap connections are in good condition.

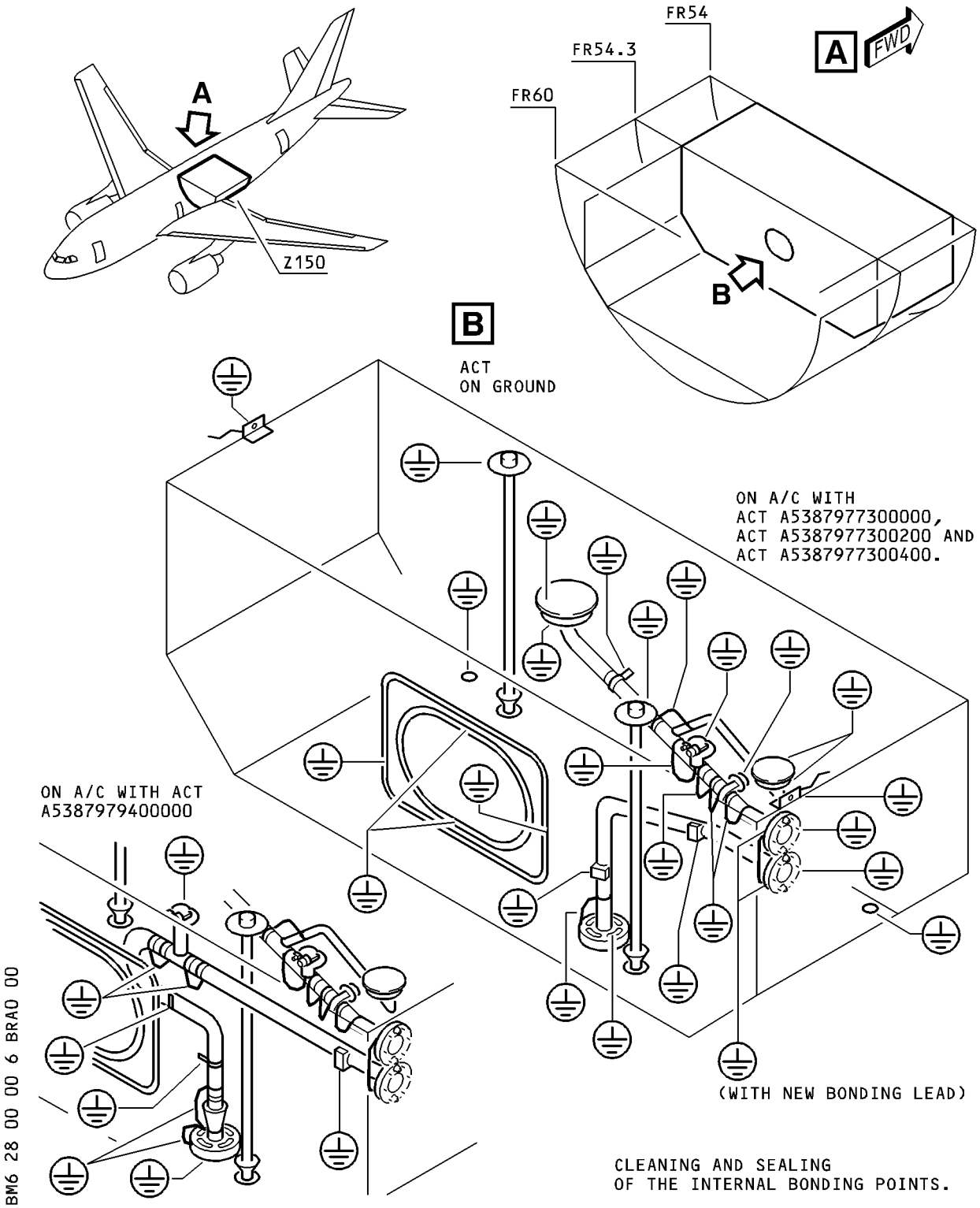
R (5)For the internal and external areas of the ACT:
- (Ref. Fig. A602)
- (Ref. Fig. A603)
- (Ref. Fig. A604)
- (Ref. Fig. A605)
- (Ref. Fig. A606)
- (Ref. Fig. A607)
- (Ref. Fig. A608)
- (Ref. Fig. A609)
- (Ref. Fig. A610)

R (6)Replace all defective bonding straps (Ref. 20-28-11, P. Block 1).
R (7)Repair all defective bonding strap attachments (Ref. 28-00-00,
R P. Block 801).

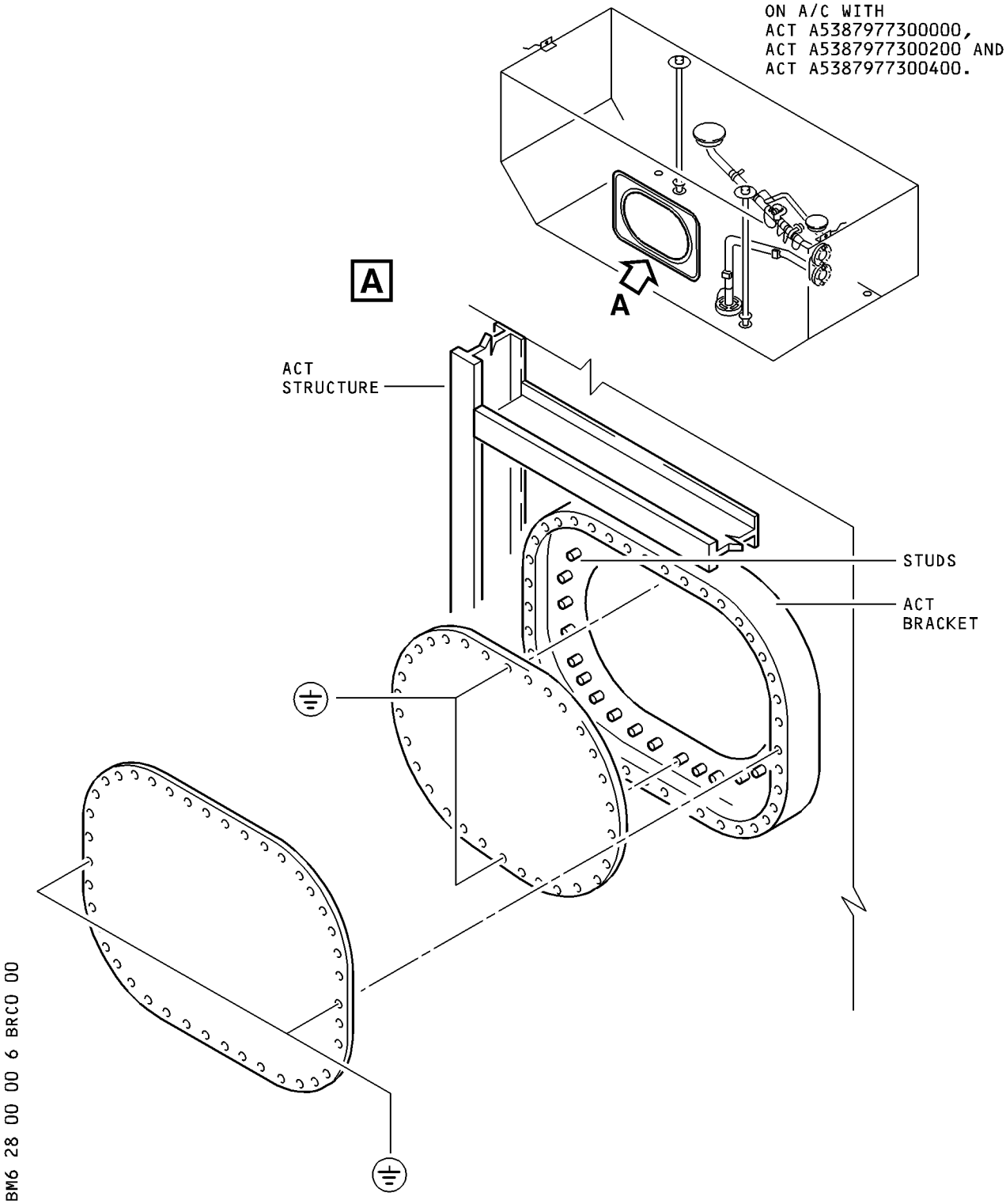
C. Close-Up
(1)Make sure that the work area is clean and clear of tools and all other items of equipment.
(2)Do the procedure for when you come out of a fuel tank (Ref. 28-10-00, P. Block 301).
(3)Install the manhole cover of the ACT (Ref. 28-11-37, P. Block 401).
(4)Remove all the ground handling and maintenance equipment, standard and special tools, ground power, all access equipment and miscellaneous items.
(5)Remove the safety clips and tags and close the circuit breakers:

PANEL	SERVICE	IDENT.	LOCATION
101VU	FUEL/CARGO TK PUMP SUPPLY	1QH	GEN1/B02
132VU	FUEL/AUX TK/VENT & PRESS VALVE	3QH	325/K57
132VU	FUEL/AUX TK/XFR VALVE/MOTOR 1	4QH	325/K58
132VU	FUEL/AUX TK/PUMP CTL/XFR VALVE/MOTOR 2	5QH	325/K59

(6)Refuel the ACT as necessary (Ref. 12-11-28, P. Block 301).

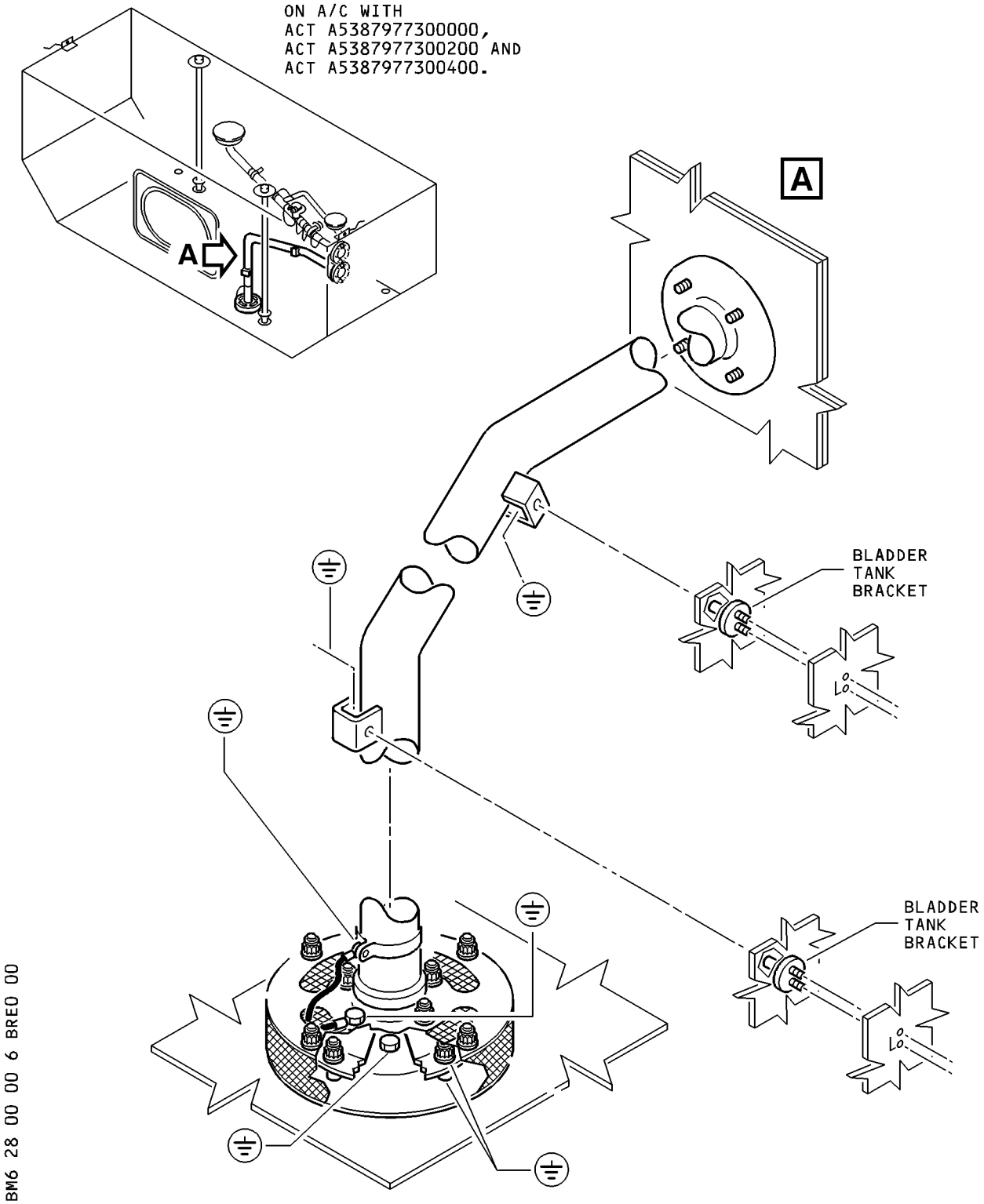


General Location of Bonding Straps
Figure A602



Manhole Cover of ACT
Figure A603

ON A/C WITH
ACT A5387977300000,
ACT A5387977300200 AND
ACT A5387977300400.



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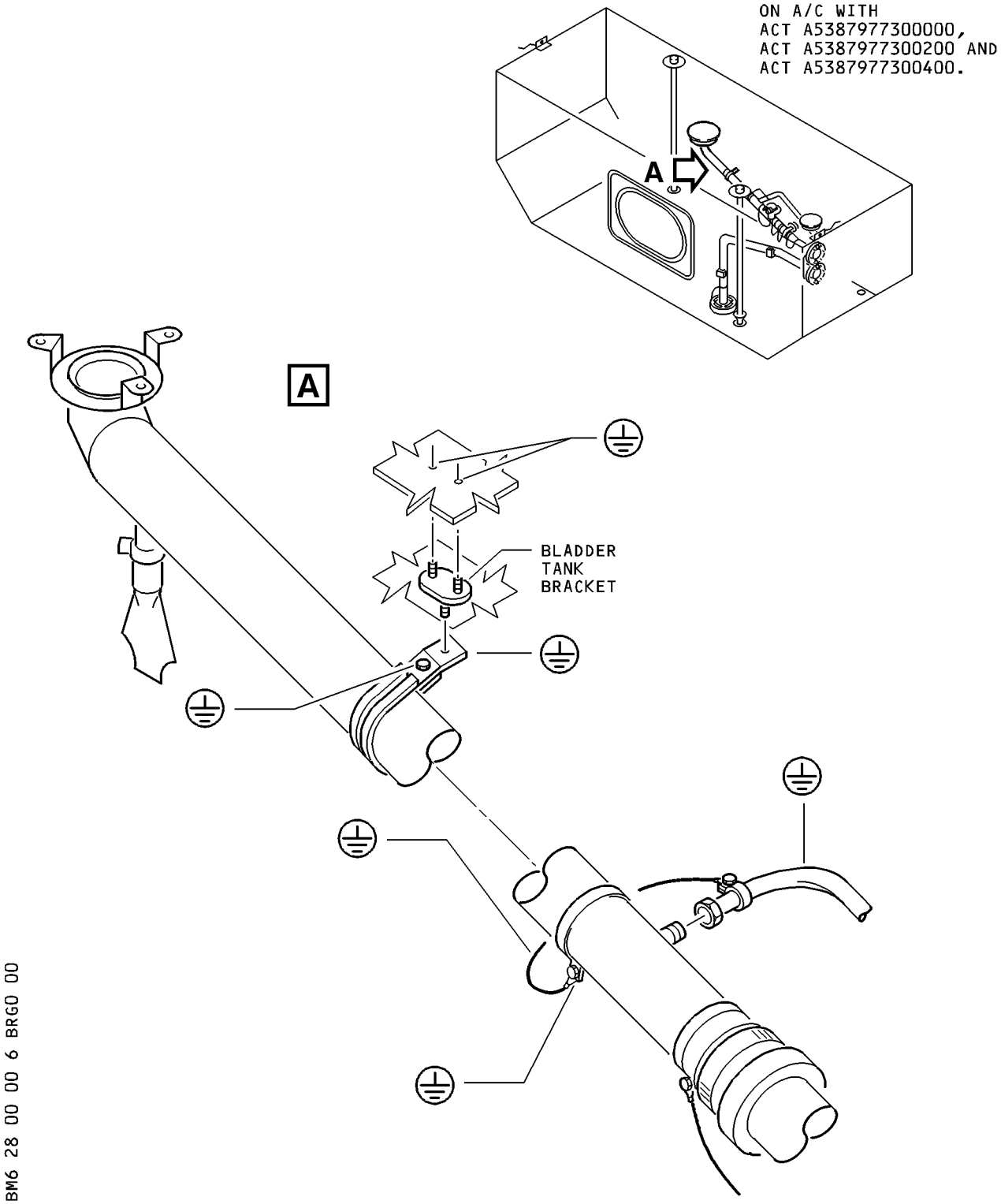
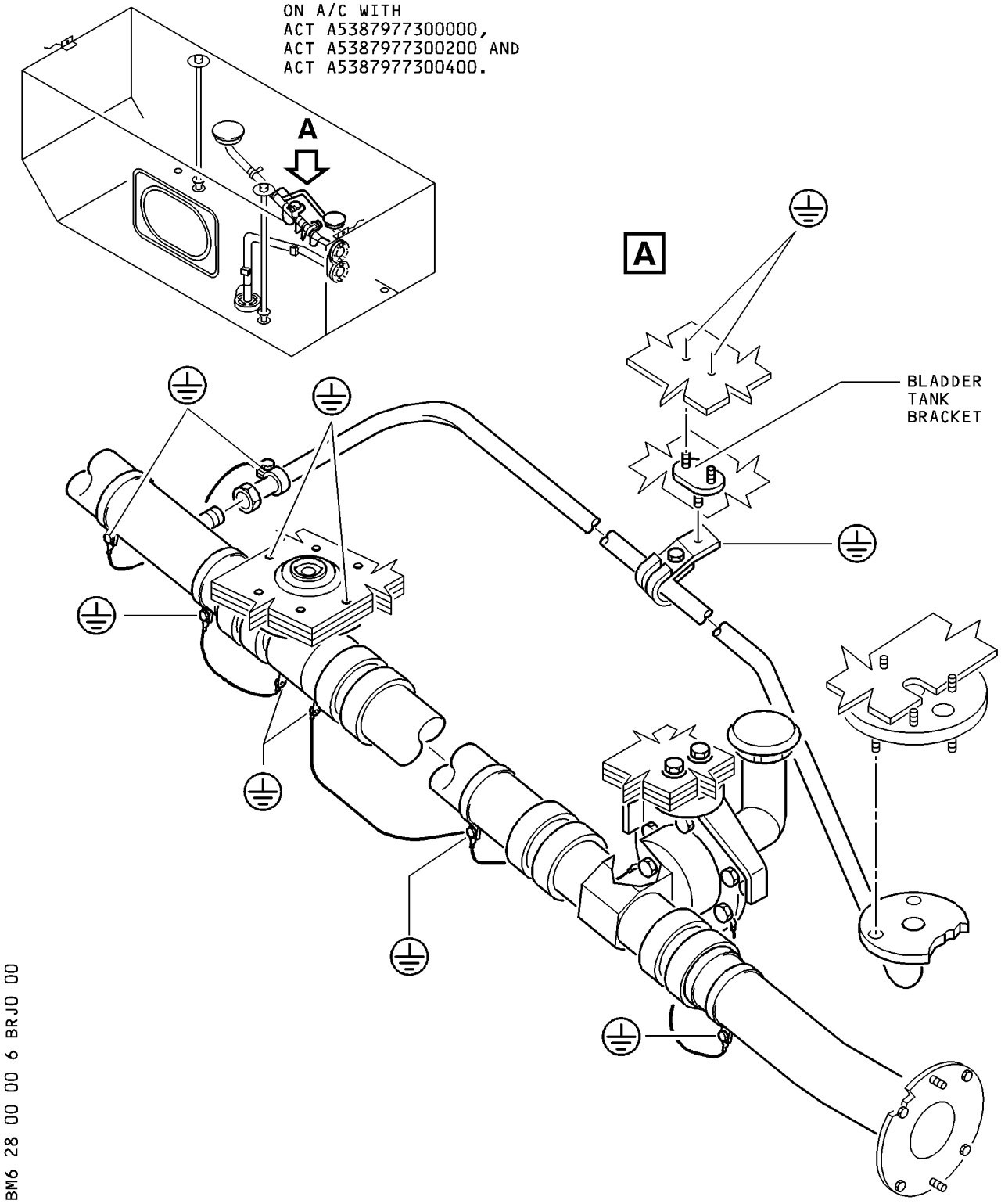
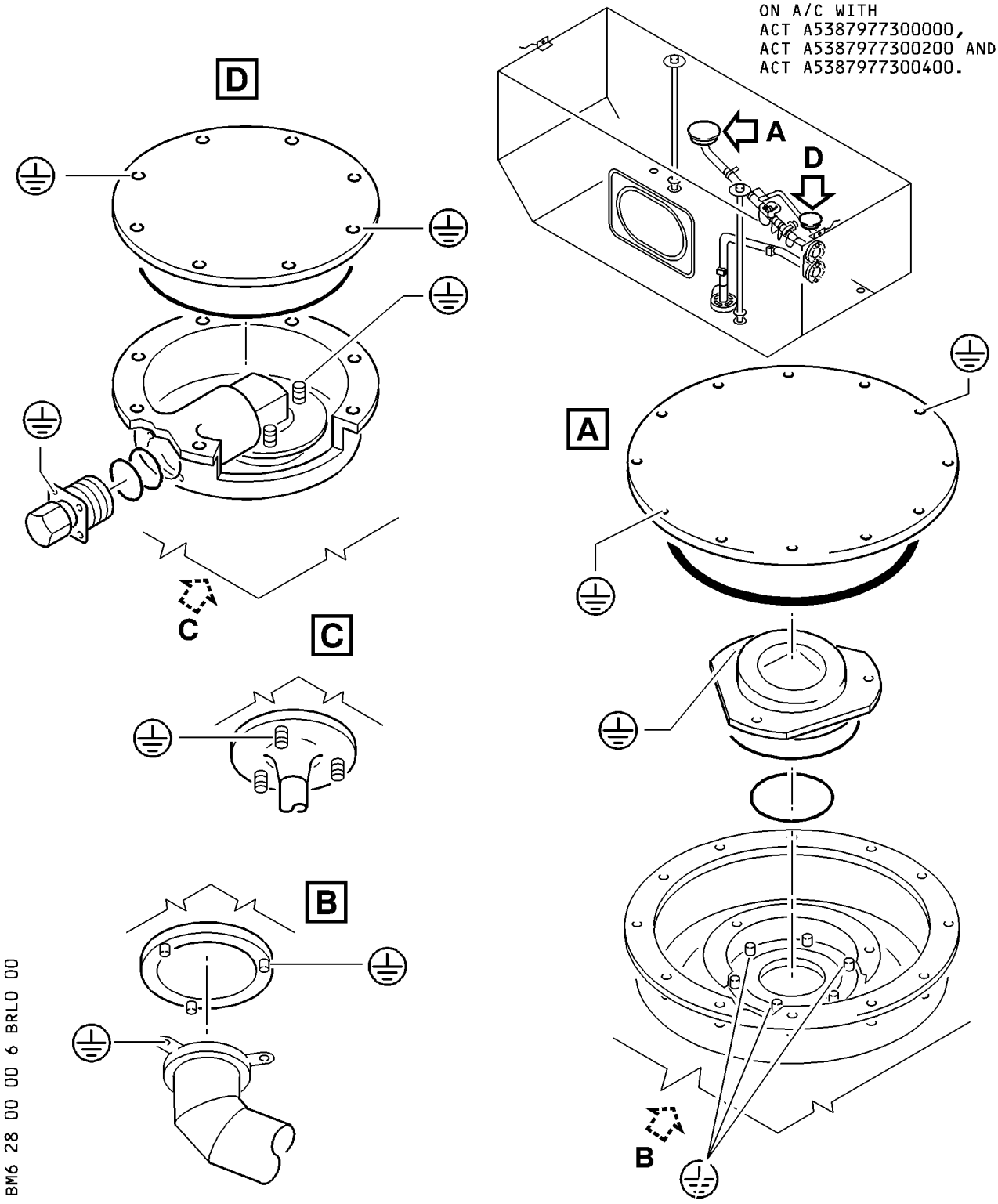
Fuel Pipe
Figure A604



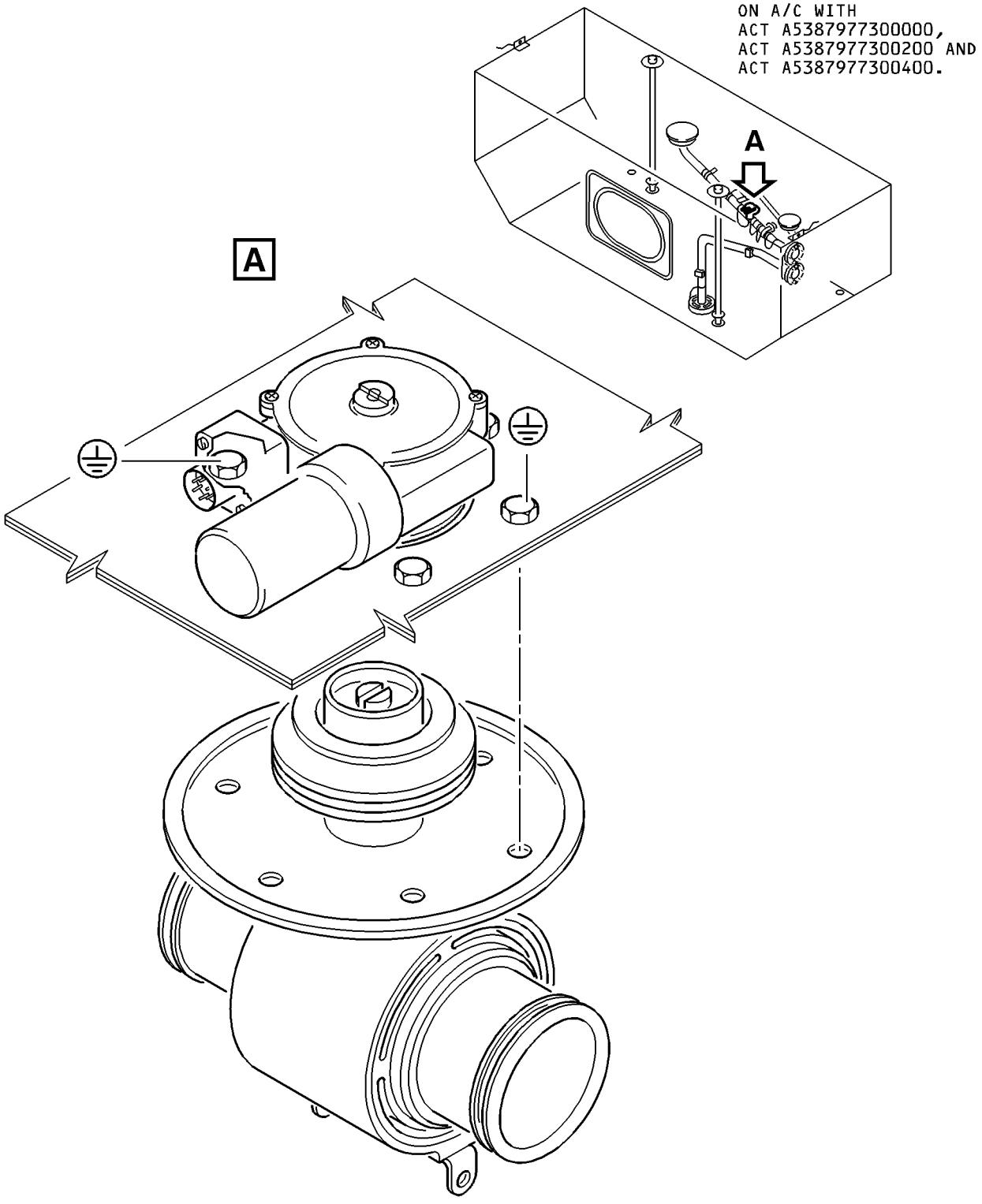
Vent Pipe
Figure A605



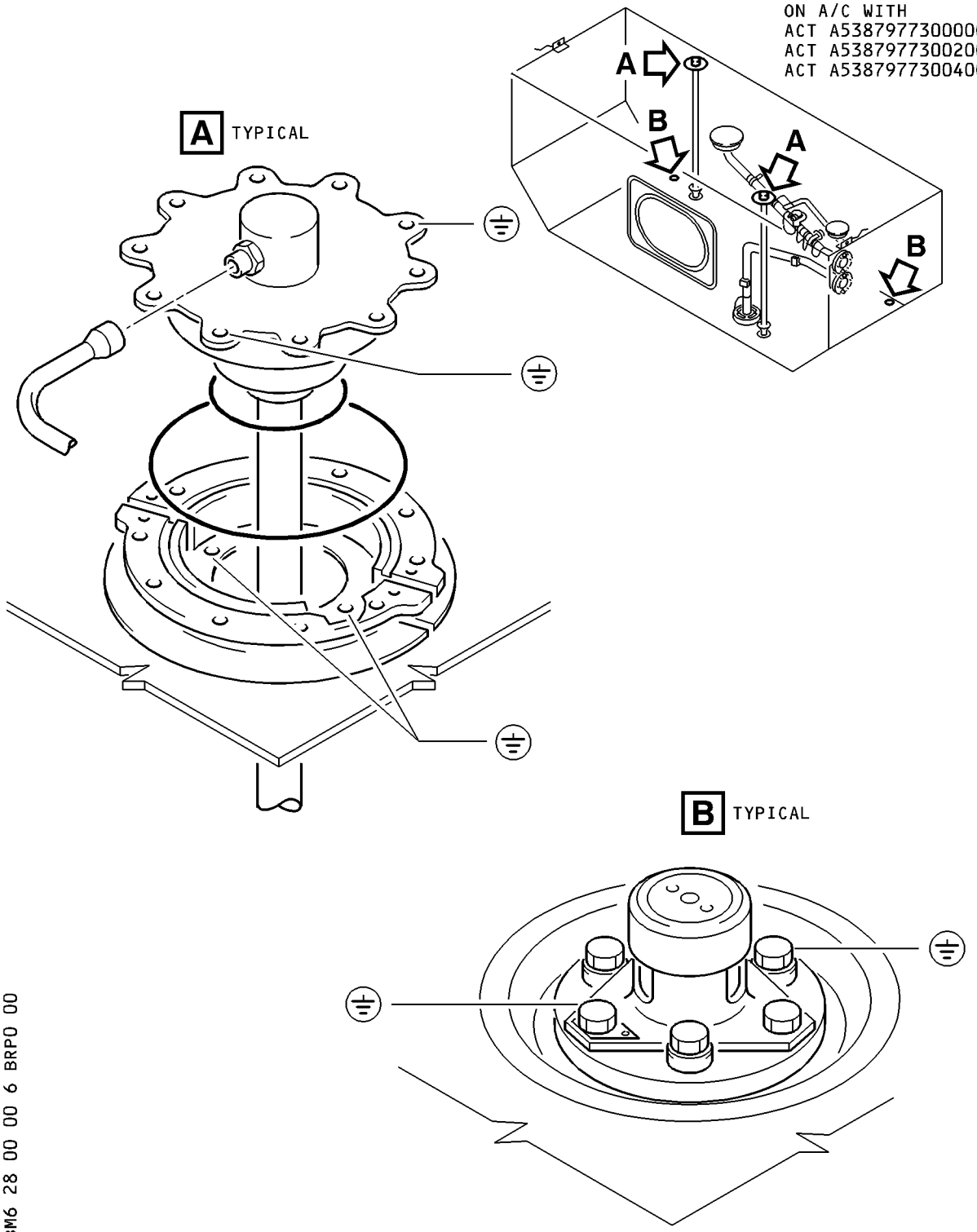
Vent Pipe and Non-Return Valve Line
Figure A606



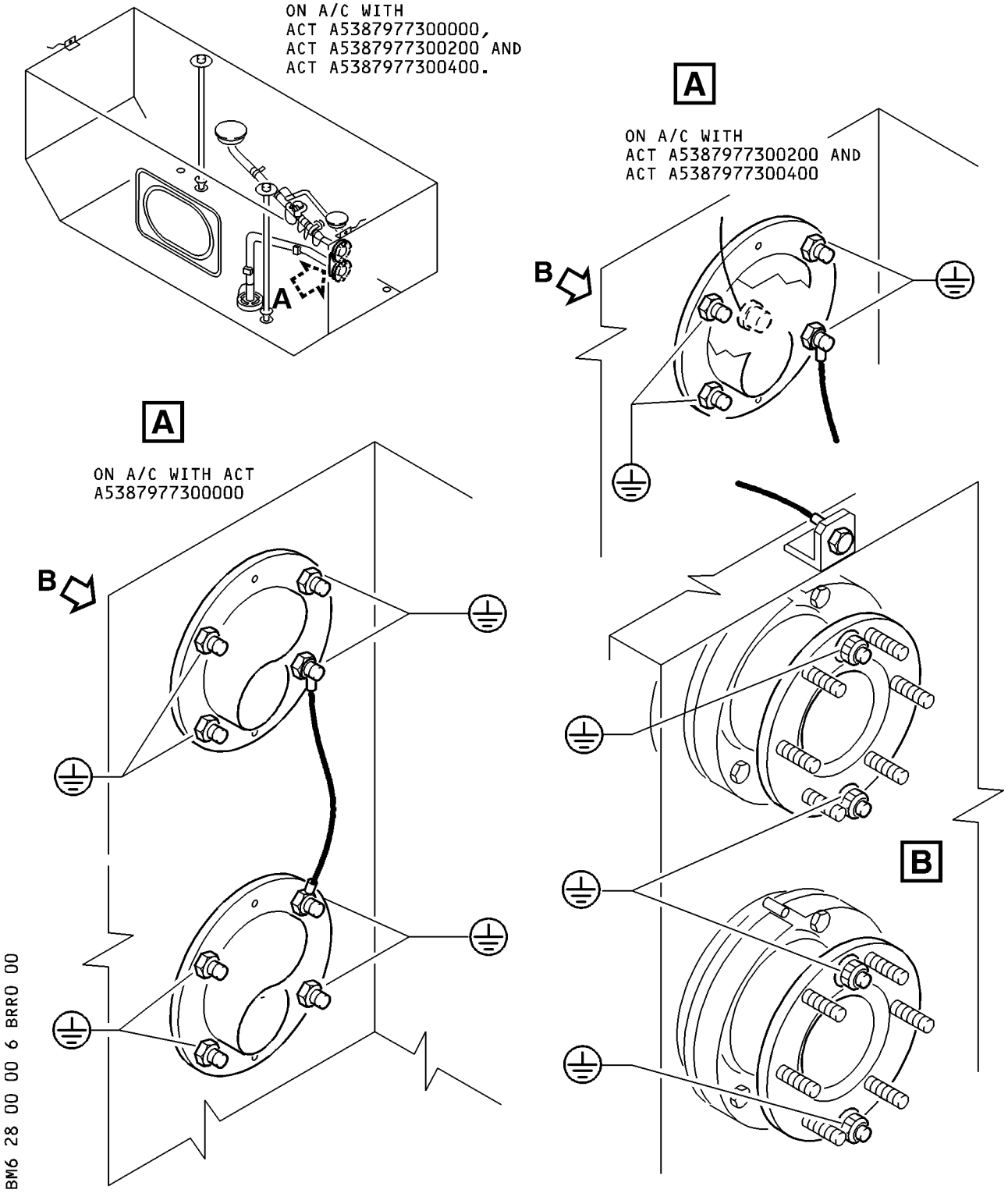
Inward Relief Valve
Figure A607



Vent Valve and Vent Valve Actuator
Figure A608



Fuel Quantity Indicator and Water Drain Valve
Figure A609



Fuel and Vent Pipe Connection
Figure A610

R **ON A/C ALL

6. Procedure for Trim-Tank Bonding Straps

A. Job Set-Up
(1)Defuel the trim-tank (Ref. 28-25-00, P. Block 301).
(2)Remove all the trim-tank manhole covers (Ref. 28-11-33, P. Block 401).
(3)Put the access platform in position.
(4)Prepare the tank(s) for access (Ref. 28-10-00, P. Block 301).

B. Inspection (Ref. Fig. 601, A611)

NOTE : Use the Bonding Strap Inspection Report Sheet to record the condition of each bonding strap in the trim-tank (Ref. Fig. 601).
For the general arrangement of the manhole covers (Ref. Fig. A611).
R For the location of the fuel-pipe bonding straps in the trim-tank
R (Ref. Fig. A612) thru
R (Ref. Fig. A621) sheet 2/2.

R (1)Use an inspection lamp to make sure that all the bonding straps are
R installed.
R (2)Visually examine the bonding straps and make sure that:
R - they are not broken
R - there are no broken strands
R - the outer braid sheaths are not loose in the end crimps
R - there is no corrosion.

R NOTE : Bonding straps which only show signs of tarnish should be kept in
R position until the next scheduled in-tank inspection.

R (3)Carefully pull each bonding strap to make sure that the end crimps are
R correctly attached.
R (4)Make sure that the bonding strap connections are in good condition.

R (5)For the LH tank between Ribs 17 thru 19:
(Ref. Fig. A612)

R (6)For the RH tank between Ribs 17 thru 19:
(Ref. Fig. A613, A614)

(7)For the LH and RH tank between Ribs 13 thru 17:
(Ref. Fig. A615) sheet 1/2
(Ref. Fig. A615) sheet 2/2

(8)For the LH and RH tank between Ribs 8 thru 13:
(Ref. Fig. A616, A617)

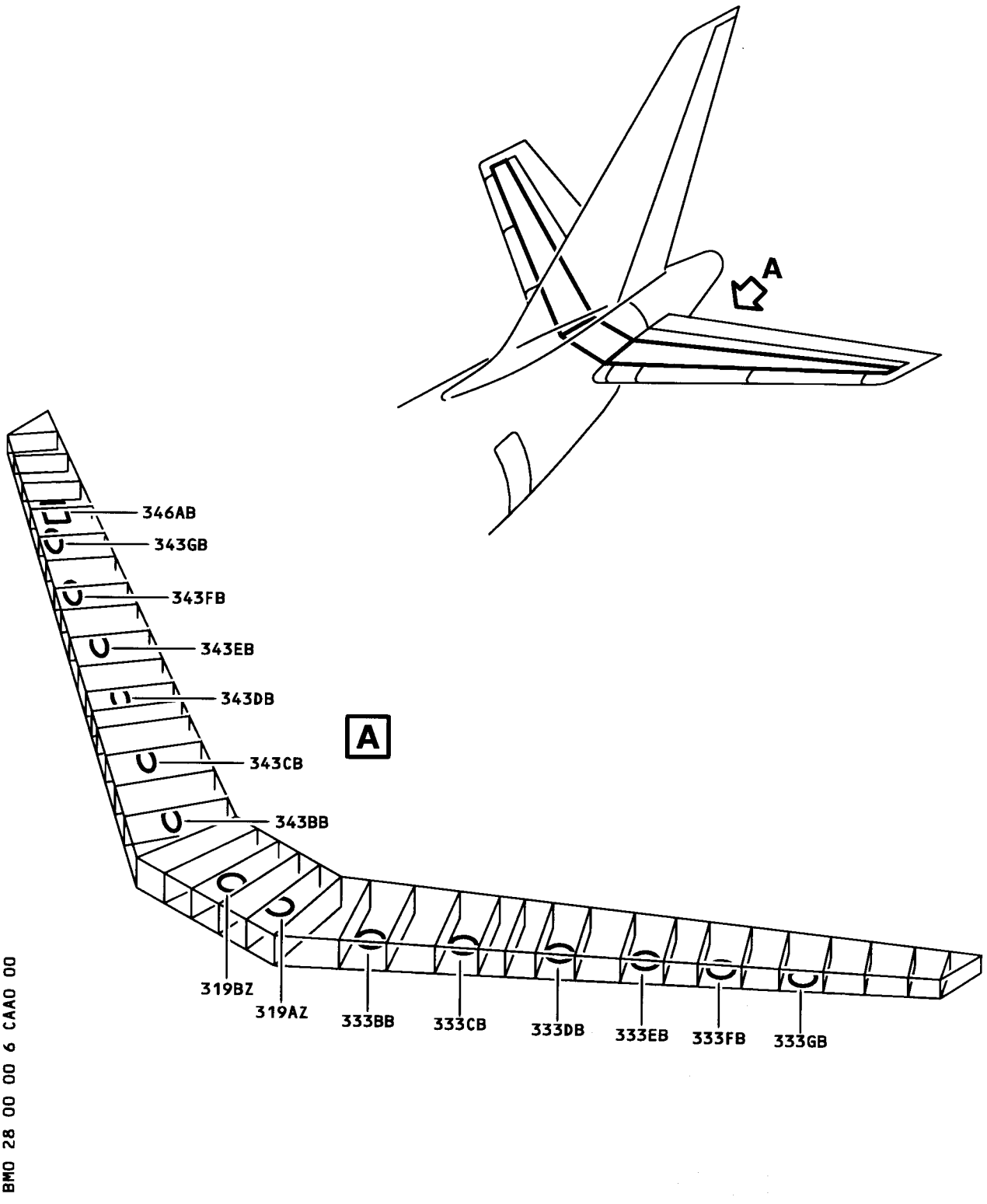
(9)For the LH tank between Ribs 3 thru 8:
(Ref. Fig. A618) sheet 1/2
(Ref. Fig. A618) sheet 2/2

(10)For the RH tank between Ribs 3 thru 8:
(Ref. Fig. A619) sheet 1/2
(Ref. Fig. A619) sheet 2/2

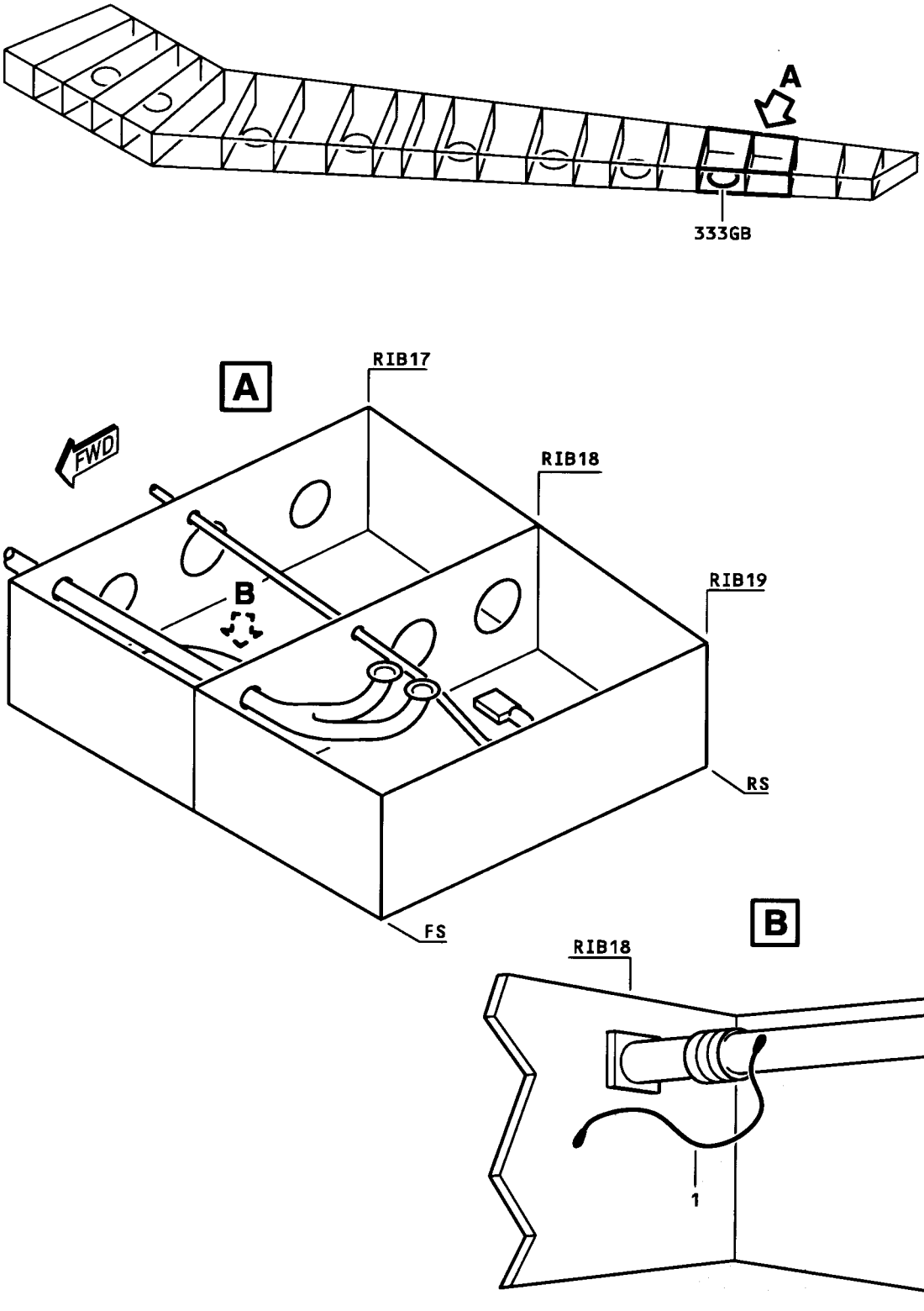
(11)For the center base tank:
(Ref. Fig. A620) sheet 1/3
(Ref. Fig. A620) sheet 2/3
(Ref. Fig. A620) sheet 3/3
(Ref. Fig. A621) sheet 1/2
(Ref. Fig. A621) sheet 2/2

R (12)Replace all defective bonding straps (Ref. 20-28-11, P. Block 1).
R (13)Repair all defective bonding strap attachments (Ref. 28-00-00,
R P. Block 801).

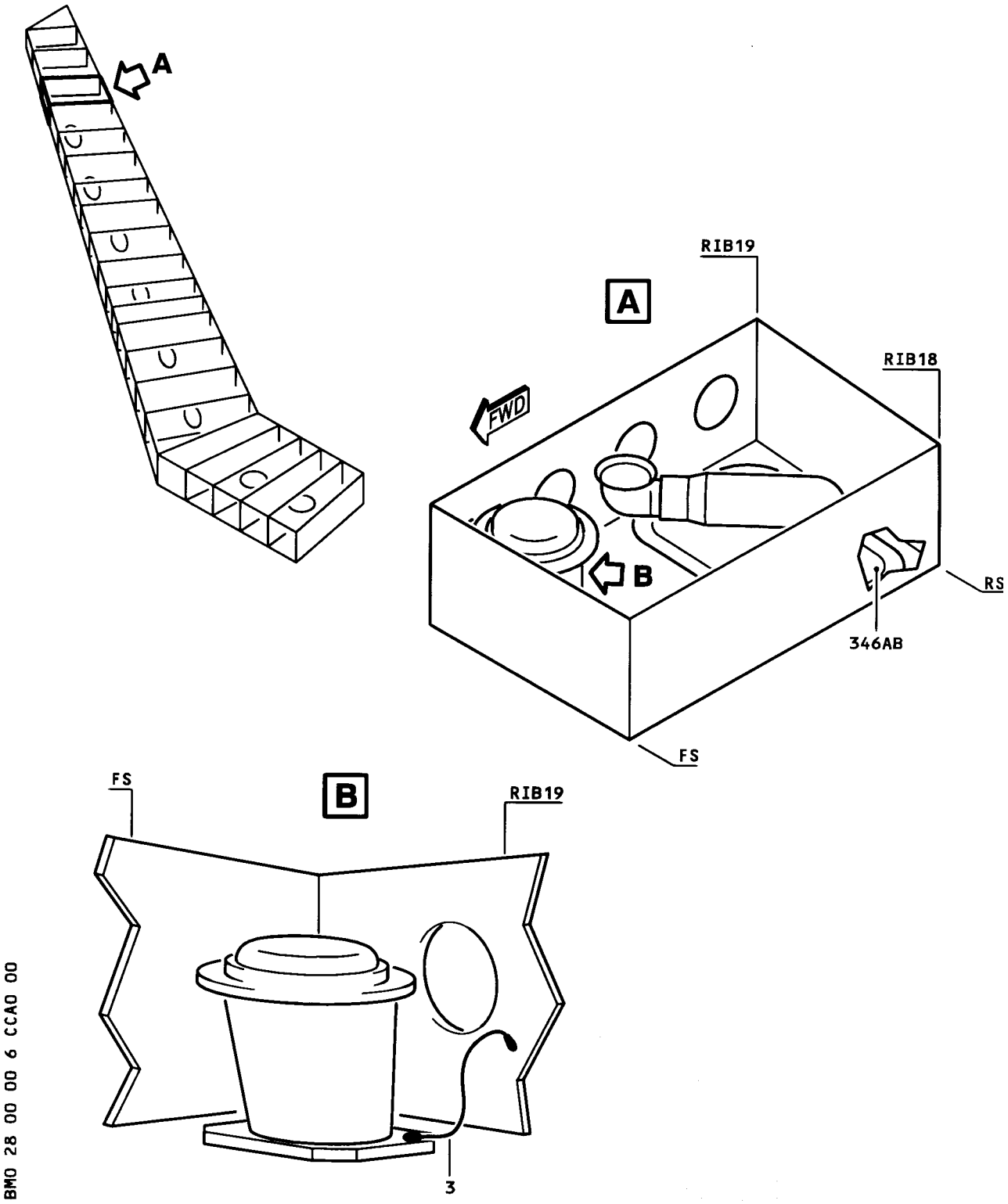
C. Close-Up
(1)Make sure that the work area is clean and clear of tools and all other items of equipment.
(2)Do the procedure for when you come out of a fuel tank (Ref. 28-10-00, P. Block 301).
(3)Remove all the ground handling and maintenance equipment, standard and special tools, ground power, all access equipment and miscellaneous items.
(4)Install the trim-tank manhole covers (Ref. 28-11-33, P. Block 401).
(5)Refuel the fuel tank(s) as necessary (Ref. 12-11-28, P. Block 301).



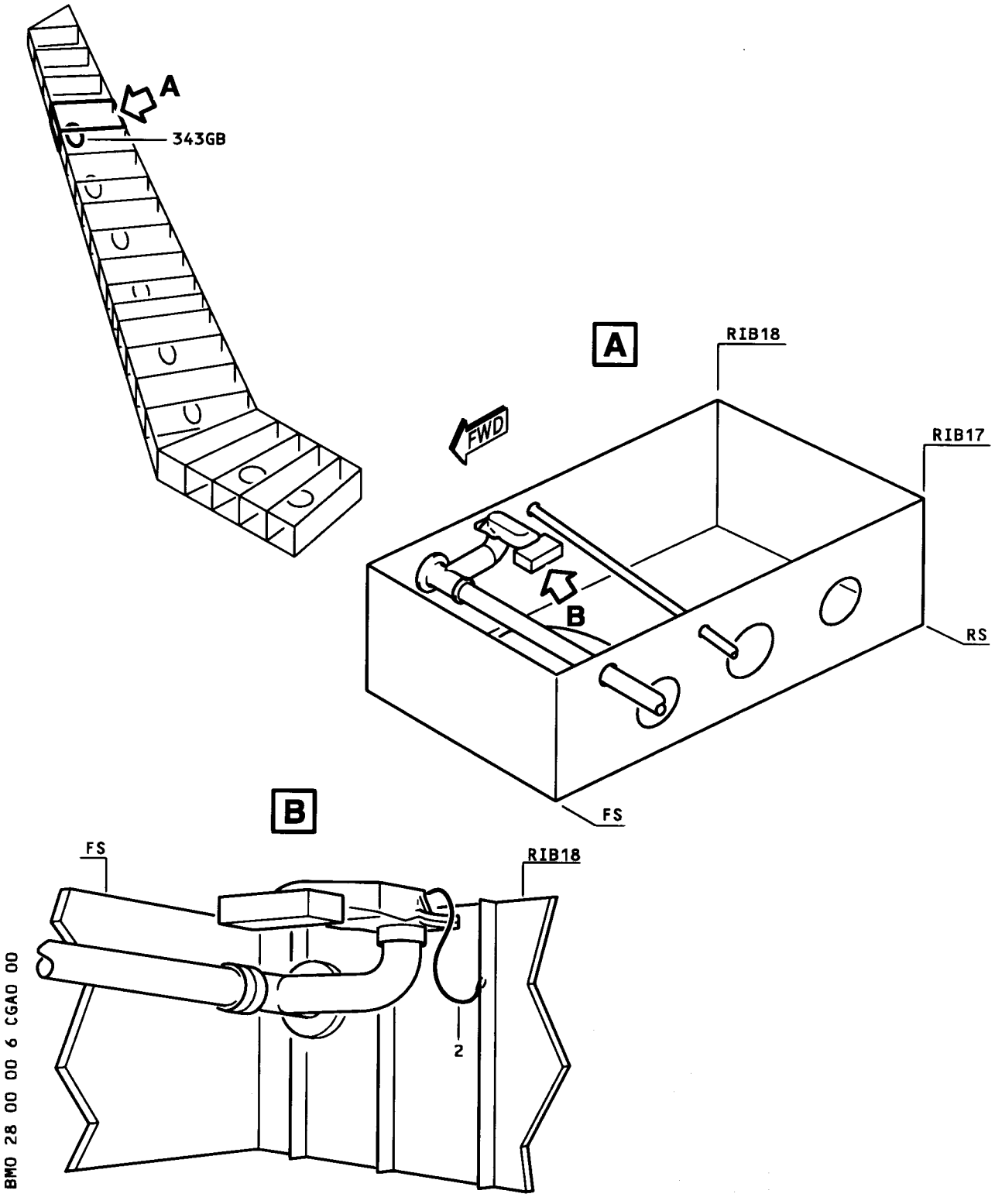
General Arrangement of Manholes - Trim-Tank Fuel Tanks
Figure A611



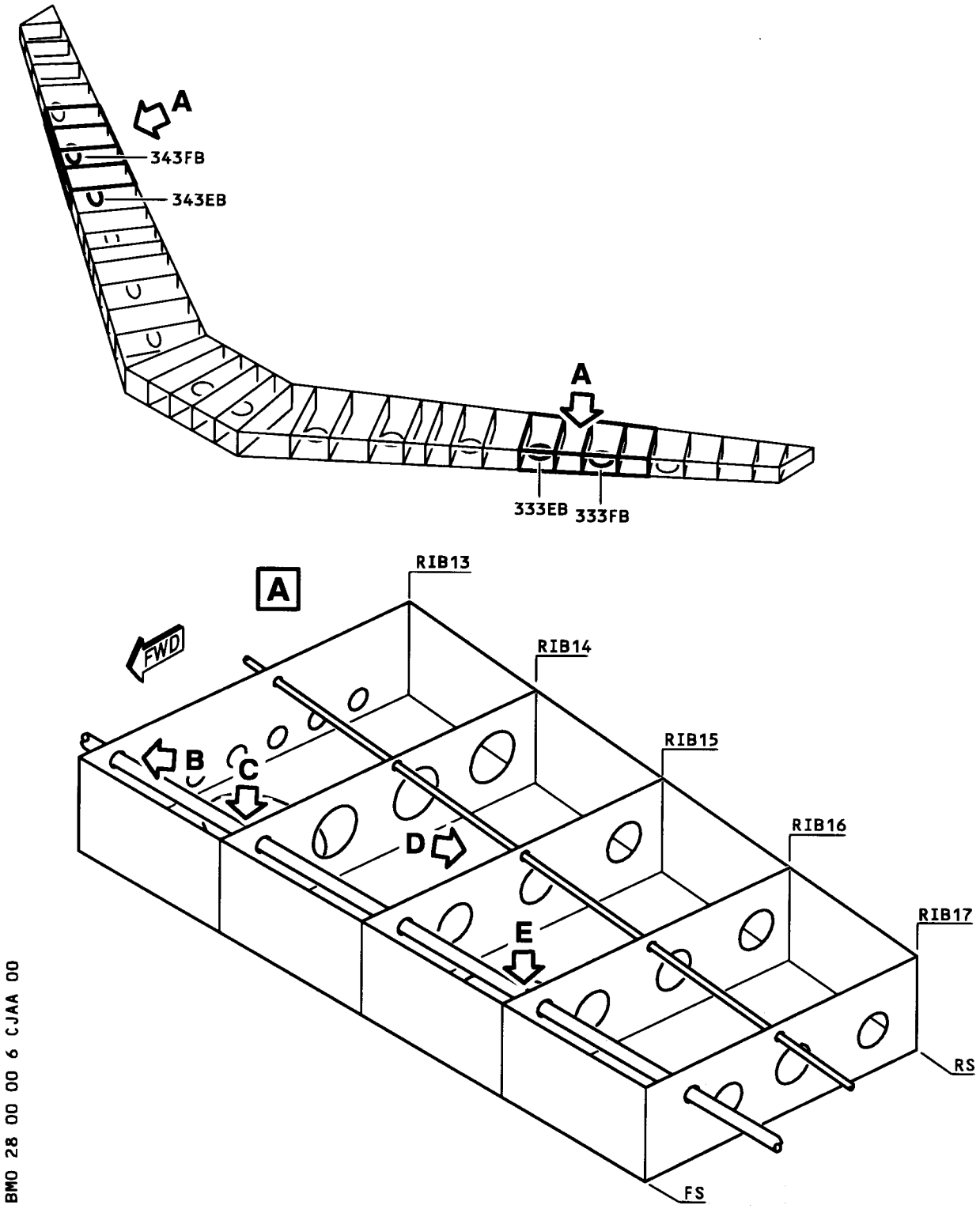
LH Tank Between Ribs 17 thru 19
Figure A612



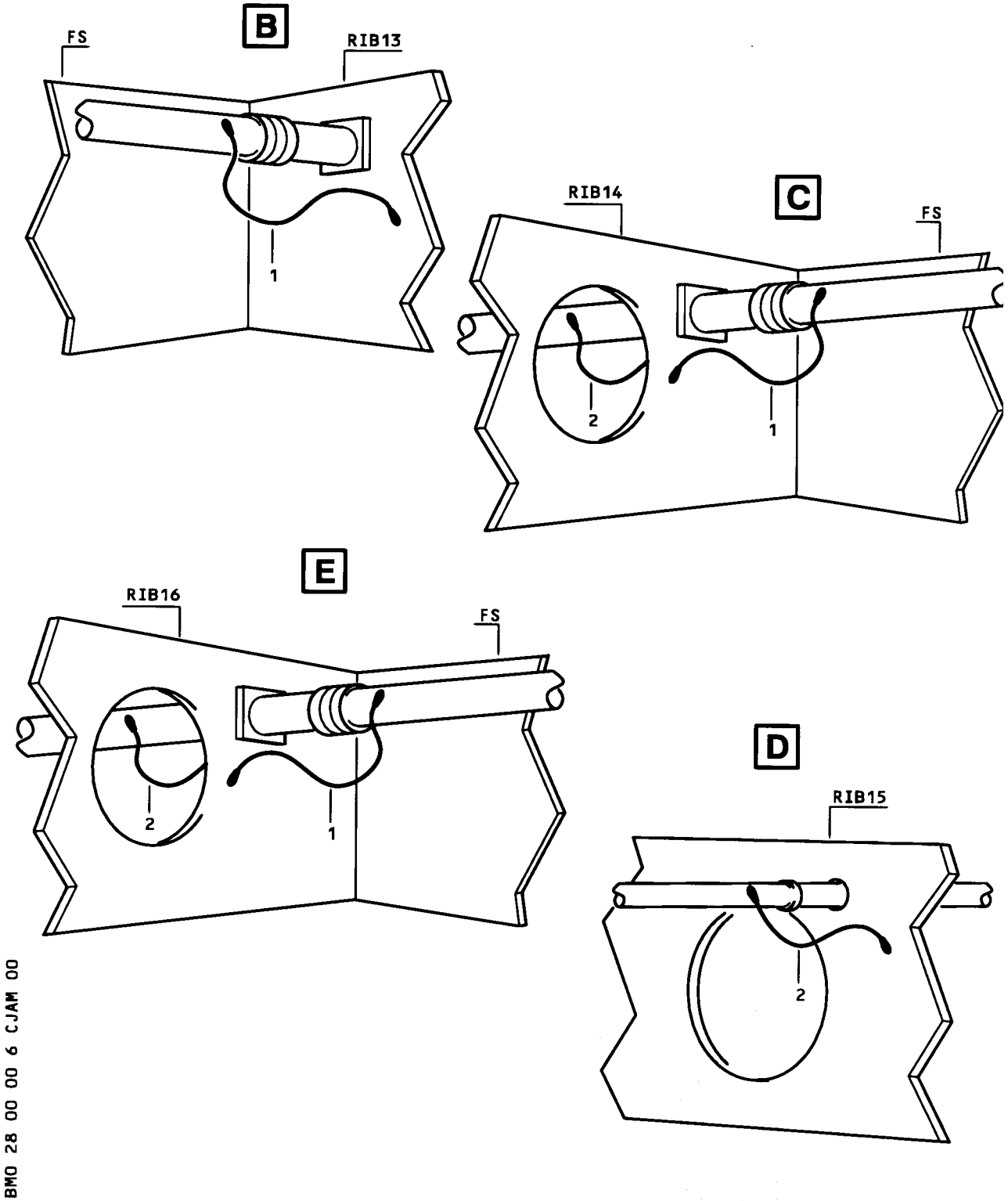
RH Tank Between Ribs 18 and 19
Figure A613



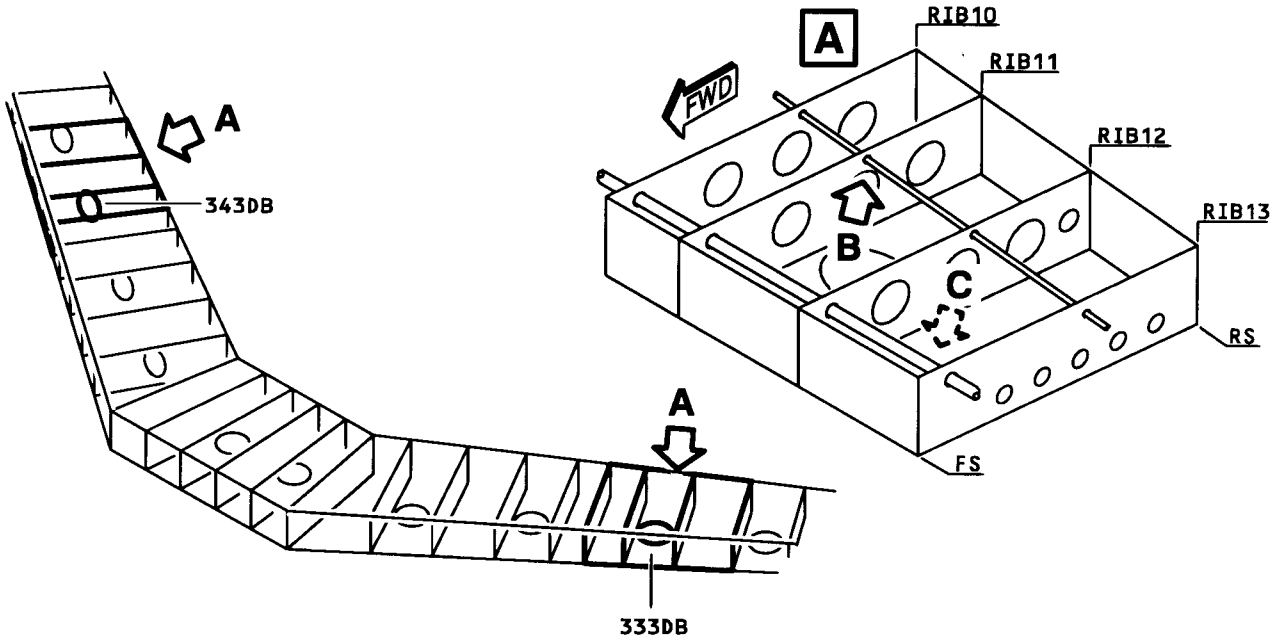
RH Tank Between Ribs 17 and 18
Figure A614

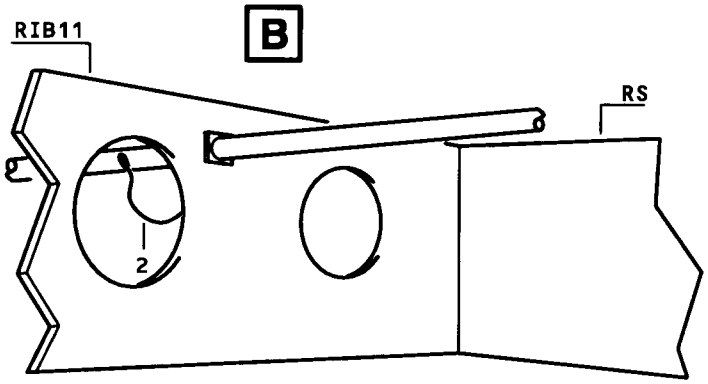


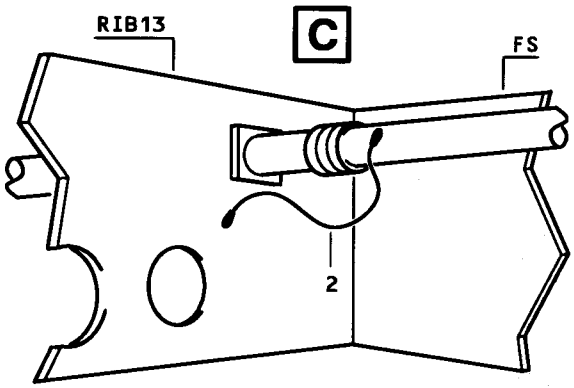
LH and RH Tank Between Ribs 13 thru 17
(Sheet 1/2)
Figure A615



Bonding Straps Between Ribs 13 thru 17
(Sheet 2/2)
Figure A615

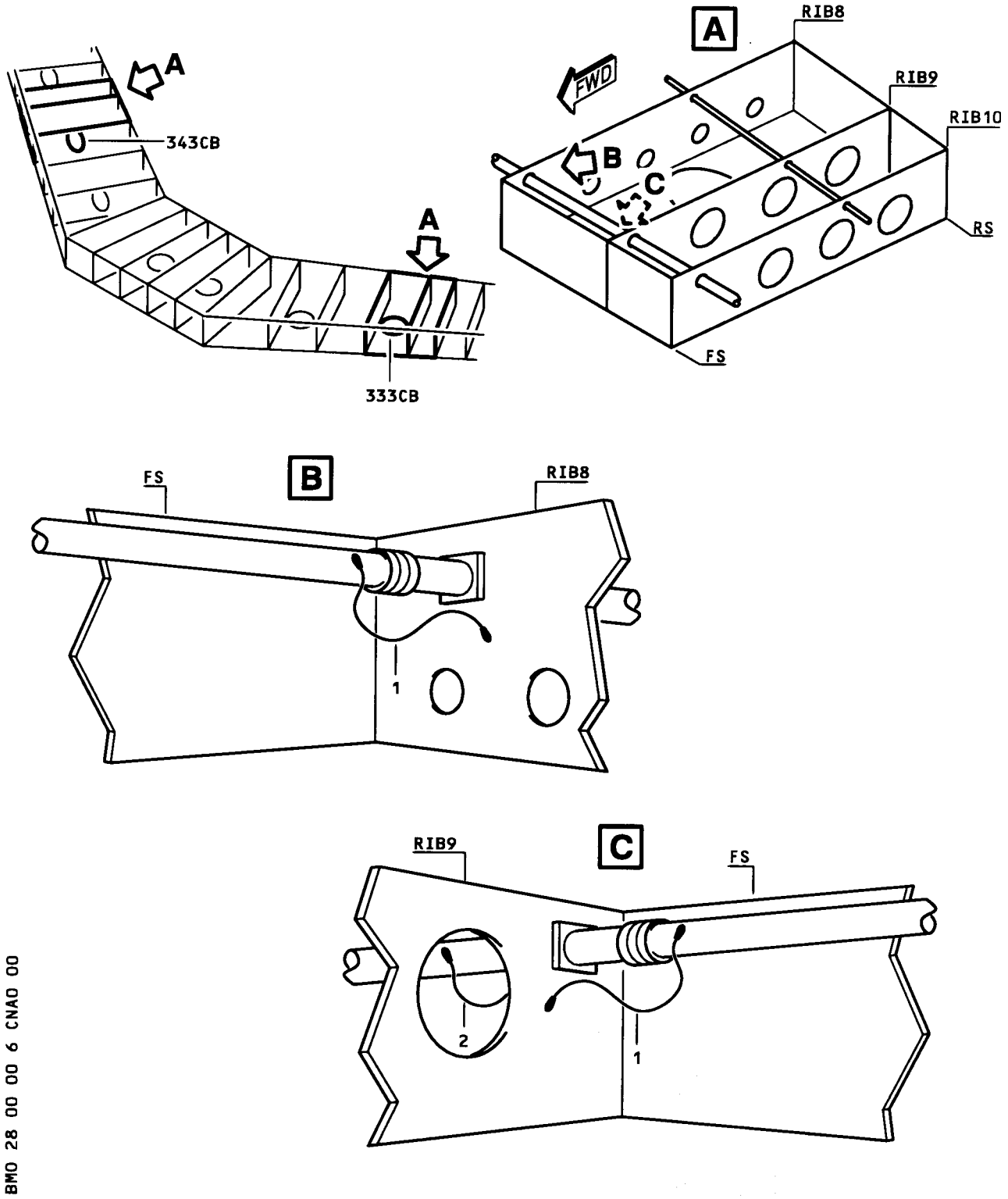






BMO 28 00 00 6 CLA0 00

LH and RH Tank Between Ribs 10 thru 13
Figure A616



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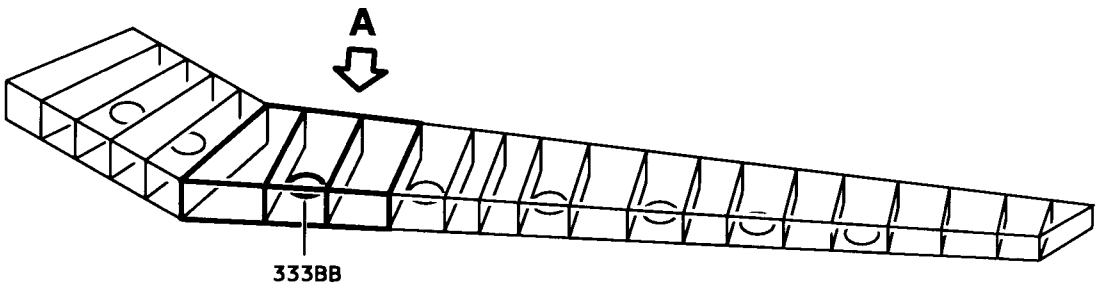
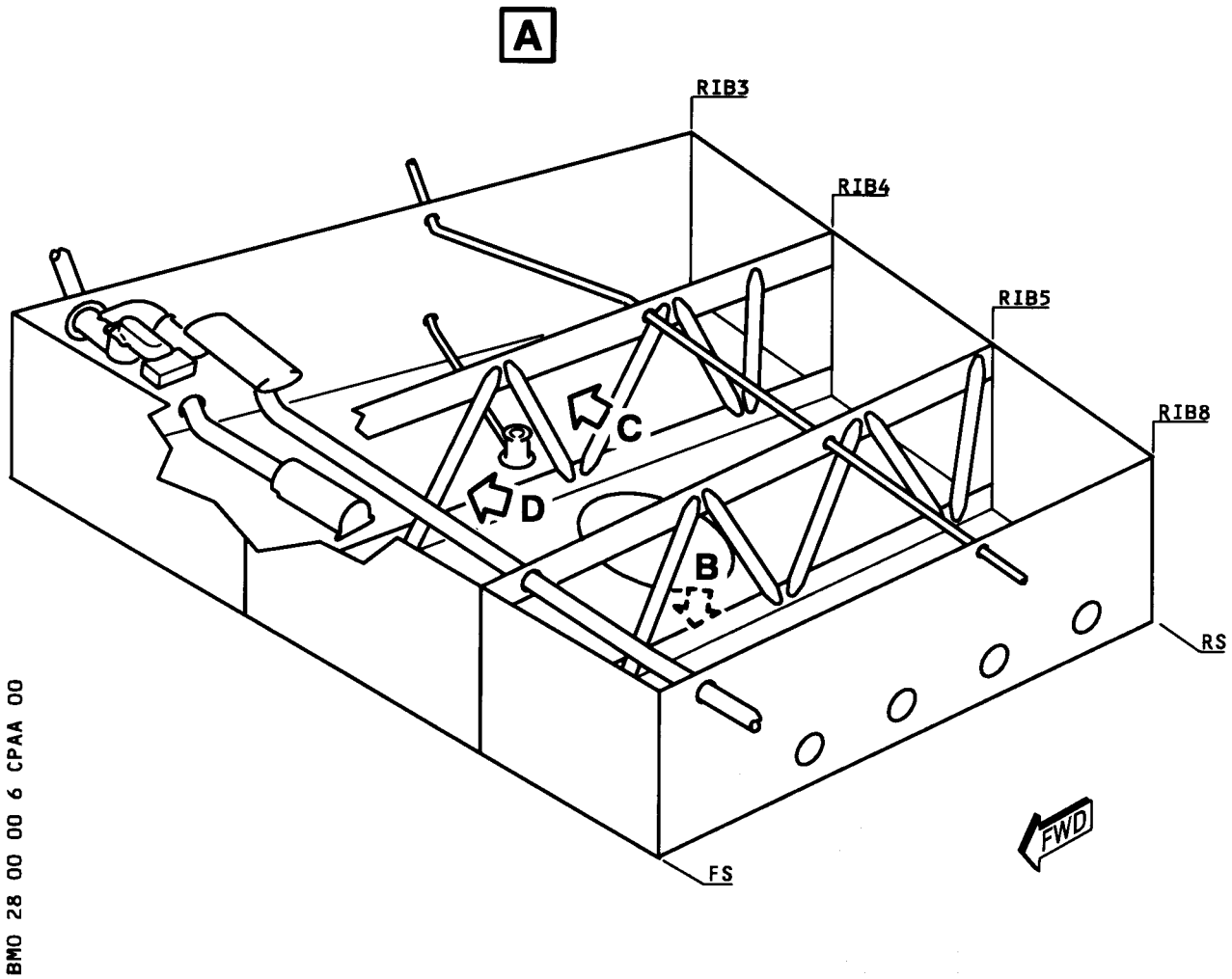
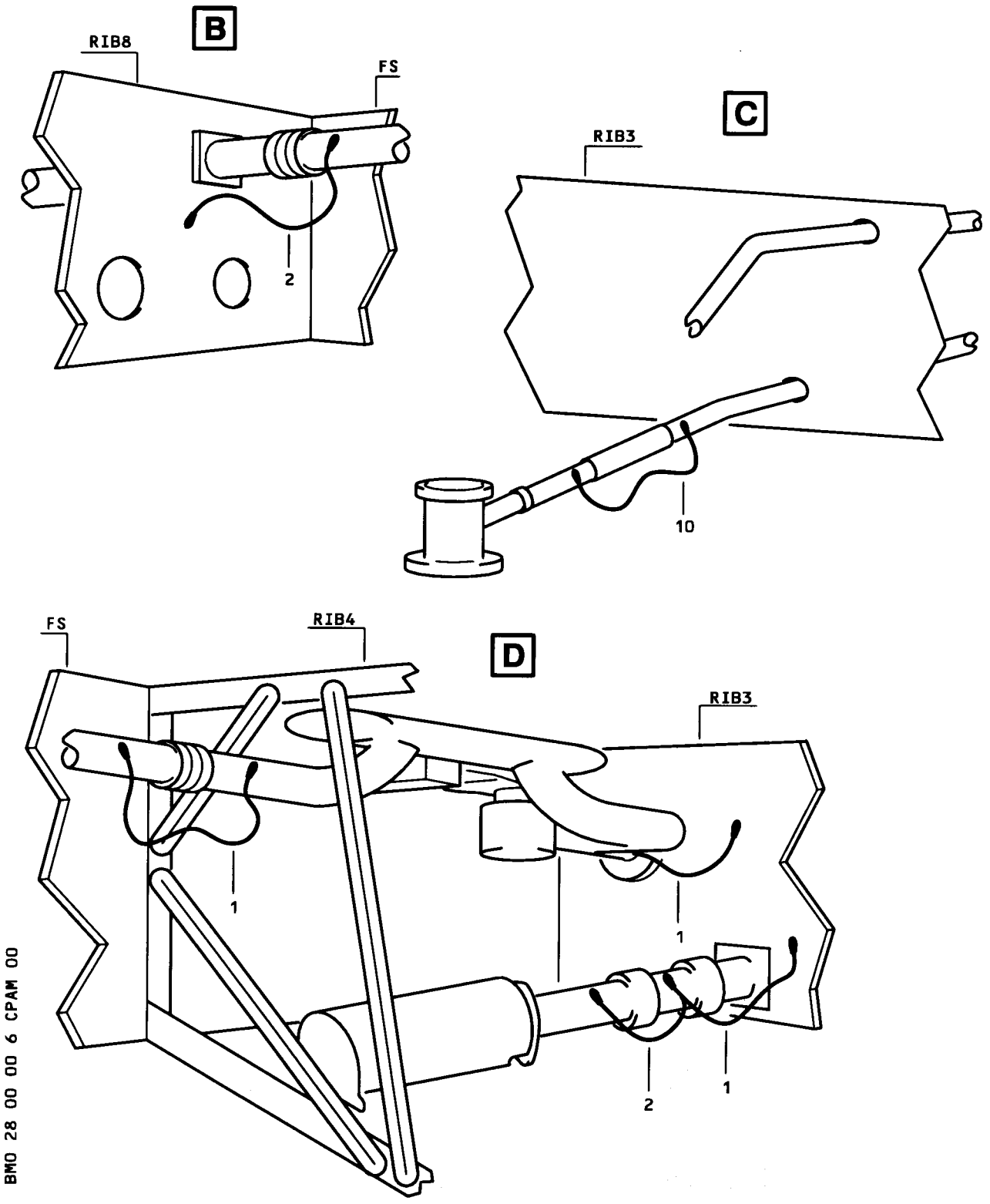
LH and RH Tank Between Ribs 8 thru 10
Figure A617

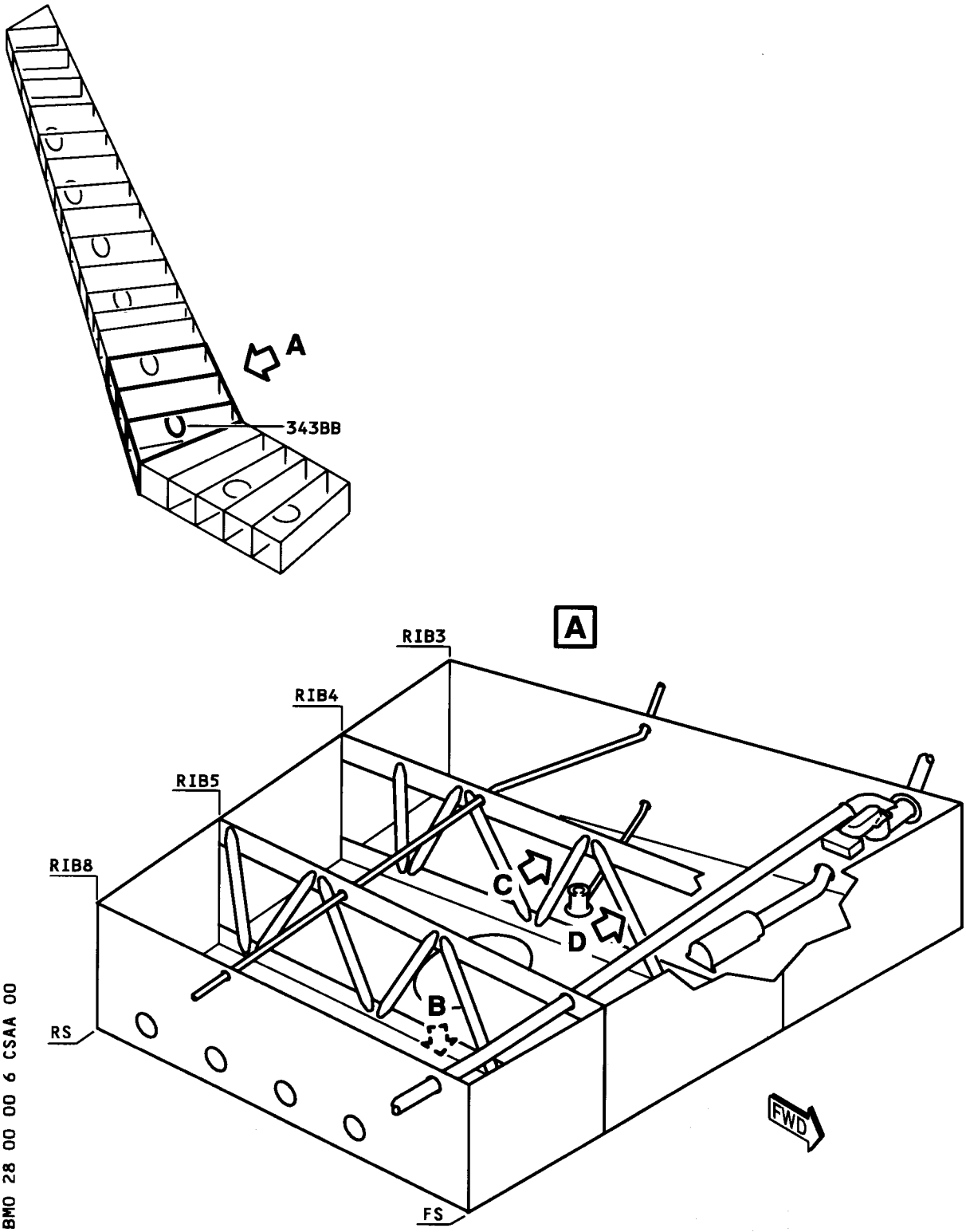




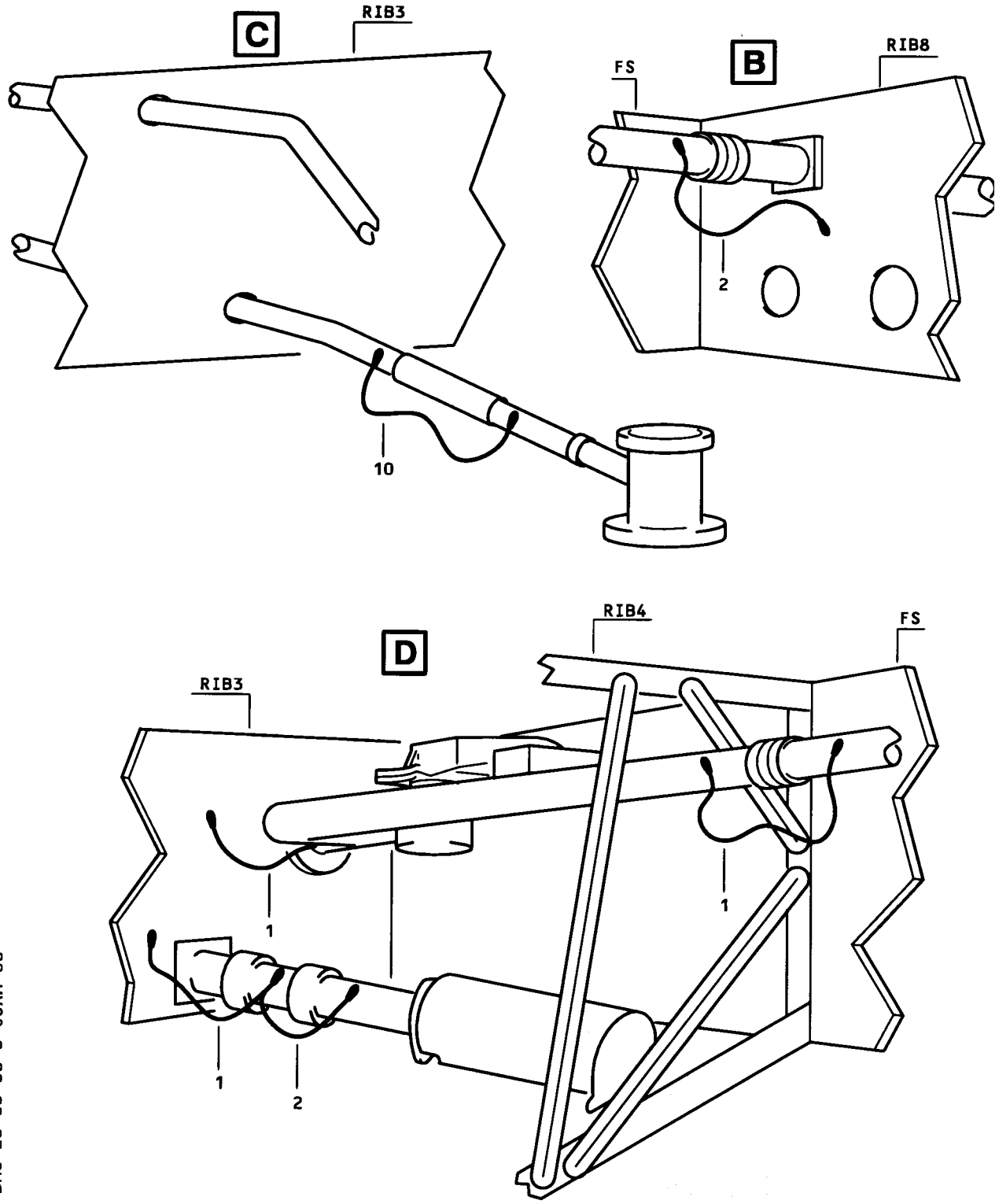
Bonding Straps Between Ribs 3 thru 8
(Sheet 1/2)
Figure A618



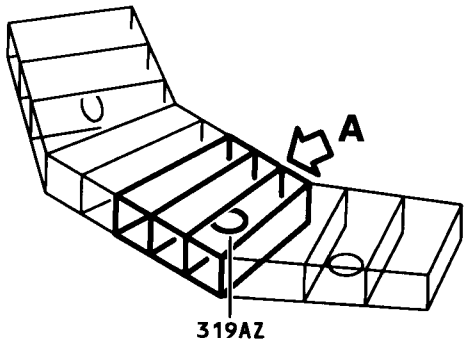
LH Tank Between Ribs 3 thru 8
(Sheet 2/2)
Figure A618

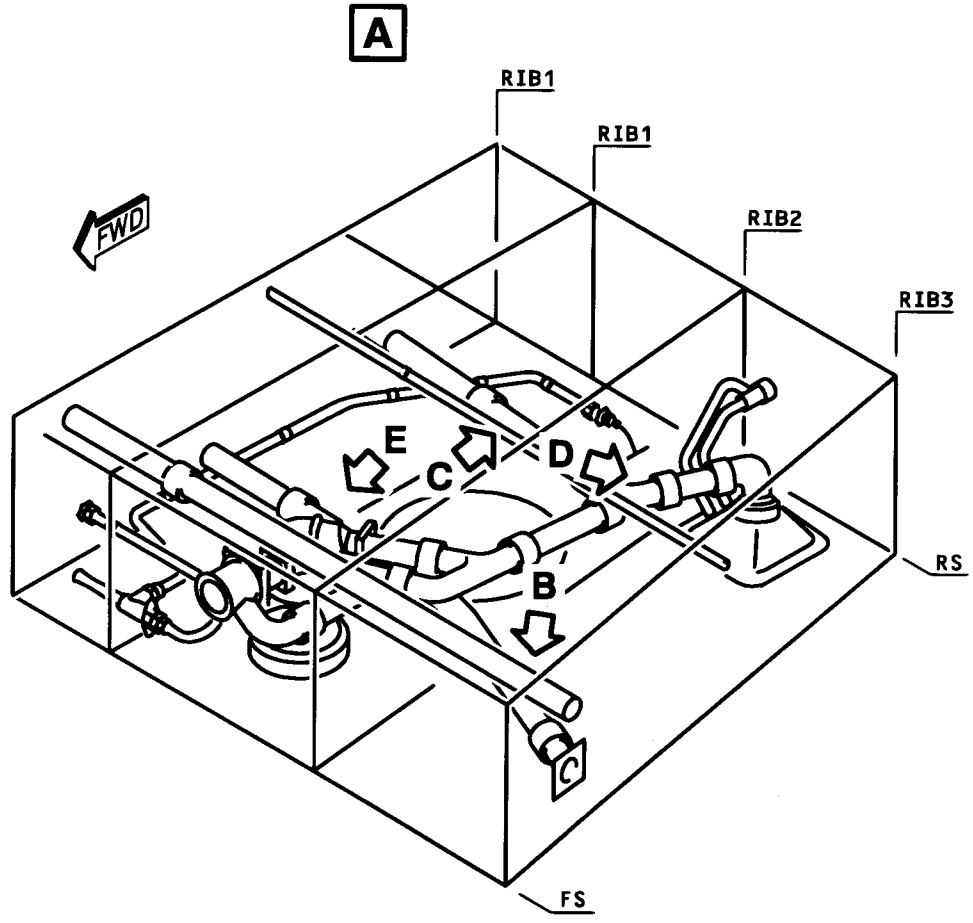


RH Tank Between Ribs 3 thru 8
(Sheet 1/2)
Figure A619



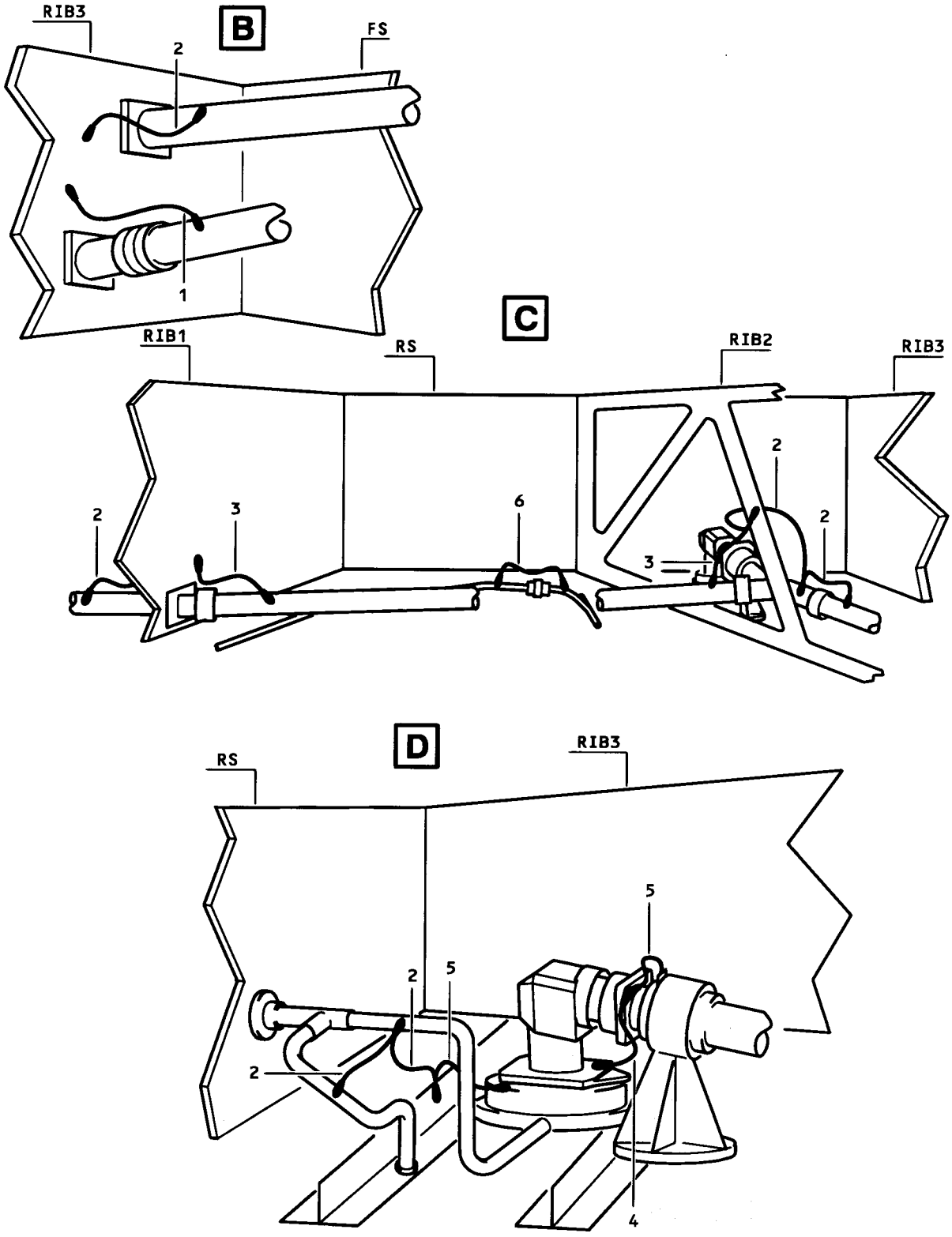
Bonding Straps Between Ribs 3 thru 8
(Sheet 2/2)
Figure A619





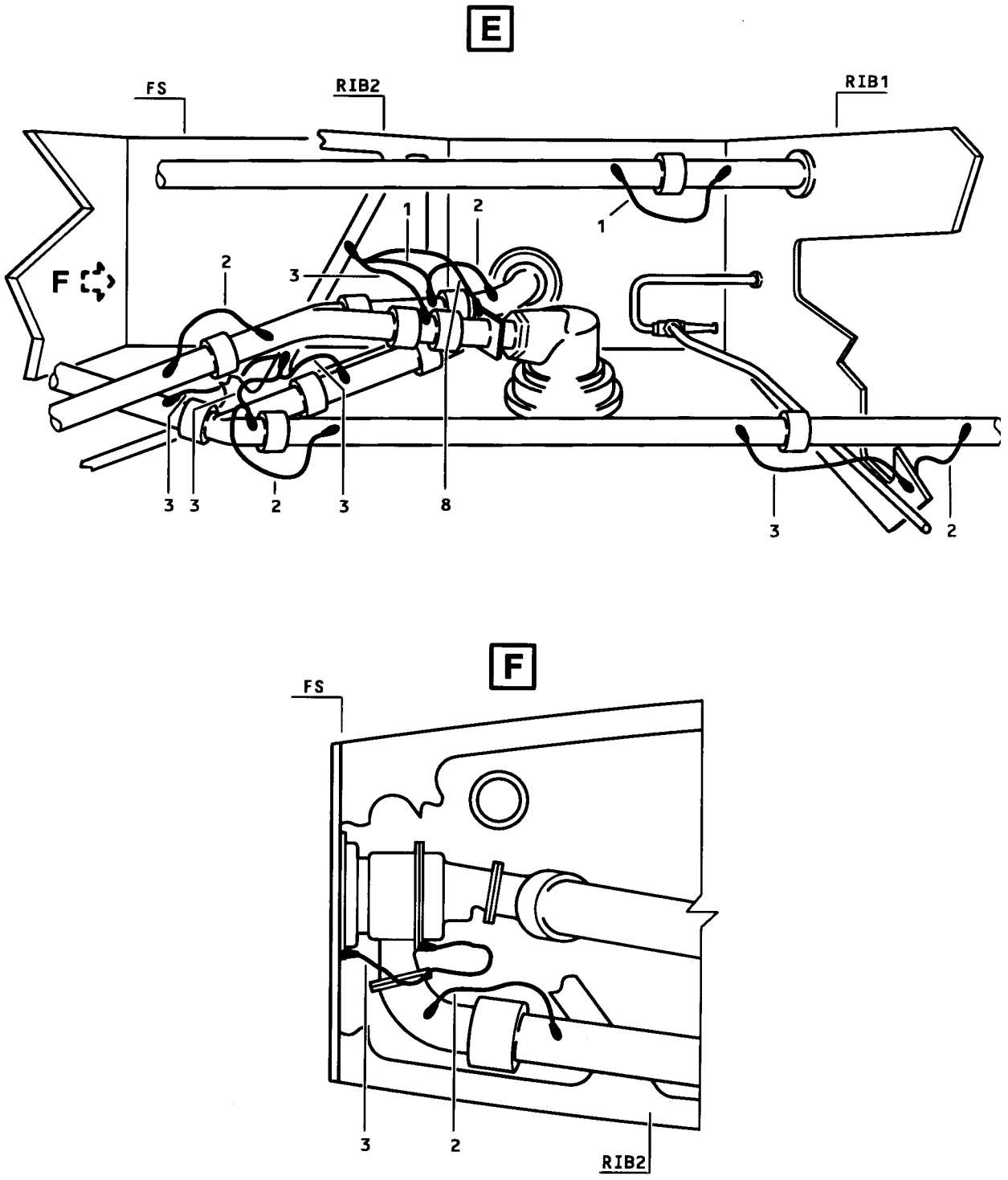
BMO 28 00 00 6 CVAA 00

Center Base Tank Between Ribs 1 thru 3
(Sheet 1/3)
Figure A620



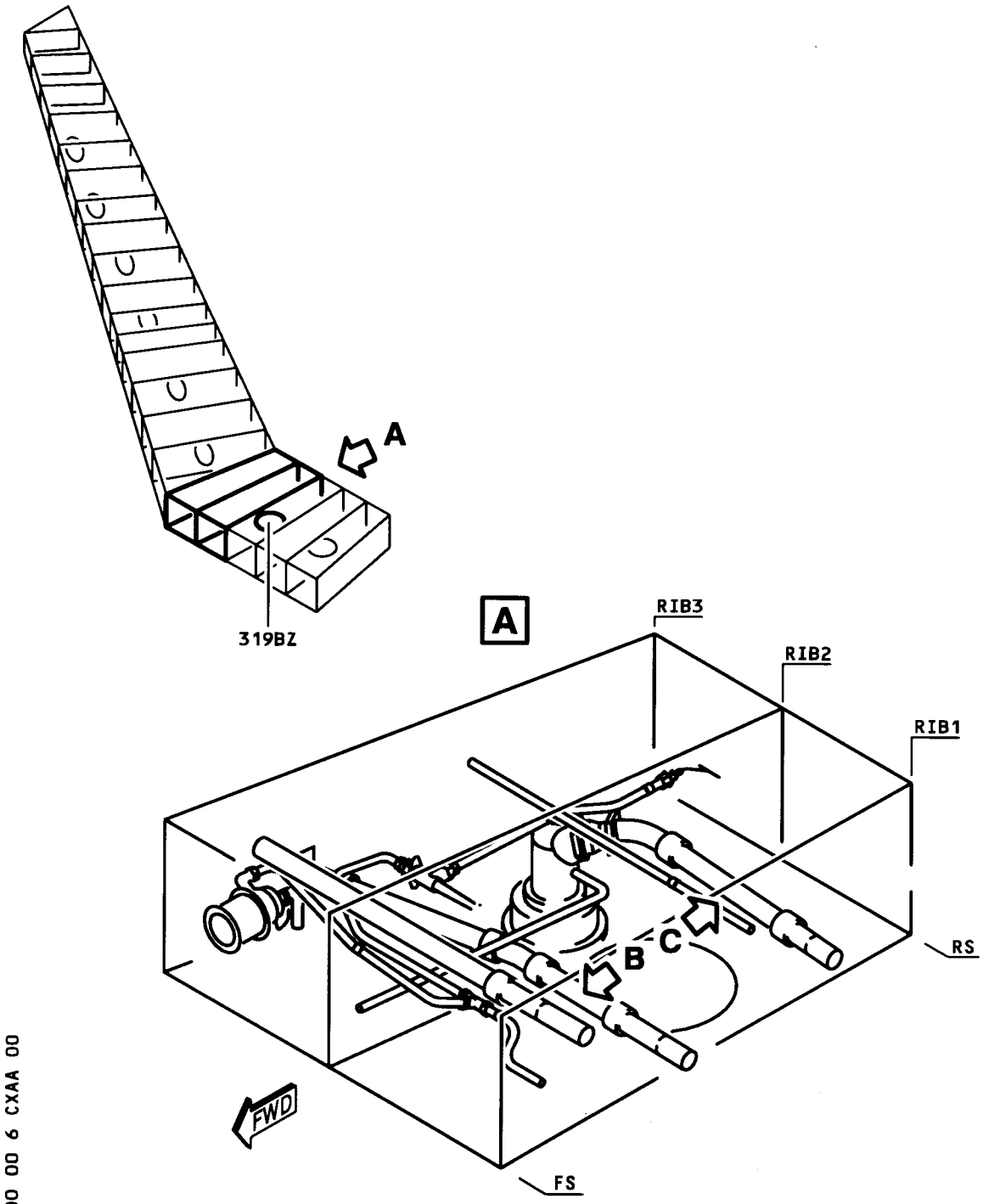
BMO 28 00 00 6 CVAJ 00

Bonding Straps Between Ribs 1 thru 3
(Sheet 2/3)
Figure A620



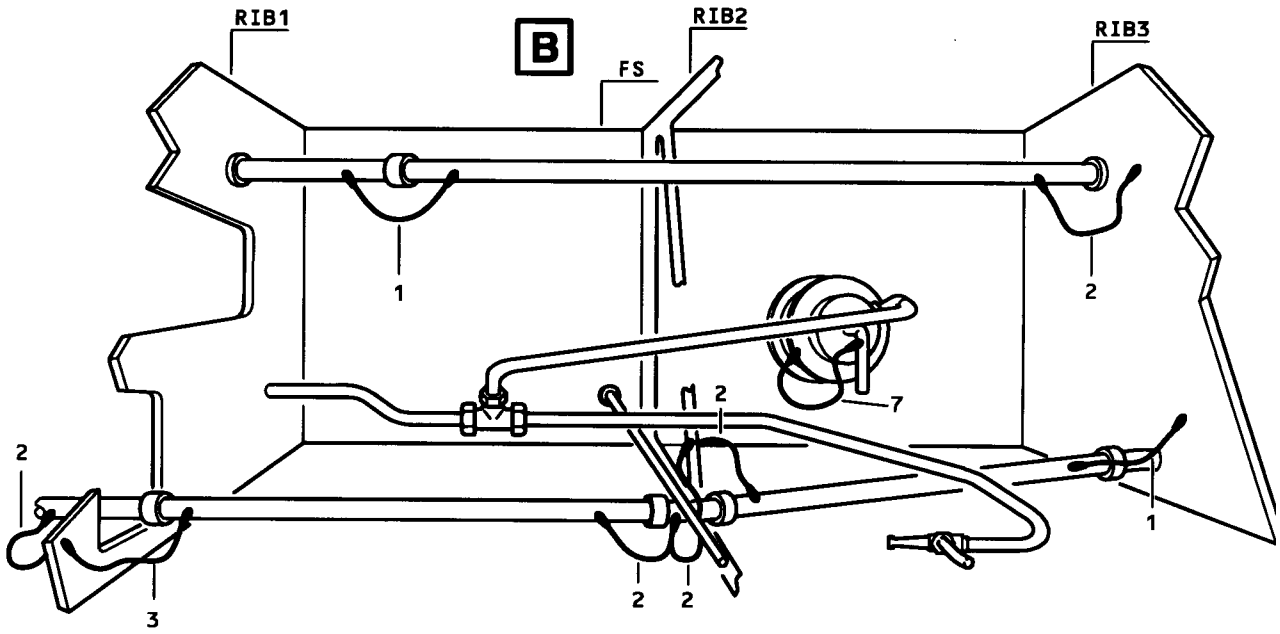
BMO 28 00 00 6 CVAS 00

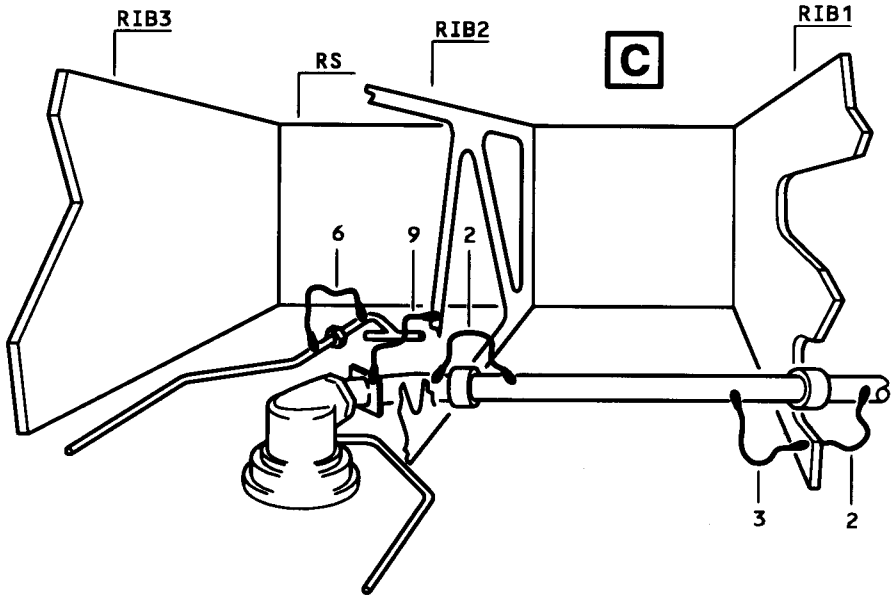
Bonding Straps Between Ribs 1 and 2
(Sheet 3/3)
Figure A620



BMO 28 00 00 6 CXAA 00

Center Base Tank Between Ribs 1 thru 3
(Sheet 1/2)
Figure A621





BMD 28 00 00 6 CXAM 00

Bonding Straps Between Ribs 1 thru 3
(Sheet 2/2)
Figure A621

1. Bonding Lead Attachment Repair

WARNING : OBSERVE THE SAFETY PRECAUTIONS IN 28-00-00, P. BLOCK 301 AND 28-10-00, P. BLOCK 301.

MAKE SURE THAT THE FIRE FIGHTING EQUIPMENT IS AVAILABLE AND ADEQUATE.

A. Reason for the Job
To provide for bonding lead attachment, after the failure of an integral bonding lug in aluminum-alloy fuel pipes, by installing a locally manufactured clamp-type clip.
R This procedure is only for aluminium-alloy fuel pipes. For the repair
R procedure of corrosion-resistant steel pipes, you must refer to
R (Ref. 20-28-11, P. Block 1).

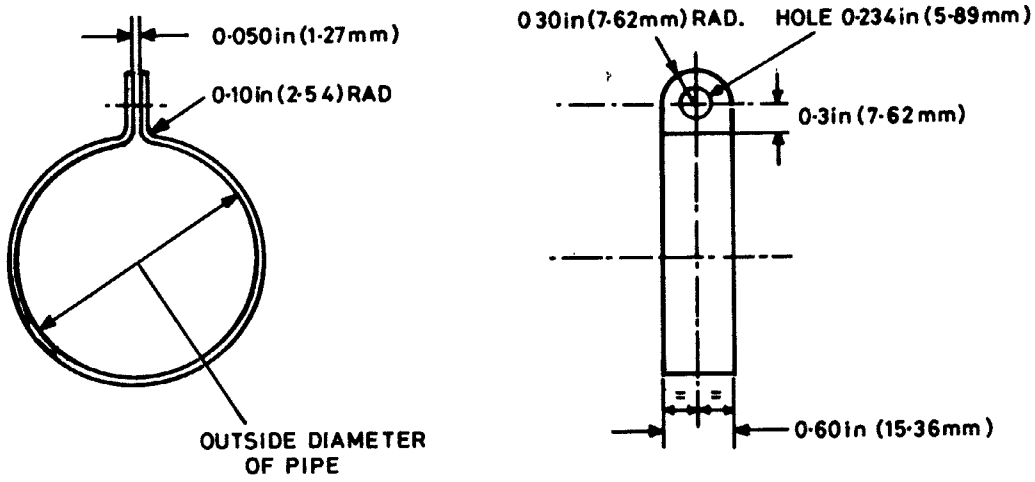
B. Equipment and Materials

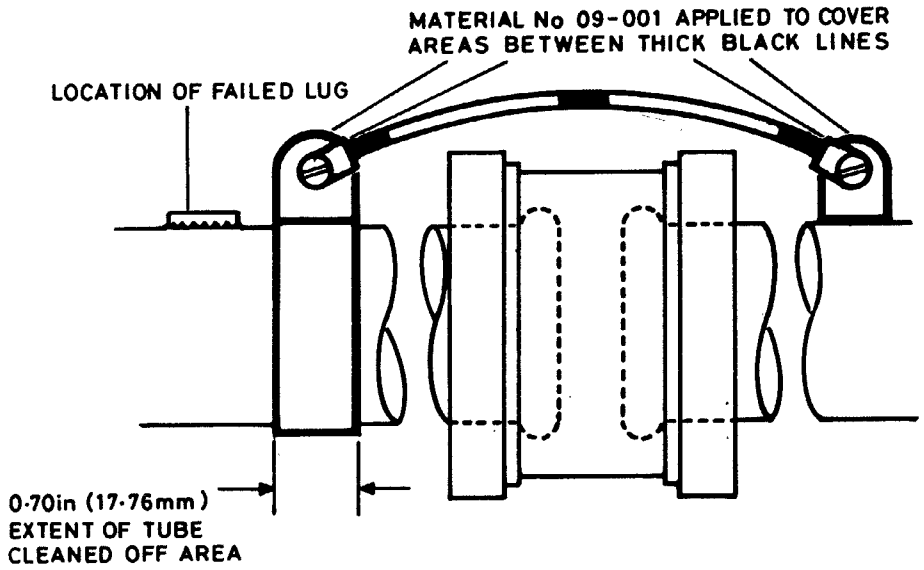
ITEM	DESIGNATION
A. Clip	Aluminum Alloy, 0.048 in (1.22 mm) Thick X 0.60 in (15.34 mm) Wide x (length to suit pipe diameter). Material Specification:
R	BS EN 485-6061 T6
	or
R	BS EN 485-6061 T42
	or
R	BS EN 485-6082 T4
B.	Lint-Free Cloth
C.	Abrasive Paper, Grade 1
D.	Fine Sand or Glass Paper
E.	Low Voltage Bonding Tester
F.	Brush
G. Material No. 09-001	Sealants (Ref. 20-31-00)
H. Material No. 11-026	Cleaning Agents (Ref. 20-31-00)
J. Material No. 16-006	Structure Paints (Ref. 20-31-00)
Referenced Procedures	
- 20-28-11, P. Block 1	Electrical Bonding
- 28-00-00, P. Block 301	Fuel - General
- 28-10-00, P. Block 301	Storage

C. Procedure
(Ref. Fig. 801)

NOTE: It is assumed access has already been gained to tank interior.

(1)Job Set-Up
(a)Manufacture clip as shown on the figure.
(2)Application
(a)On the fuel tube, carefully smooth the failed lug. Do not remove





BM 7 28 00 00 8 AAM0

Bonding Clip Details
Figure 801

the attaching weld.

(b)Use a clean lint-free cloth moistened with cleaning agent (Material No. 11-026) to clean the exposed surface.

(c)Brush on Material No. 16-006, to completely cover the exposure. Allow time to dry.

(d)Remove tube protective treatment, adjacent to the failed lug, and to suit length of bonding lead, down to bare metal over an area 0.70 in (17.78 mm) wide. Use abrasive paper, grade 1.

(e)Finally finish the exposed area using fine sand or glass paper.

(f)Use a clean lint-free cloth moistened with cleaning agent (Material No. 11-026) to clean the locally-manufactured clip. Dry the clip with dry lint-free cloth.

(g)Install and align clip on tube, connect bonding lead using existing parts. Make sure that the clip is central to the cleaned-up area; tighten attaching parts.

(3)Bonding check and final sealing

(a)Using low voltage bonding tester, check that bonding resistance between clip and tube does not exceed 0.05 ohms (Ref. 20-28-11, P. Block 1).

(b)Apply sealant (Material No. 09-001) and make sure that the sealant covers the remainder of the exposed tube surface.

1. General

**ON A/C 001-100,

Fuel is stored in six fuel tanks. There are two integral tanks in each wing designated inner and outer tanks, a tank located in the center wing box between STA2294 (FR 40/41) and STA2612 (FR 47/48) designated the center tank and a tank in the horizontal stabilizer between STA723 (RIB 19) and STA673 (RIB 18) designated the trim tank, (Ref. 28-11-00, P. Block 1).

**ON A/C 101-200,

Fuel is stored in six main fuel tanks and, if fitted, one additional center tank (ACT). There are two integral tanks in each wing designated inner and outer tanks, a tank located in the center wing box between STA2294 (FR 40/41) and STA2612 (FR 47/48) designated the center tank, a tank located in the cargo compartment between STA 2931 (FR 54) and STA 3090 (FR 54.3) designated the ACT and a tank in the horizontal stabilizer between STA723 (RIB19) and STA673 (RIB18) designated the trim tank.

**ON A/C 101-200,

Post SB 28-2105 For A/C 101-200,

R Post SB 28-2126 For A/C 104-104,

Fuel is stored in six main fuel tanks and, if fitted, one or two additional center tanks (ACT). There are two integral tanks in each wing designated inner and outer tanks, a tank located in the center wing box between STA2294 (FR 40/41) and STA2612 (FR 47/48) designated the center tank and a tank in the horizontal stabilizer between STA723 (RIB19) and STA673 (RIB18) designated the trim tank. The tank (tanks) can be located in the cargo compartment between STA2931 (FR54) and STA3249 (FR60) designated the ACT(s).

**ON A/C 001-100,

Each tank is vented to atmosphere by a flush NACA intake located in the outboard section of each wing or trim tank (Ref. 28-12-00, P. Block 1).

**ON A/C 101-200,

Each tank, except the ACT(s), is (are) initially vented into a vent surge tank and then to atmosphere by a flush NACA intake located in the outboard section of each wing or trim tank. The ACT(s) is (are) vented to atmosphere via the center tank vent line. (Ref. 28-12-00, P. Block 1).

**ON A/C ALL

The center tank external ventilation system ventilates that volume which lies between the center tank roof/front wall and the adjacent vapor membrane (Ref. 28-13-00, P. Block 1).

The trim tank external ventilation system ventilates the volume that lies between the trim tank front wall, trim tank underside and the adjacent vapor membrane (Ref. 28-13-00, P. Block 1).

WARNING : LANDING GEAR - MAKE SURE THAT THE GROUND SAFETIES AND CHOCKS ARE IN POSITION.

FLIGHT CONTROLS - MAKE SURE THAT THE GROUND SAFETIES AND NOTICES ARE IN POSITION.

OBEY THE GENERAL SAFETY PRECAUTIONS (REF. 28-00-00, P. BLOCK 301) AND THE ELECTRICAL SAFETY PRECAUTIONS (REF. 24-00-00, P. BLOCK 301) BEFORE YOU DO MAINTENANCE WORK ON THE FUEL SYSTEM OR IN THE FUEL TANKS.

MAKE SURE THAT THE FIRE FIGHTING EQUIPMENT IS AVAILABLE AND ADEQUATE.

DO NOT CONNECT GROUND POWER OR SWITCH ON ANY AIRCRAFT ELECTRICAL SYSTEM UNTIL THE FUEL TANKS HAVE BEEN COMPLETELY DRAINED AND VENTED.

R CAUTION : MAKE SURE THAT THE ACCESS DOOR (144DR) TO THE EXTERNAL
R REFUEL/DEFUEL PANEL (110VU) IS CLOSED BEFORE YOU:
R - DISCONNECT THE ELECTRICAL GROUND POWER SUPPLY
R - ISOLATE THE AIRCRAFT BATTERIES.
R THE CENTER TANK RELIEF VALVE CAN REMAIN IN THE OPEN POSITION AND LET
R FUEL ENTER THE INNER FUEL TANK.

1. General

When fuel tank access doors are removed or when entry into a fuel tank is required, the following precautions must be observed. These precautions must be read in conjunction with any special notes and precautions which may apply to specific maintenance operations. The person to work inside the fuel tank and the safety person out of the fuel tank, must obey these precautions.

NOTE: These precautions are the minimum safety standard for work in a fuel tank. But, the Local Regulations can make other safety precautions necessary.

2. Equipment and Materials

ITEM	DESIGNATION
A. 98A28101000000	Adapting Pipe - Water Draining from Fuel
B. 98A28104000000	Water Drain Purger
C.	Combustible Gas Indicator
D.	Compressed Air Supply
E.	Respirators
F.	Lint-Free Cloth
G.	Access Mats
H.	Spark-Proof Lamps
J.	Warning Notices

ITEM	DESIGNATION
K.	Warning Placards
L.	Access Platform 6 to 24ft (2 to 7m)
M. Material No. 09-001	Sealants (Ref. 20-31-00)
Referenced Procedures	
- 12-11-28, P. Block 301	Replenishing of Fuel Tanks
- 12-32-28, P. Block 301	Fuel Sampling
- 20-28-11, P. Block 1	Electrical Bonding
- 24-31-11, P. Block 401	Batteries
- 28-00-00, P. Block 301	Fuel - General
- 28-00-00, P. Block 601	Fuel - General
- 28-11-22, P. Block 401	Manhole Covers
- 28-25-00, P. Block 301	Refuel/Defuel
- 28-11-24, P. Block 401	Manhole Covers, Booster Pumps
- 28-11-29, P. Block 401	Manhole Covers, Center Tank
- 28-11-33, P. Block 401	Manhole Covers, Trim Tank
R **ON A/C 101-200,	
- 28-11-36, P. Block 401	Additional Center Tank
- 28-11-37, P. Block 401	Manhole Cover, ACT
R **ON A/C ALL	
- 28-25-00, P. Block 301	Refuel/Defuel System

3. Safety Precautions

A. You must obey the fuel safety procedures (Ref. 28-00-00, P. Block 301) when you do work in a fuel tank.

B. There must be a continuous flow of clean filtered air through the fuel tank when the person is in the tank.

(1) You must put on an air-supplied respirator to go into a fuel tank, unless the Local Regulations permit you to work without a respirator. The Local Regulations must include a risk assessment for:
(a) Fire/Explosion. Do not enter a fuel tank until the Lower Explosion Limit (LEL) is below 10% LEL.
(b) Health. Do not go into a fuel tank (without an air-supplied respirator) unless the vapor concentration in the tank is below the Local Occupational Exposure Limits (Threshold Limit Values or equivalent).

WARNING : DO NOT REMOVE RESPIRATOR WHILE INSIDE A TANK. SEVERE ILLNESS, UNCONSCIOUSNESS OR DEATH CAN RESULT FROM EXCESSIVE EXPOSURE TO FUEL VAPOR.

C. If possible, the safety person must position himself to be able to see

the person in the fuel tank and monitor his safety.

NOTE: This may require the attendant to put his head through an appropriate manhole to gain an unobstructed view of the operator inside the tank.

D. Do not go in a tank until you know the location and dimensions of the work areas.

NOTE: In some of the outer wing areas you can only put part of your body into the tank.

E. If fuel is splashed into the eyes, flush with water for at least 5 minutes, lifting the upper and lower eyelids frequently to ensure complete wash, and report to the nearest medical center.

F. All equipment used in the tank must be scrupulously clean and free from dirt, grit, swarf, oil contamination, flaking paint or any other material that may be deposited in the tank.

G. Ventilating air from the compressor must be filtered to remove impurities, particularly oil and water.

H. Use only approved lint-free cloth for drying tank interiors.

J. Extreme care must be taken to avoid inadvertent damage to the internal structure or sealant during maintenance.
Internal fuel lines are particularly susceptible to damage and should be removed where access is restricted. Do not damage the bonding straps, the electrical cables or the conduits.

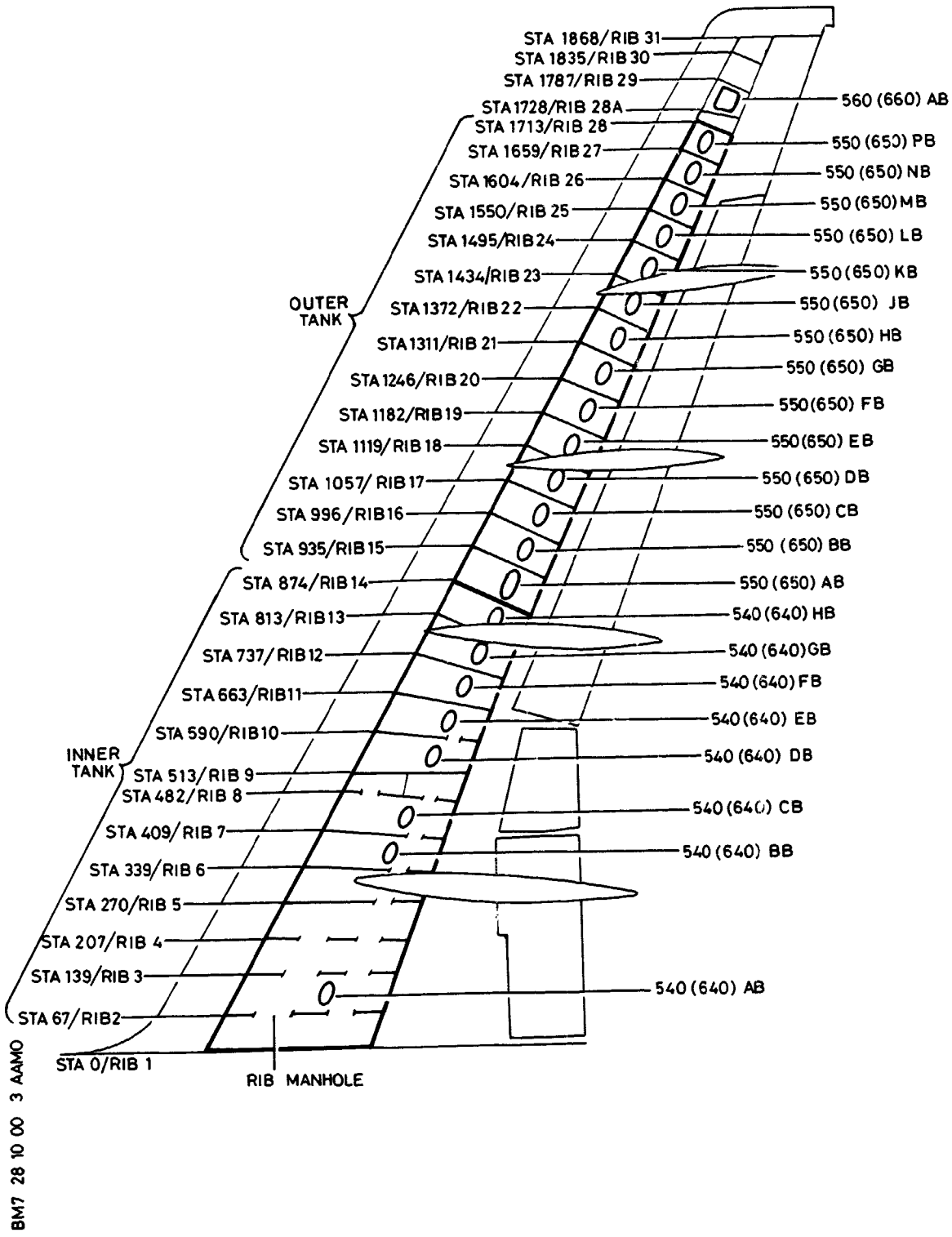
K. Use access mats on the floor of the tank to prevent damage to the tank structure and as a safeguard against injury to the operator.

L. Do not touch or push against the magnetic level indicators when you are in the fuel tank. This will prevent damage to them.

4. Fuel Tank Access and Working Areas

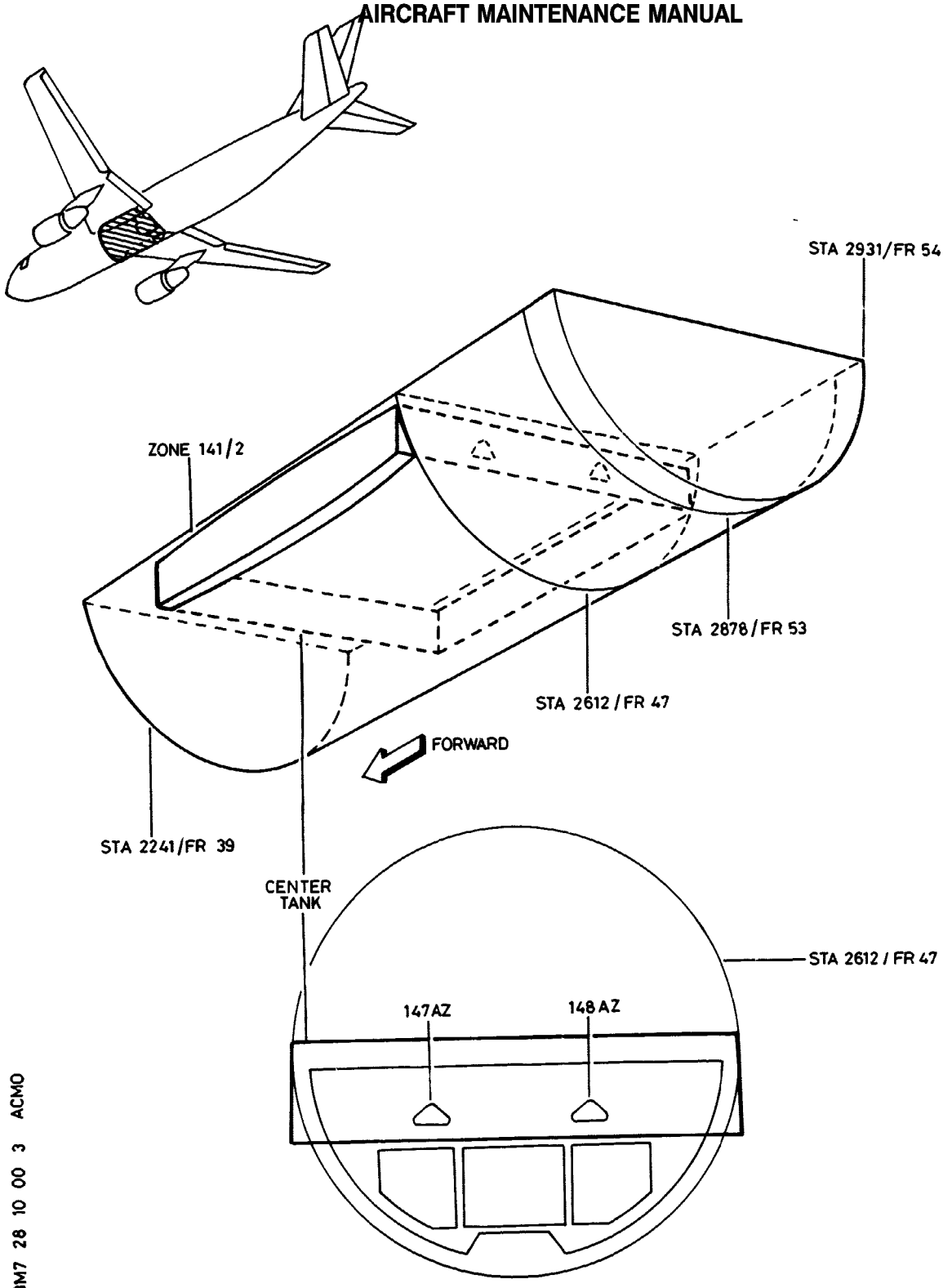
A. Inner and Outer Tanks
(Ref. Fig. 301)
Each inner and outer fuel tank is divided into working areas corresponding to the compartments located between structural ribs.
Most of these compartments have manholes located in the wing lower surface. Compartments not provided with manholes are accessible from adjacent compartments through manholes in the ribs.

B. Center Tank
(Ref. Fig. 302)
Two manhole covers give access to the center tank. These are located in the rear spar at STA2612/FR47 and are accessible from the main



Wing Tank Access
Figure 301

R



BM7 28 10 00 3 ACMO

Center Tank Access
Figure 302

R

landing gear bay.

**ON A/C 101-200,

C. ACT(s) (if fitted)

**ON A/C 001-100,

C. Not applicable.

**ON A/C 101-200,

(Ref. Fig. 303)

R **ON A/C 101-103, 105-200,

R Post SB 28-2105 For A/C 101-103,105-200,

(Ref. Fig. 304)

**ON A/C 101-200,

One manhole cover gives access to the ACT. This is located on the rear face of the ACT at STA3090/FR 54.3 accessible from the aft cargo compartment.

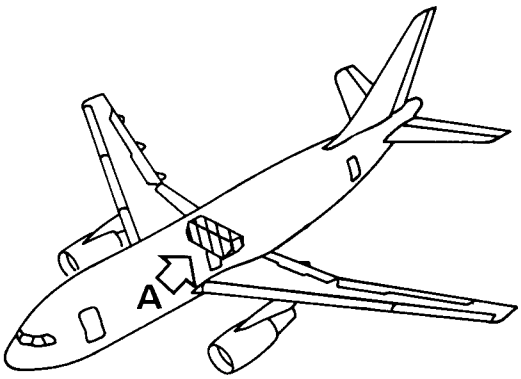
R **ON A/C 101-103, 105-200,

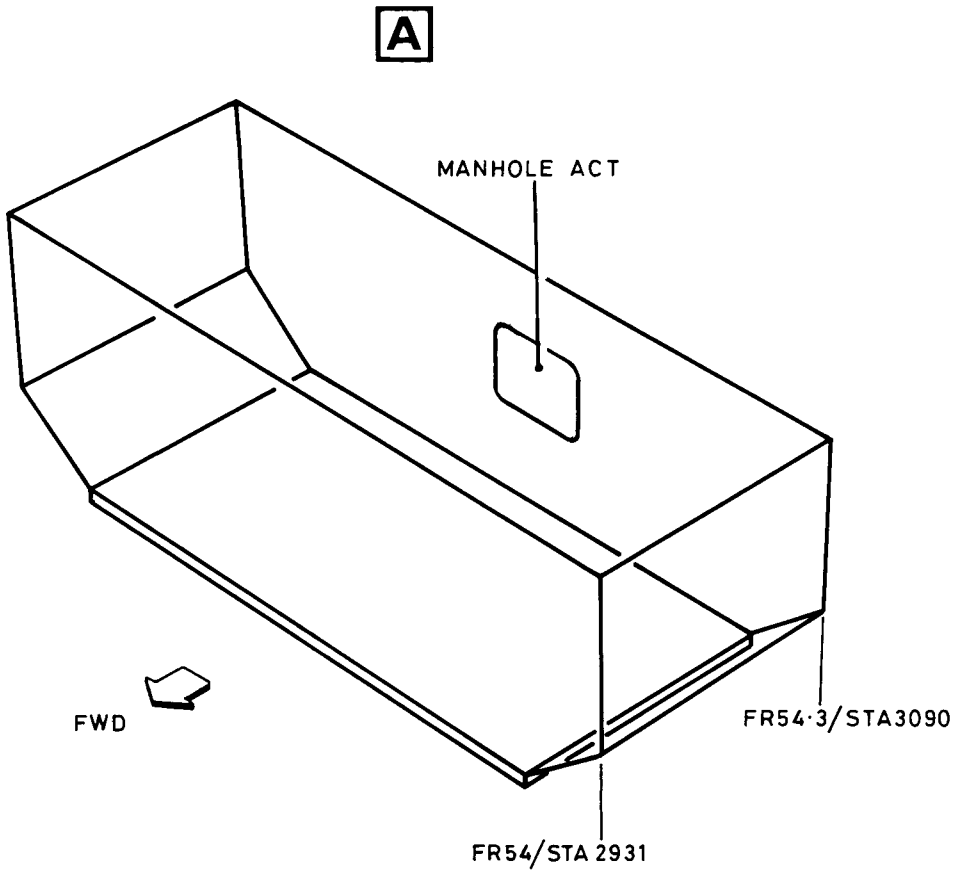
R Post SB 28-2105 For A/C 101-103,105-200,

Each ACT has a manhole cover for access. This manhole cover is located on the aft face of each ACT, at STA 3090/FR 54.3 on ACT 1 and at STA 3249/FR 60 on ACT 2. The manhole cover of ACT 2 is accessible from the aft cargo compartment. The manhole cover of ACT 1 is only accessible from the aft cargo compartment, if ACT 2 has been removed (Ref. 28-11-36, P. Block 401).

**ON A/C ALL

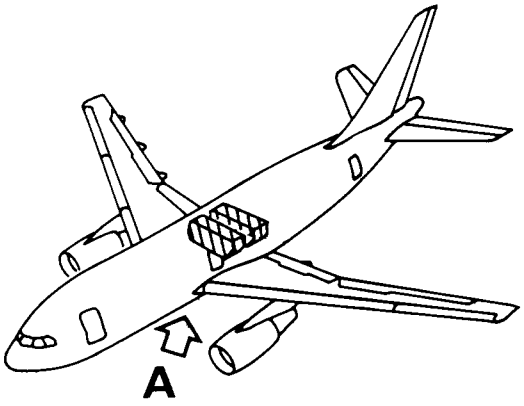
D. Trim Tank
(Ref. Fig. 305)
The manholes in the trim-tank lower surface allow access to the rib compartments. The rib compartments not provided with a manhole are accessible through an adjacent compartment. Panel 312AR gives access to the two center section manholes (Ref. 28-11-33, P. Block 401).

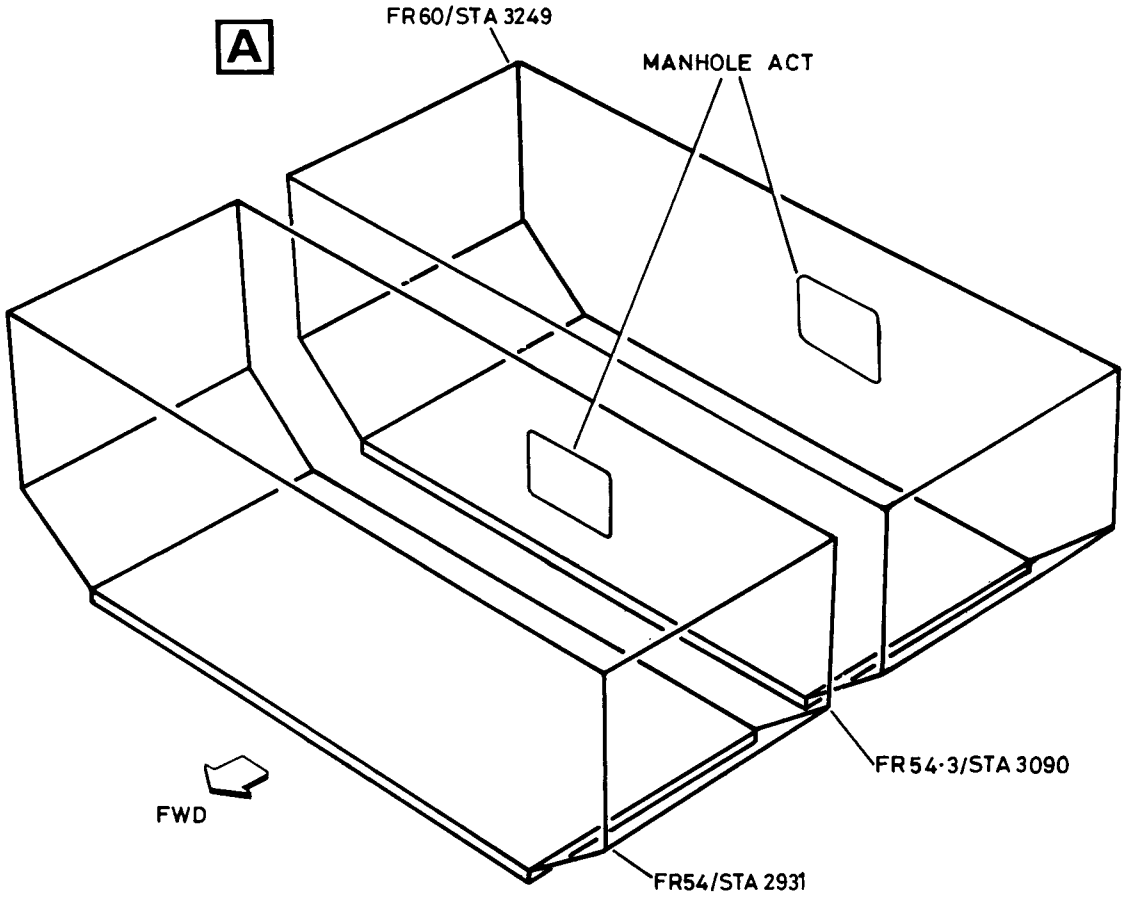




BMB 28 10 00 3 ACUO 01

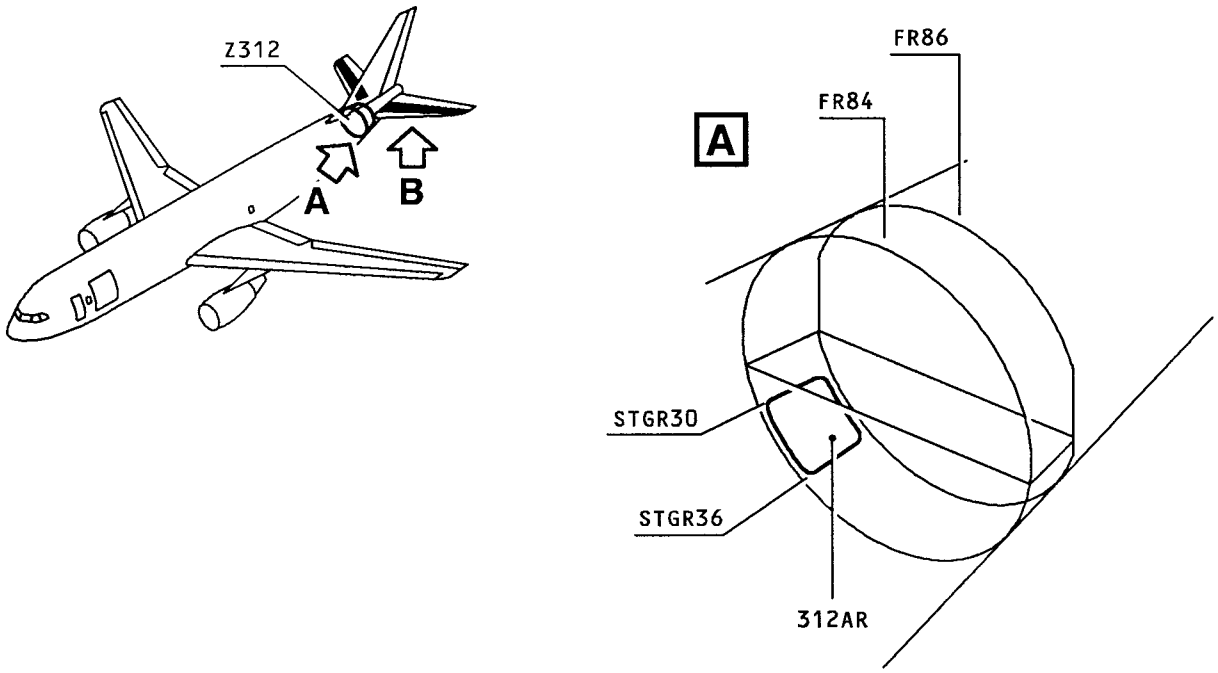
R ACT Access
Figure 303





BM8 28 10 00 3 ADFO 01

ACT(s) Access
Figure 304



BM8 28 10 00 3 AHM0 00

Trim Tank Access
Figure 305

WARNING: WHEN ONLY PARTIAL ENTRY INTO THE TANK IS POSSIBLE THE FULL SAFETY PRECAUTIONS STILL APPLY.

E. Before entering a tank, study the work area diagram to establish which area is to be worked in and its extent. To perform maintenance in some of the outer wing areas it may be possible to make only a partial entry into the tank.

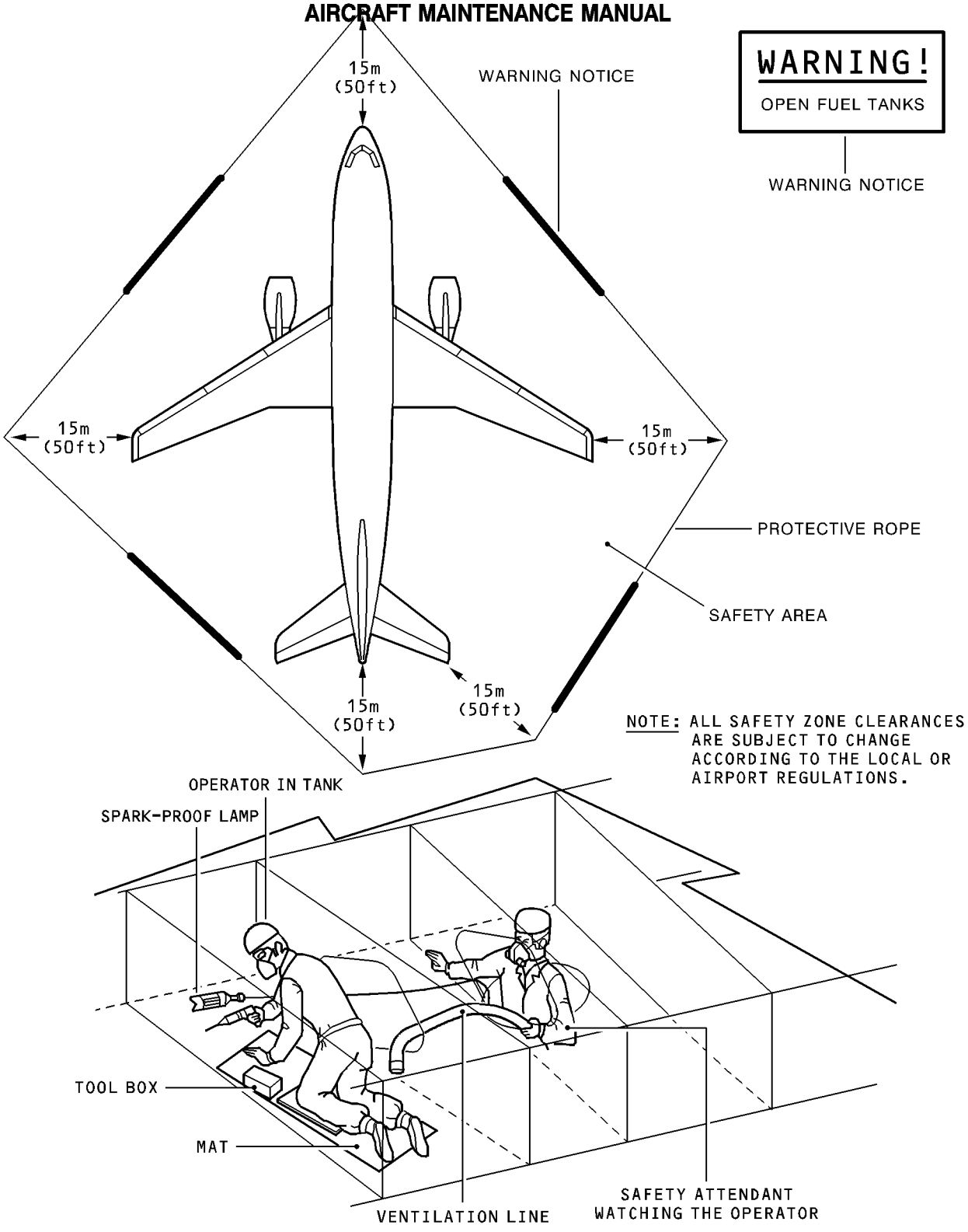
F. An operator must have a detailed knowledge of the structure of tanks, access doors and component location and also know the tools and equipment required for a particular operation. To gain access to more remote corners of a work area it may be necessary to remove parts of the structure, lines and equipment.

5. Fuel Tank Draining, Venting and Entry
(Ref. Fig. 306)

R WARNING : OBSERVE THE PRESCRIBED SAFETY PRECAUTIONS (REF. 28-00-00,
R P. BLOCK 301).

A. Preparation
(1)Rope off an area around the aircraft in order to indicate the safety area.
(2)Position suitable warning notices at vantage points around the perimeter of the area indicating that fuel tank maintenance is in progress, as well as **NO SMOKING** notices and any other suitable warning notices that will prevent accidents.
(3)Position access platform(s) as necessary.
(4)Make sure that the aircraft is electrically grounded and that electrical bonding is established for all access platforms and associated equipment, before maintenance commences.

B. Draining
(1)Defuel the relevant tank (Ref. 28-25-00, P. Block 301).
(2)Make sure that all isolation (shutoff) valves associated with the defueled tank are closed.
(3)Disconnect electrical ground power and isolate the aircraft power. Battery leads must be disconnected and correctly stowed (Ref. 24-31-11, P. Block 401).
(4)Put suitable warning placards on the appropriate panels and on the ground power connection indicating that personnel are working in the fuel tanks.
(5)Put the water drain purger (together with adapting pipe-water draining from fuel) under the water drain valve of the appropriate tank (Ref. 12-32-28 P. Block 301).
(6)Drain off water and residual fuel (Ref. 12-32-28, P. Block 301).
(7)Put the water drain purger (together with adapting pipe-water draining from fuel) under the drain plug of the relevant pumps, unscrew the drain plug to drain pump canister.
Tighten drain plug.



Safety Areas and Precautions
Figure 306

R

R **ON A/C 001-100,

(8)Remove appropriate manhole cover(s):
- outboard of STA1246/RIB 20 (Ref. 28-11-22, P. Block 401).
- inboard of STA1246/RIB 20 (Ref. 28-11-22, P. Block 401).
- outer tank pumps (Ref. 28-11-24, P. Block 401).
- center tank (Ref. 28-11-29, P. Block 401).
- trim tank (Ref. 28-11-33, P. Block 401).

C. Fuel Tank Venting

R **ON A/C 101-200,

R (8)Remove appropriate manhole cover(s):
- outboard of STA1246/RIB 20 (Ref. 28-11-22, P. Block 401).
- inboard of STA1246/RIB 20 (Ref. 28-11-22, P. Block 401).
- outer tank pumps (Ref. 28-11-24, P. Block 401).
- center tank (Ref. 28-11-29, P. Block 401).
- ACT(s) (if ACT(s) fitted) (Ref. 28-11-37, P. Block 401).
- trim tank (Ref. 28-11-33, P. Block 401).

C. Fuel Tank Venting

R **ON A/C ALL

(1) Fuel tank venting (preferred method)
(a)Make sure that all access doors, available for ventilation, have been removed.
(b)Ventilate the fuel tank with clean, filtered air from a compressor.
1 Position the air compressor as far as possible from the aircraft.
2 Insert the end of the compressor supply hose into the tank, through a convenient access hole.
3 Switch on the compressor and check that air is circulating through the tank.
(c)Continue the ventilating process for six hours. At least one observer must stay in the area to check that the process continues satisfactorily.

R NOTE : Any operator leaving the area during the initial venting period must remove all protective clothing and store it in a clean, dry place until it is required again.

(d)After six hours, test the condition of the fuel tank atmosphere with the combustible gas indicator. If the fuel vapor concentration exceeds
R 10% of the LEL (as indicated by the combustible gas indicator) continue the venting process taking readings at 15 minutes intervals
R until the fuel vapor concentration drops below 10% of the LEL.

R NOTE : When fuel vapor concentration reaches a level between 5%
R and 10% of the LEL (as indicated by the combustible gas

indicator) personnel may enter the fuel tank only if wearing an air-supplied respirator. When the fuel vapor concentration reaches a level below 5% of the LEL (as indicated by the combustible gas indicator) personnel may enter a fuel tank without a respirator. Such a decision must only be taken when the vapor concentration in the fuel tank is below the Local Occupational Exposure Limits (Threshold Limit Values or equivalent).

(2)Fuel tank venting (alternate method)

(a)Make sure that all access doors, available for ventilation, have been removed.

(b)Ventilate the fuel tank with clean, filtered air from a compressor.

1 Position the air compressor as far as possible from the aircraft.

2 Insert the end of the compressor supply hose into the tank, through a convenient access hole.

3 Switch on the compressor and check that air is circulating through the tank.

(c)Continue the circulating process until the fuel vapor
R concentration in the tank atmosphere does not exceed 10% of the LEL (as indicated by the combustible gas indicator). Check at several points to ensure the fuel vapor is evenly distributed inside the tank.

NOTE: At least one observer must stay in the area to check that the process continues satisfactorily.

NOTE: Any operator leaving the area during the initial venting period must remove all protective clothing and store it in a clean, dry place until it is required again.

NOTE: Personnel may enter the fuel tank only if wearing an air-supplied respirator when the fuel vapor concentration is
R between 5% and 10% of the LEL (as indicated by the combustible gas indicator). Personnel may enter the fuel tank without a respirator when fuel vapor concentration is less than 5% of the LEL (as indicated by the combustible gas indicator), provided that specified safety precautions are adhered to.

D. Entering the Fuel Tank

(Ref. Fig. 307)

WARNING : DO NOT ENTER THE TANK UNTIL IT HAS BEEN CORRECTLY VENTED. APPROVED PROTECTIVE CLOTHING MUST BE WORN TO ENTER THE FUEL TANK. THIS PREVENTS PERSONAL CONTAMINATION AND THE FORMATION OF STATIC ELECTRICITY.

(1)You must complete the Pre-Entry Checklist before you do work in a fuel

This check list must be complete before you do work in the fuel tank.

Wet Fuel Tank Entry Location

Aircraft:_____ Tank:_____ Shift:_____ Date:_____

Shift Supervisor is:_____

✓ the box when you have made sure that :-

☐ 1. All the aircraft electrical circuits are de-energized.

☐ 2. The aircraft is electrically grounded.

☐ 3. All the access platforms and associated equipment are electrically grounded.

☐ 4. All the electrical ground power units are disconnected.

☐ 5. Access to the area is limited and warning signs are in position.

☐ 6. A checklist of all tools and equipment to be used in the fuel tank is available.

☐ 7. Only approved spark-proof lamps and torches are in the work area. Sealed vapor-lamps are not to be used.

☐ 8. Only approved protective clothing is used.

☐ 9. The tank entry person and the safety person each have two air-supplied respirators that operate satisfactorily.

☐ 10. Both the tank entry person and the safety person have current medical certificates for entry into tanks.

☐ 11. Lint free cloths and special fire-proof containers are available to remove all remaining fuel.

☐ 12. There is a continuous flow of clean filtered air through the fuel tank available when the person is in the tank.

☐ 13. The vapor concentration is less than 10% of the applicable Lower Explosion Limit (LEL).

☐ 14. Correct fire fighting equipment and approved persons available.

☐ 15. The fire department has been told.

Meter Reading

☐ 16. Fuel-Gas concentration (LEL) reading prior to tank entry is:_____

I confirm that all entry requirements were met before entry was made into the tanks.

_____

Signature of Supervisor Date/Time

BM8 28 10 00 3 ALMO 01

Pre-Entry Checklist
Figure 307

R

tank (Ref. Fig. 307).
(2)Put on protective clothing (Ref. 28-00-00, P. Block 301).

NOTE : The wearing of safety overshoes is not compulsory when the operator only partially enters the fuel tank.

(3)Make sure that each operator has two air-supplied respirators.
(4)Check the operation of both respirators before use.
(5)Remove all loose items from pockets of overalls.
(6)Remove all personal jewellery, watches, rings etc.
(7)Make a check list of tools and equipment to be taken into the tank. Place all tools and equipment required for the maintenance operation in a shallow, open topped, nonmetallic container of a convenient size to allow unobstructed passage through internal apertures.
(8)Agree with the attendant on the safety signals to be used in the event of the operator feeling unwell.
(9)Discharge any static electricity in the body by touching an identified ground: put on the overshoes and enter the tank.

E. Procedure Inside the Tank

WARNING: WIRELOCKING MUST BE ACCOMPLISHED OUTSIDE TANK AREA WITH EXCEPTION OF T-CONNECTION ON TRANSFER LINE AT STA2612(FR47/48). ENDS OF LOCKWIRE ARE ENCLOSED WITH SEALANT (MATERIAL NO. 09-001).

(1)Continue circulating the ventilating air while the operator is working inside the tank.
(2)Remove all fuel leakage with an approved clean lint-free cloth.
(3)Put down access mats on the floor of the tank in the working area.
(4)Use only approved spark proof lamps and tools in the working area.
(5)Continue to blow clean air through the fuel tank while persons are in the fuel tank. Monitor the fuel tank atmosphere, with the combustible gas indicator, to make sure that the atmosphere in the fuel tank remains at a safe level.
(6)Use only approved solvents and cleaning agents.
(7)Use only red colored cable ties in the fuel tanks.

NOTE : The use of red colored cable ties helps to identify their location.

(8)Extreme care must be taken to avoid accidental damage to the internal structure or sealant during maintenance. Internal fuel lines can be easily damaged and should be removed where access is limited.
R (9)Do not damage the bonding straps, the electrical cables or the conduits.

F. Leaving the Fuel Tank
(1)Install any structure or equipment removed to complete the repair.
R (2)Before you install an internal door or a fuel tank access panel you must
R remove all the items that follow:
R - unwanted objects
R - unwanted materials

R - tools
R - other equipment.
R (3)Check off every item on the check list you made when the tools and equipment were taken into the tank.
R (4)Make sure that all the bonding straps that bond the pipes and the components are in position and connected correctly. Make sure that they are not corroded, damaged, broken or missing (Ref. 28-00-00, P. Block 601). If necessary, install new bonding straps (Ref. 20-28-11, P. Block 1).
R (5)Install the manhole covers.
R (6)Remove all maintenance equipment.
R (7)Reset any switches or circuit breakers opened in the preparation sequences and reconnect the aircraft battery leads (Ref. 24-31-11, P. Block 401).
R (8)Remove all ropes, safety barriers, warning notices and warning placards from the maintenance area.
R (9)Refuel the relevant fuel tank (Ref. 12-11-28, P. Block 301) and check access doors for leakage.
R (10)Remove the access platform.

6. Safety Procedures When You Do Work in a Dry Fuel Tank

A. Safety Precautions

WARNING : OBEY THE SAFETY PROCEDURES WHEN YOU DO WORK IN A FUEL TANK. THIS WILL PREVENT INJURY OR DAMAGE.

DO NOT REMOVE YOUR RESPIRATOR WHILE YOU ARE IN A FUEL TANK UNLESS THE FUEL-GAS CONCENTRATION IS LESS THAN 5% OF LEL (LOWER EXPLOSIVE LIMIT). YOU WILL BECOME ILL OR DIE.

USE THE APPROVED PROTECTIVE CLOTHING WHEN YOU GO IN A FUEL TANK. THIS PREVENTS PERSONAL CONTAMINATION AND THE FORMATION OF STATIC ELECTRICITY.

(1)You must obey the fuel safety procedures (Ref. 28-00-00, P. Block 301) and (Ref. 28-10-00, P. Block 301) when you do work in a fuel tank. But where differences occur, you must use the approved precautions of this procedure.

B. Procedure

(1)Precautions When You go in a Dry Fuel Tank
Read these precautions together with the special notes and precautions which are applicable to specified maintenance operations.

NOTE : These precautions are the minimum safety standard for work in a fuel tank. But, the Local Regulations can make other safety precautions necessary.

(a)You must complete the Pre-Entry Checklist before you do work in a dry fuel tank (Ref. Fig. 307).

NOTE : Make sure that there are no local regulations or conditions that will prevent you from energizing the aircraft electrical systems with fuel tanks open.

(b)Aircraft power must not be applied unless the LEL level is below 10% in the aircraft fuel tanks, the surrounding area and any zone where work is being carried out on electrical circuits. Access to the tanks is not permitted until the LEL is below 10% LEL.

(c)**A WARNING NOTICE** must be placed on the aircraft near to all energized ground or external power equipment to warn personnel that the fuel tanks are open.

(d)For your safety, make sure that:
- the lead maintenance engineer or supervisor has identified and approved the electrical systems that can be energized
- all the fuel pipes are drained, blanked and free from fuel before you go into a fuel tank
- before the fuel tanks are open for servicing that all the applicable circuit breakers are open and made safe
- all the bonding leads in the open fuel tanks and on the pipes are installed and serviceable
- you are authorised by the lead maintenance engineer or supervisor to go into the fuel tanks
- all the fuel tanks you go into, or are adjacent to, are dry and continuously ventilated with clean filtered air
- if you go in the left wing outer tank or the left surge tank you must make sure the center tank is drained and all residual fuel is removed
- the fuel tanks are free from unwanted material or contamination
- you put on protective clothing before you do work in or around a fuel tank
- there is a safety person in position when you do work inside the fuel tank. The safety person must, if possible, keep you in continuos view
- you and the safety person have an applicable medical certificate for entry into the aircraft fuel tanks.

(e)You can only go into the aircraft fuel tanks without a respirator when:
- the gas-fuel levels of the aircraft fuel tanks are continuously monitored and are below 5% of the applicable lower explosion limit (LEL)
- the gas-fuel levels of the aircraft fuel tanks are below the local occupational exposure limits (threshold limit values or equivalent).

(f)If the gas-fuel levels given in step (4) increase, you must come out of the fuel tanks immediately and tell your lead maintenance engineer or supervisor.

(g)You must do the electrical safety checks to the electrical circuits that will be energized when the fuel tanks are open.

(h)Damaged or unsafe electrical wiring must be disconnected. You must make safe and tag the applicable circuit breaker(s).

(j)If fuel goes in your eyes:
1 Flush them with clean water for 5 minutes (during this time, lift your top and bottom eyelids frequently to make sure they are fully washed).
2 Get medical help.

(k)You must make sure that all the equipment you use in the fuel tank is clean. Do not let oil, dirt, grit, swarf or loose paint cause contamination of the tank.

(l)Do not go in a tank until you know the location and the dimensions of the work areas.

(m)To prevent damage in the fuel tanks, do not:
- touch or push against the magnetic level indicators
- touch or push against the FQI probes
- cause damage to the internal structure, sealant, electrical cables or conduits during maintenance.

(n)Use protective mats on the floor of the fuel tank to prevent:
- damage to the fuel tank structure
- injury to persons.

(p)Use only the approved spark-proof lamps and torches in the fuel tank.

(q)You must safety, if possible:
- all components before you place them inside the fuel tank
- all wire locking completed outside the fuel tank.

(r)Use only an approved lint-free cloth to dry the fuel tank internally.

7. Use of Combustible Gas Indicator

WARNING : OBEY THE APPROVED SAFETY PRECAUTIONS.

The combustible gas indicator is used to test the condition of the atmosphere inside the fuel tanks.
The personnel designated to undertake air analysis inside the fuel tanks must wear approved protective clothing and air-supplied respirators. To operate the combustible gas indicator, refer to the manufacturer's instructions.

NOTE : Analysis of air inside the fuel tanks should be carried out with the combustible gas indicator in at least four different areas of the tank.

FUEL TANKS - DESCRIPTION AND OPERATION

1. General

R **ON A/C 001-100,

Fuel is stored in four wing tanks, a center section tank and a tail trim tank. The wing and center tanks are connected by lines to vent tanks located in the outer section of each wing. Any fuel that overflows into the vent tanks is drained back into the inner or outer tanks during fuel usage. The trim tank is connected to a vent tank located in the outer section of the right hand (RH) stabilizer, any overflows are drained back into the trim tank via the drain valve.

The wing tanks, center tank, trim tank and vent tanks are integral parts of the structure, sealing materials and compounds used are fully resistant to all approved fuels and additives.

Access to the interior of the wing tanks is through manholes in the lower wing surface and access panels in the upper surface.

Access to the center tank is through two manholes in the rear spar.

Access to the trim tank is through manholes in the lower skin.

Access to the vent tanks is by removal of the NACA inlet vent assembly. Every fuel system component within the fuel tanks is accessible through the manholes. Where possible, line replacement units (LRUs) are designed to be removable without draining the fuel tanks, for example, fuel pumps, refuel valves, pressure switches and motorized valve actuators.

All ribs within the main fuel tanks are designed to allow adequate fuel transfer, drainage and venting throughout the tank, and provide adequate baffling to prevent fuel surging during aircraft maneuvers.

R **ON A/C 101-200,

Fuel is stored in four wing tanks, a center section tank, one or two additional center tanks (ACT's) (if fitted) and a tail trim tank. The wing and center tanks are connected by lines to vent tanks located in the outer section of each wing. Any fuel that overflows into the wing vent tanks is siphoned back into the inner tanks during fuel usage. (If fitted) the ACT(s) vents, are connected to the center tank vent line. The trim tank is connected to a vent tank located in the outer section of the right hand (RH) stabilizer, any overflows are drained back into the trim tank via the drain valve.

The wing tanks, center tanks, trim tank and vent tanks are integral parts of the structure, sealing materials and compounds used are fully resistant

to all approved fuels and additives.

The ACT(s) (if fitted) are separate tanks located in the aft cargo compartment and are designed to be easily removable. This allows the aircraft to be quickly changed between no ACTs, one ACT or two ACT configuration.

Access to the interior of the wing tanks and the trim tank is through manholes in the lower skin. The center tank access is through two manholes in the rear spar. Access to the vent tanks is by removal of the NACA inlet vent assembly. All fuel system components within the main fuel tanks are accessible through the manholes. Where possible line replacement units (LRUs) are designed to be removeable without draining the fuel tanks, for example fuel pumps, refuel valves, pressure switches and motorized valve actuators. Access to the ACT(s) is through the aft cargo compartment.

**ON A/C ALL

Post SB 28-2049 For A/C 001-003,

A water scavenge system is installed in the inner tanks and the trim tank to prevent the accumulation of water at the low point in these tanks.

**ON A/C ALL

2. Component Location

R **ON A/C 001-100,

(Ref. Fig. 001)

R **ON A/C 101-200,

(Ref. Fig. 002)

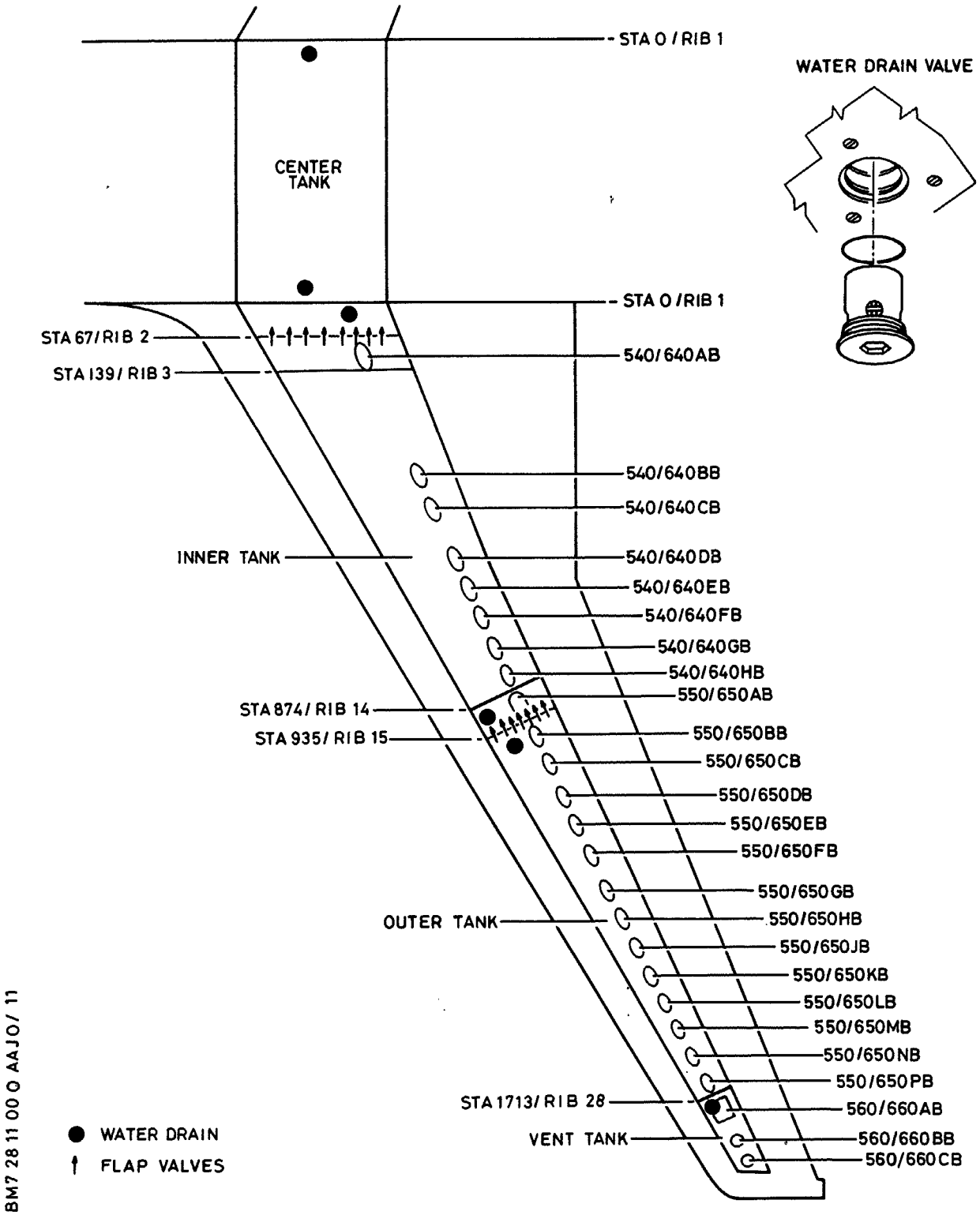
R **ON A/C 101-200,

R Post SB 28-2105 For A/C 101-200,

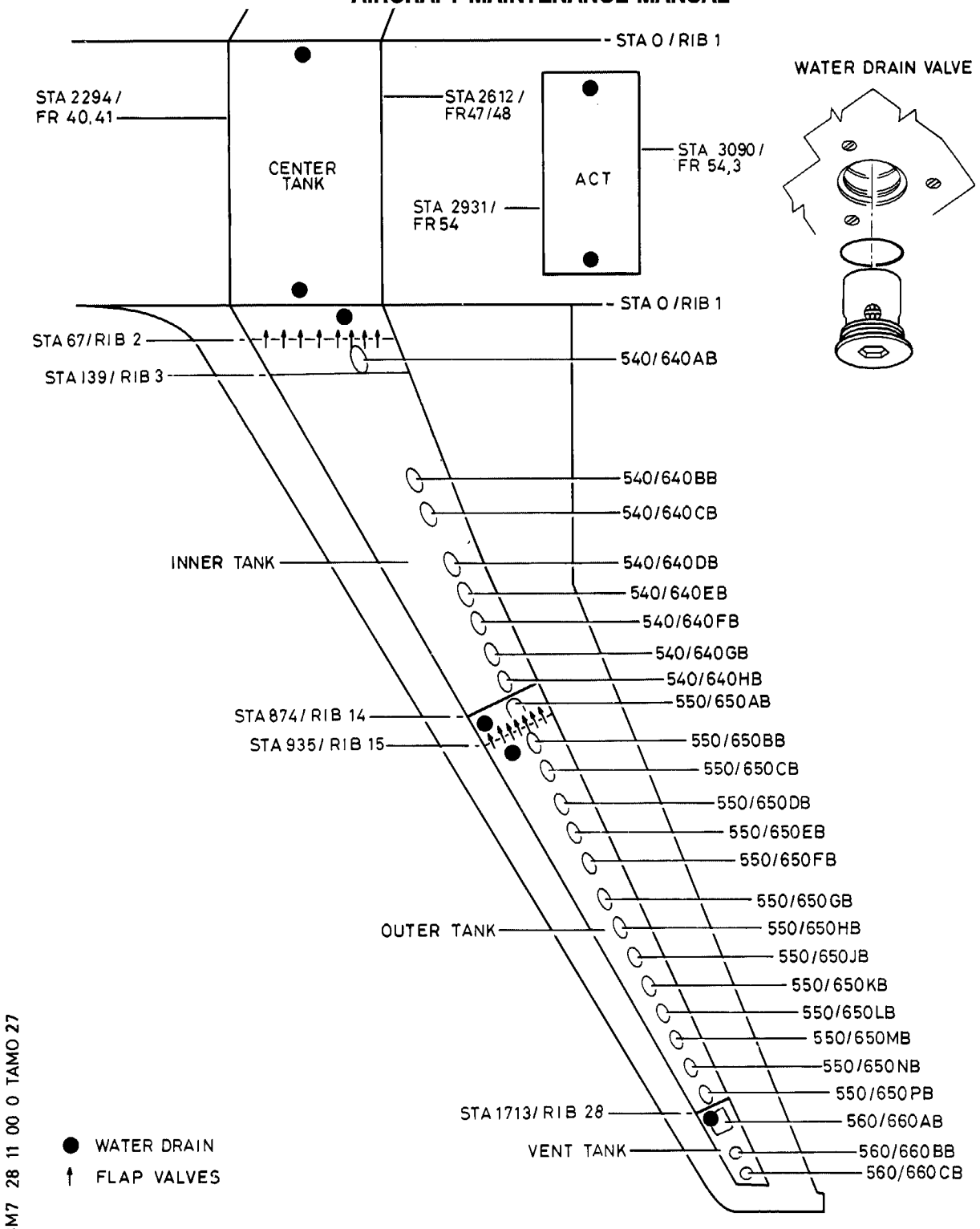
(Ref. Fig. 003)

R **ON A/C ALL

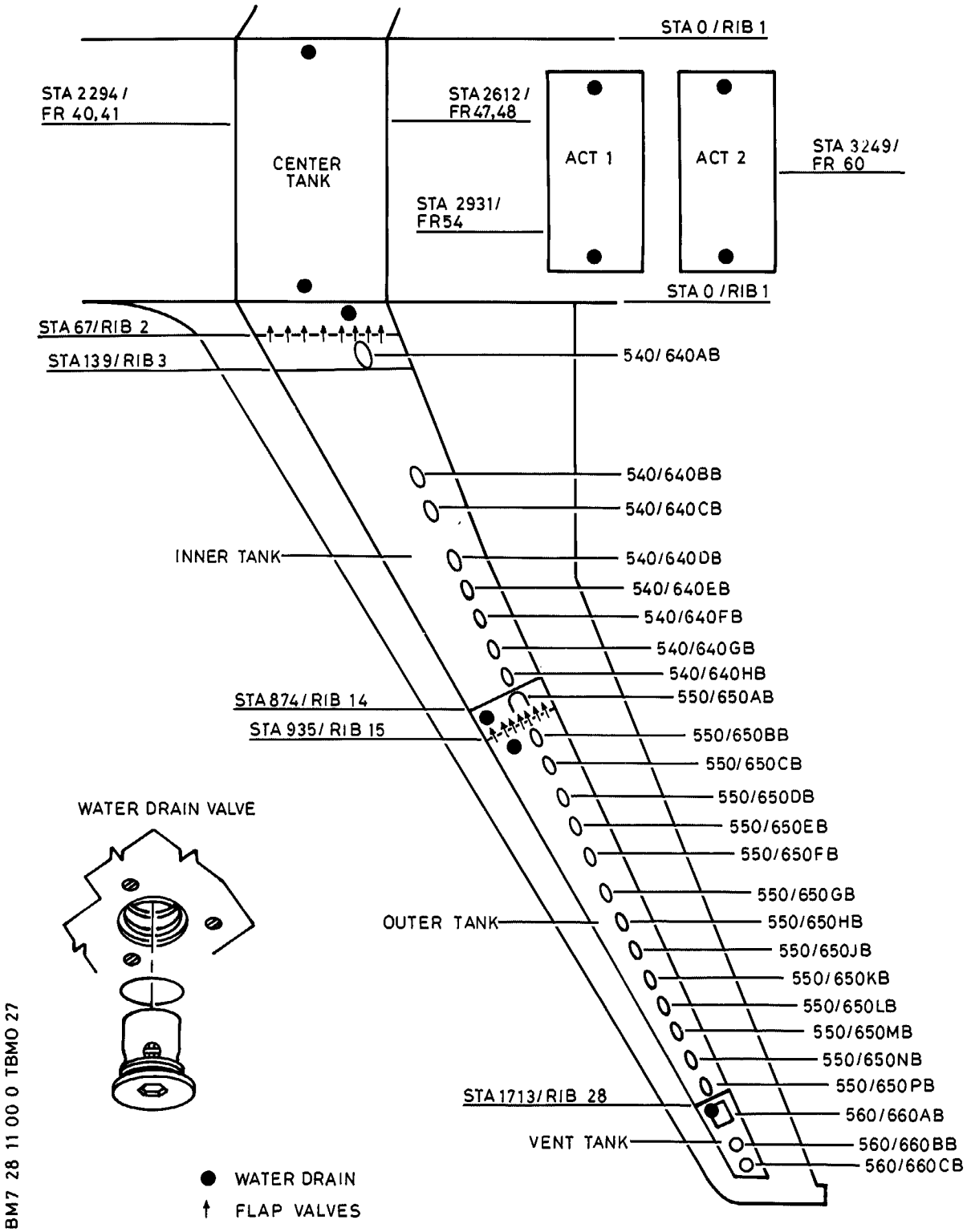
(Ref. Fig. 004)



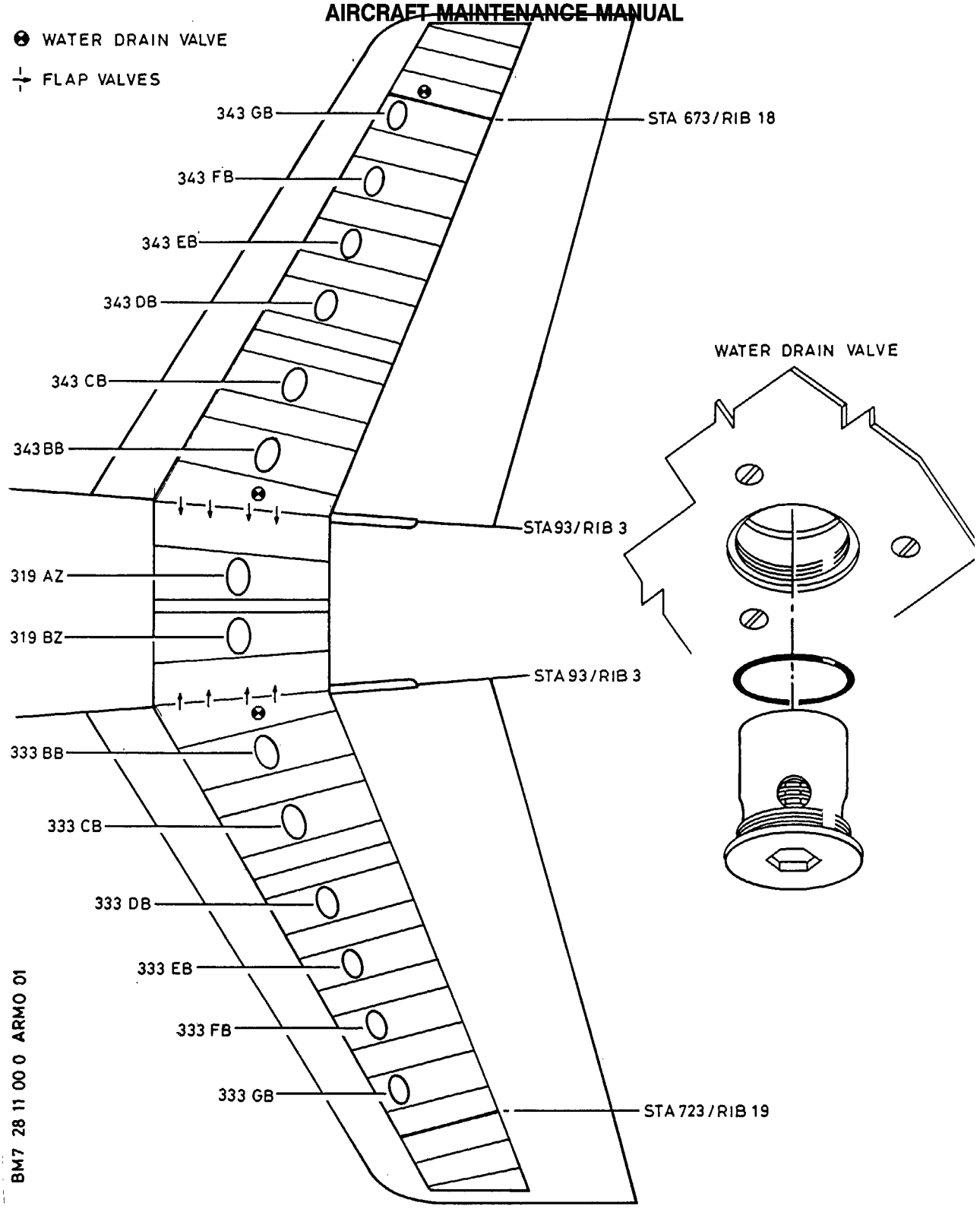
Tanks - Component Location
Figure 001



Component Location - Wing Tanks and ACT
Figure 002



Component Location - Wing Tanks and ACT(s)
Figure 003



Component Location - Trim Tank
Figure 004

	FIN	FUNCTIONAL DESIGNATION	PANEL	ZONE	ACCESS DOOR	ATA REF
	280156	VALVE - WATER DRAIN L INR TK		540	540AB	28-11-21
	280157	VALVE - WATER DRAIN R INR TK		640	640AB	28-11-21
	280162	VALVE - WATER DRAIN L OUTR TK		550	550AB	28-11-21
	280163	VALVE - WATER DRAIN R OUTR TK		650	650AB	28-11-21
	280164	VALVE - WATER DRAIN L OUTR TK		550	550BB	28-11-21
	280165	VALVE - WATER DRAIN R OUTR TK		650	650BB	28-11-21
	280166	VALVE - WATER DRAIN L VENT SURGE TK		560	560AB	28-11-21
	280167	VALVE - WATER DRAIN R VENT SURGE TK		660	660AB	28-11-21
	280170	VALVE - WATER DRAIN CTR TK		141	147AZ	28-11-21
	280171	VALVE - WATER DRAIN CTR TK		142	148AZ	28-11-21
R	**ON A/C 101-200,					
R	280241	VALVE - WATER DRAIN, ACT 1				28-11-39
R	280244	VALVE - WATER DRAIN, ACT 1				28-11-39
R		COVER - MANHOLE, ACT 1				28-11-37
R	**ON A/C 101-200,					
R	Post SB 28-2105 For A/C 101-200,					
	280241	VALVE - WATER DRAIN, ACT 1				28-11-39
	280244	VALVE - WATER DRAIN, ACT 1				28-11-39
	280242	VALVE - WATER DRAIN, ACT 2				28-11-39
	280243	VALVE - WATER DRAIN, ACT 2				28-11-39
		COVER - MANHOLE, ACT 1				28-11-37
		COVER - MANHOLE, ACT 2				28-11-37
R	**ON A/C ALL					
		COVER - MANHOLE L OUTR TK		550	550GB	28-11-22
		COVER - MANHOLE R OUTR TK		650	650GB	28-11-22
		COVER - MANHOLE L OUTR TK		550	550HB	28-11-22
		COVER - MANHOLE R OUTR TK		650	650HB	28-11-22
		COVER - MANHOLE L OUTR TK		550	550JB	28-11-22
		COVER - MANHOLE R OUTR TK		650	650JB	28-11-22
		COVER - MANHOLE L OUTR TK		550	550KB	28-11-22
		COVER - MANHOLE R OUTR TK		650	650KB	28-11-22
		COVER - MANHOLE L OUTR TK		550	550LB	28-11-22
		COVER - MANHOLE R OUTR TK		650	650LB	28-11-22
		COVER - MANHOLE L OUTR TK		550	550MB	28-11-22
		COVER - MANHOLE R OUTR TK		650	650MB	28-11-22
		COVER - MANHOLE L OUTR TK		550	550NB	28-11-22
		COVER - MANHOLE R OUTR TK		650	650NB	28-11-22
		COVER - MANHOLE L OUTR TK		550	550PB	28-11-22
		COVER - MANHOLE R OUTR TK		650	650PB	28-11-22
		COVER - MANHOLE L INR TK		540	540AB	28-11-22

	FIN	FUNCTIONAL DESIGNATION	PANEL	ZONE	ACCESS DOOR	ATA REF
		COVER - MANHOLE R INR TK		640	640AB	28-11-22
		COVER - MANHOLE L INR TK		540	540BB	28-11-22
		COVER - MANHOLE R INR TK		640	640BB	28-11-22
		COVER - MANHOLE L INR TK		540	540CB	28-11-22
		COVER - MANHOLE R INR TK		640	640CB	28-11-22
		COVER - MANHOLE L INR TK		540	540DB	28-11-22
		COVER - MANHOLE R INR TK		640	640DB	28-11-22
		COVER - MANHOLE L INR TK		540	540EB	28-11-22
		COVER - MANHOLE R INR TK		640	640EB	28-11-22
		COVER - MANHOLE L INR TK		540	540FB	28-11-22
		COVER - MANHOLE R INR TK		640	640FB	28-11-22
		COVER - MANHOLE L INR TK		540	540GB	28-11-22
		COVER - MANHOLE R INR TK		640	640GB	28-11-22
		COVER - MANHOLE L INR TK		540	540HB	28-11-22
		COVER - MANHOLE R INR TK		640	640HB	28-11-22
		COVER - MANHOLE L OUTR TK		550	550BB	28-11-22
		COVER - MANHOLE R OUTR TK		650	650BB	28-11-22
		COVER - MANHOLE L OUTR TK		550	550CB	28-11-22
		COVER - MANHOLE R OUTR TK		650	650CB	28-11-22
		COVER - MANHOLE L OUTR TK		550	550DB	28-11-22
		COVER - MANHOLE R OUTR TK		650	650DB	28-11-22
		COVER - MANHOLE L OUTR TK		550	550EB	28-11-22
		COVER - MANHOLE R OUTR TK		650	650EB	28-11-22
		COVER - MANHOLE L OUTR TK		550	550FB	28-11-22
		COVER - MANHOLE R OUTR TK		650	650FB	28-11-22
		COVER - MANHOLE L OUTR TK		550	550AB	28-11-24
		COVER - MANHOLE R OUTR TK		650	650AB	28-11-24
		VALVES - FLAP, RIB 2 L INR TK		540	540AB	28-11-25
		VALVES - FLAP, RIB 2 R INR TK		640	640AB	28-11-25
		VALVES - FLAP, RIB 15 L OUTR TK		550	550AB	28-11-26
		VALVES - FLAP, RIB 15 R OUTR TK		650	650AB	28-11-26
R	280353	CAP - OVERWING REFUELLING L INR TK		540	540AT	28-11-28
R	280355	CAP - OVERWING REFUELLING R INR TK		640	640AT	28-11-28
R	280357	CAP - OVERWING REFUELLING L OUTR TK		550	550BT	28-11-28
R	280359	CAP - OVERWING REFUELLING R OUTR TK		650	650BT	28-11-28
		COVER - MANHOLE CTR TK		147	147AZ	28-11-29
		COVER - MANHOLE CTR TK		148	148AZ	28-11-29
		COVER - MANHOLE, TRIM TK		333	333BB	28-11-33
		COVER - MANHOLE, TRIM TK		333	333CB	28-11-33
		COVER - MANHOLE, TRIM TK		333	333DB	28-11-33
		COVER - MANHOLE, TRIM TK		333	333EB	28-11-33
		COVER - MANHOLE, TRIM TK		333	333FB	28-11-33
		COVER - MANHOLE, TRIM TK		333	333GB	28-11-33
		COVER - MANHOLE, TRIM TK		343	343BB	28-11-33
		COVER - MANHOLE, TRIM TK		343	343CB	28-11-33
		COVER - MANHOLE, TRIM TK		343	343DB	28-11-33
		COVER - MANHOLE, TRIM TK		343	343EB	28-11-33
		COVER - MANHOLE, TRIM TK		343	343FB	28-11-33

FIN	FUNCTIONAL DESIGNATION	PANEL	ZONE	ACCESS DOOR	ATA REF
	COVER - MANHOLE, TRIM TK		343	343GB	28-11-33
	VALVES - FLAP RIB 3, TRIM TK		319	319AZ	28-11-34
	VALVES - FLAP RIB 3, TRIM TK		319	319BZ	28-11-34
280457	VALVE - WATER DRAIN, TRIM TK		342	344AB	28-11-32
280458	VALVE - WATER DRAIN, TRIM TK		334	344AB	28-11-32
	VALVE - WATER DRAIN, TRIM TK VENT TK		333		28-11-32

**ON A/C ALL

Post SB 28-2049 For A/C 001-003,

1QQ	C/B - FUEL, SCAVENGE SYSTEM, PUMP INNER L	132VU	325/K60
2QQ	C/B - FUEL, SCAVENGE SYSTEM, PUMP INNER R	132VU	325/K61
3QQ	C/B - FUEL, SCAVENGE SYSTEM, PUMP TT	132VU	325/K62
4QQ	RELAY - TRIM TANK PUMP POWER SUPPLY	487VU	122
5QQ	RELAY - LEFT INNER PUMP POWER SUPPLY	487VU	122
6QQ	RELAY - RIGHT INNER PUMP POWER SUPPLY	487VU	122
7QQ	DETECTOR - CURRENT, L INNER TANK PUMP	487VU	122
8QQ	DETECTOR - CURRENT, R INNER TANK PUMP	487VU	122
9QQ	DETECTOR - CURRENT, TRIM TANK PUMP	487VU	122
10QQ	RELAY - TRIM TANK LO LEVEL	487VU	122
11QQ	PUMP - LEFT INNER TANK	542	
12QQ	PUMP - RIGHT INNER TANK	642	
13QQ	C/B - FUEL, SCAVENGE SYSTEM, CTL	132VU	325/K63
14QQ	PUMP - TRIM TANK	312	
15QQ	RELAY - L INNER TANK LO LEVEL	487VU	122
16QQ	RELAY - R INNER TANK LO LEVEL	487VU	122
17QQ	ANNUNCIATOR - MEMORIZED FAULT	472VU	212
18QQ	RELAY - PUMPS CONTROL	487VU	122

R **ON A/C 101-200,

FIN	FUNCTIONAL DESIGNATION	PANEL	ZONE	ACCESS DOOR	ATA REF
1QR	Sensor - Fuel Temperature		550	550AB	28-49-00

**ON A/C ALL

3. Description and Operation

A. Tank Location
(1)Center Tank - located in the center wing box between STA0 (RIB 1) of the

left wing and STA0 (RIB 1) of the right wing.
(2)Inner Tanks - located in the wing box of each wing between STA0 (RIB 1) and STA874 (RIB 14).
(3)Outer Tanks - located in the wing box of each wing between STA874 (RIB 14) and STA1713 (RIB 28).
(4)Vent Tanks - located in the wing box of each wing between STA1713 (RIB 28) and STA1868 (RIB 31).
(5)Trim tank - located in the horizontal stabilizer between STA723 (RIB 19) LH and STA673 (RIB 18) RH.
(6)Trim Tank Vent Tank - located in the horizontal stabilizer between STA673 (RIB 18) and STA812 (RIB 21) RH.

R **ON A/C 101-200,

(7)ACT(s) (if fitted) - located in the AFT cargo compartment between STA2931 (FR 54) and STA3249 (FR60).

R **ON A/C ALL

B. Tank Contents
The usable volume and weight of fuel in each tank is as follows:

R **ON A/C 001-100,

TANK	OUTER LEFT	INNER LEFT	CENTER	TRIM	INNER RIGHT	OUTER RIGHT
VOLUME Liters	3700	13950	19640	6150	13950	3700
WEIGHT IN kgs (at 0.79 SG)	2923	11020	15516	4859	11020	2923

An additional volume in each tank allows for a 2% thermal expansion of fuel without spillage through the vent system. The vent tank in each wing has a volume of 190 liters. The vent tank in the trim tank has a volume of 160 liters.

R **ON A/C 101-200,

TANK	OUTER LEFT	INNER LEFT	CENTER	TRIM	INNER RIGHT	OUTER RIGHT	ACT
VOLUME US Gals	977	3685	5189	1625	3685	977	1902
WEIGHT IN lbs							

TANK	OUTER LEFT	INNER LEFT	CENTER	TRIM	INNER RIGHT	OUTER RIGHT	ACT
(at 6.59 lb/ Gal Density	6438	24284	34196	10709	24284	6438	12534

An additional volume in each tank allows for a 2% thermal expansion of fuel without spillage through the vent system. The vent tank in each wing has a volume of 50 US Gals. The vent tank in the trim tank has a volume of 42 US Gals.

**ON A/C 101-200,

Post SB 28-2105 For A/C 101-200,

TANK	OUTER LEFT	INNER LEFT	CENTER	TRIM	INNER RIGHT	OUTER RIGHT	ACT 1	ACT 2
VOLUME Liters	3700	13950	19640	6150	13950	3700	7200	7200
WEIGHT IN kgs (at 0.79 SG)	2923	11020	15516	4859	11020	2923	5688	5688

An additional volume in each tank allows for a 2% thermal expansion of fuel without spillage through the vent system. The vent tank in each wing has a volume of 190 liters. The vent tank in the trim tank has a volume of 160 liters.

**ON A/C ALL

C. Water Drain Valves

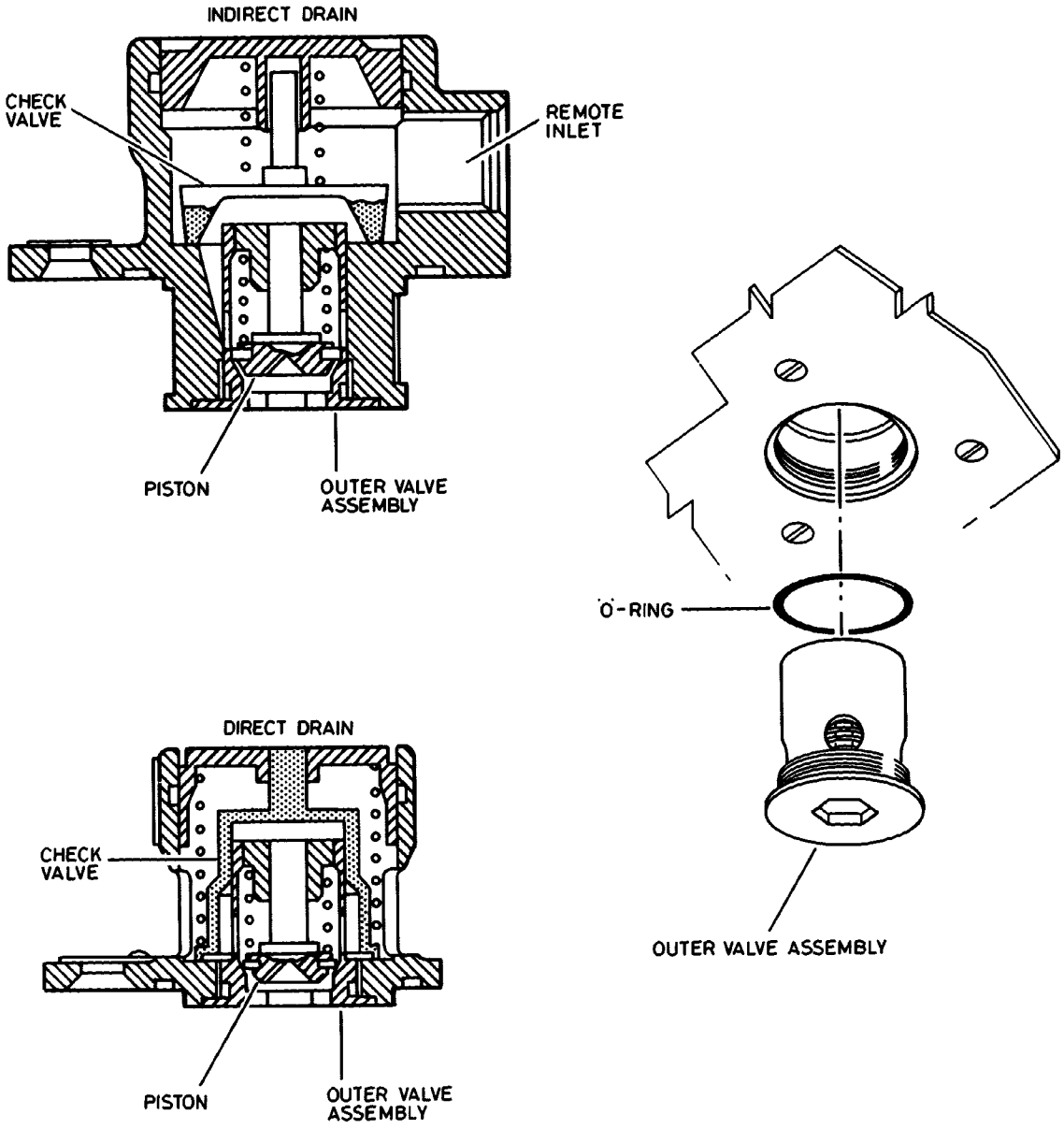
**ON A/C 001-005,

(Ref. Fig. 005)

**ON A/C ALL

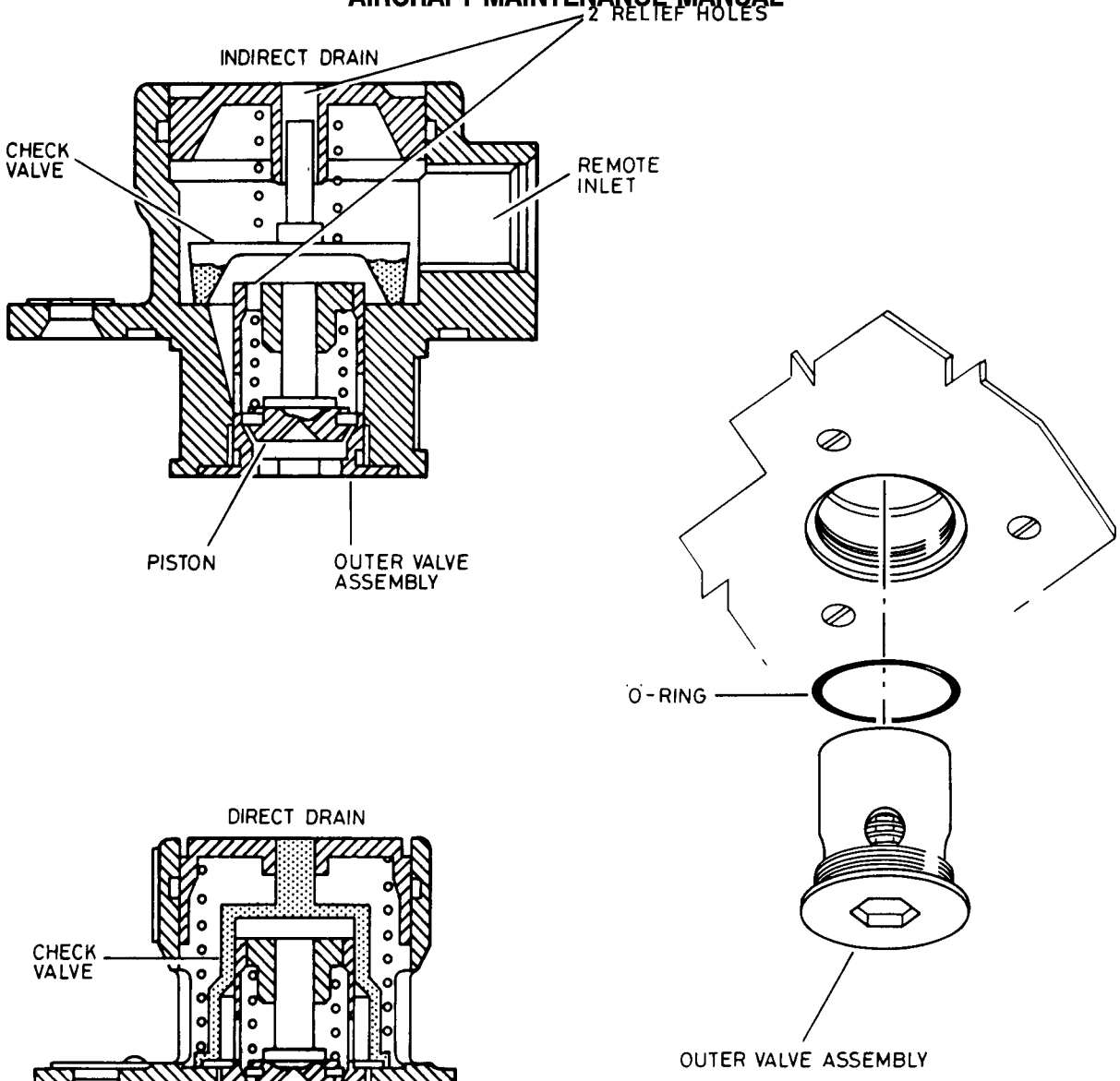
Post SB 28-2054 For A/C 001-005,

(Ref. Fig. 006)



BM7 28 11 00 0 MEMO/11

Water Drain Valves
Figure 005



BM8 28 11 00 0 MGMO 00

Water Drain Valves
Figure 006

R **ON A/C 101-200,

(Ref. Fig. 007)

R **ON A/C 101-200,

R Post SB 28-2105 For A/C 101-200,

(Ref. Fig. 008)

**ON A/C ALL

Water that collects below the fuel in the lowest parts of the fuel tanks is drained away through small bore pipes connected to manually operated water drain valves.

The minimum weight of fuel required in each tank to force any collected water through the small bore pipes to the water drain valves is as follows:
- Outer tank 300 kg (660 lb)
- Inner tank 700 kg (1500 lb)
- Center tank 700 kg (1500 lb)
- Trim tank 700 kg (1500 lb)

The shape of the inboard end of each wing tank, the outboard ends of the center tank and the inboard ends of the trim tank form sumps in which a water drain is located. The booster pumps are positioned in each main tank to leave an un-pumpable fuel quantity of at least 0.01 of the tank volume.

The drain valve installed in each vent tank opens directly from the tank to the wing lower surface.

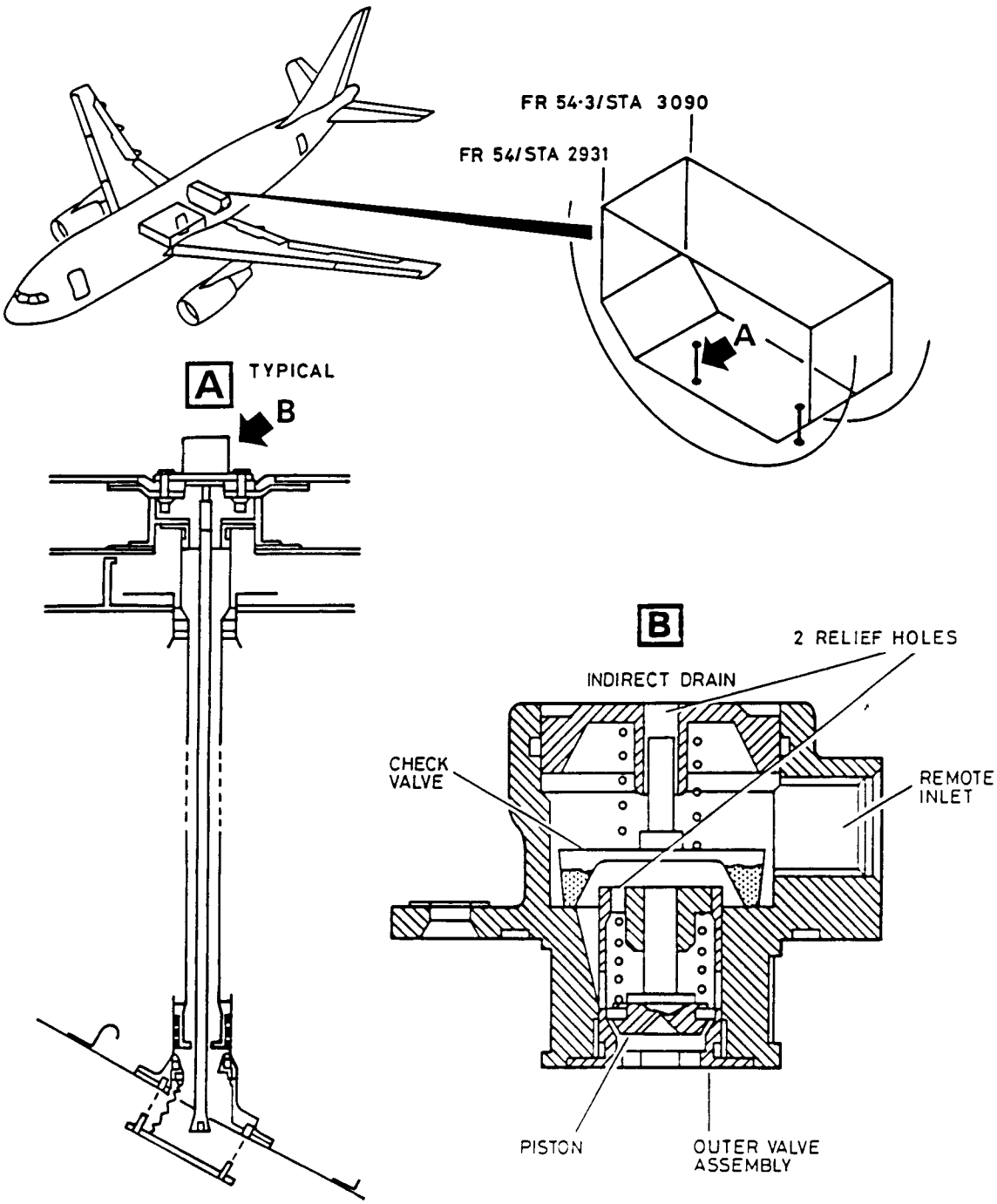
R **ON A/C 101-200,

Each drain valve in the ACT (if ACT fitted) is operated by a plunger accessible through the fuselage lower skin. When pushed, the plunger opens the valve and water drains through the plunger shroud.

R **ON A/C 101-200,

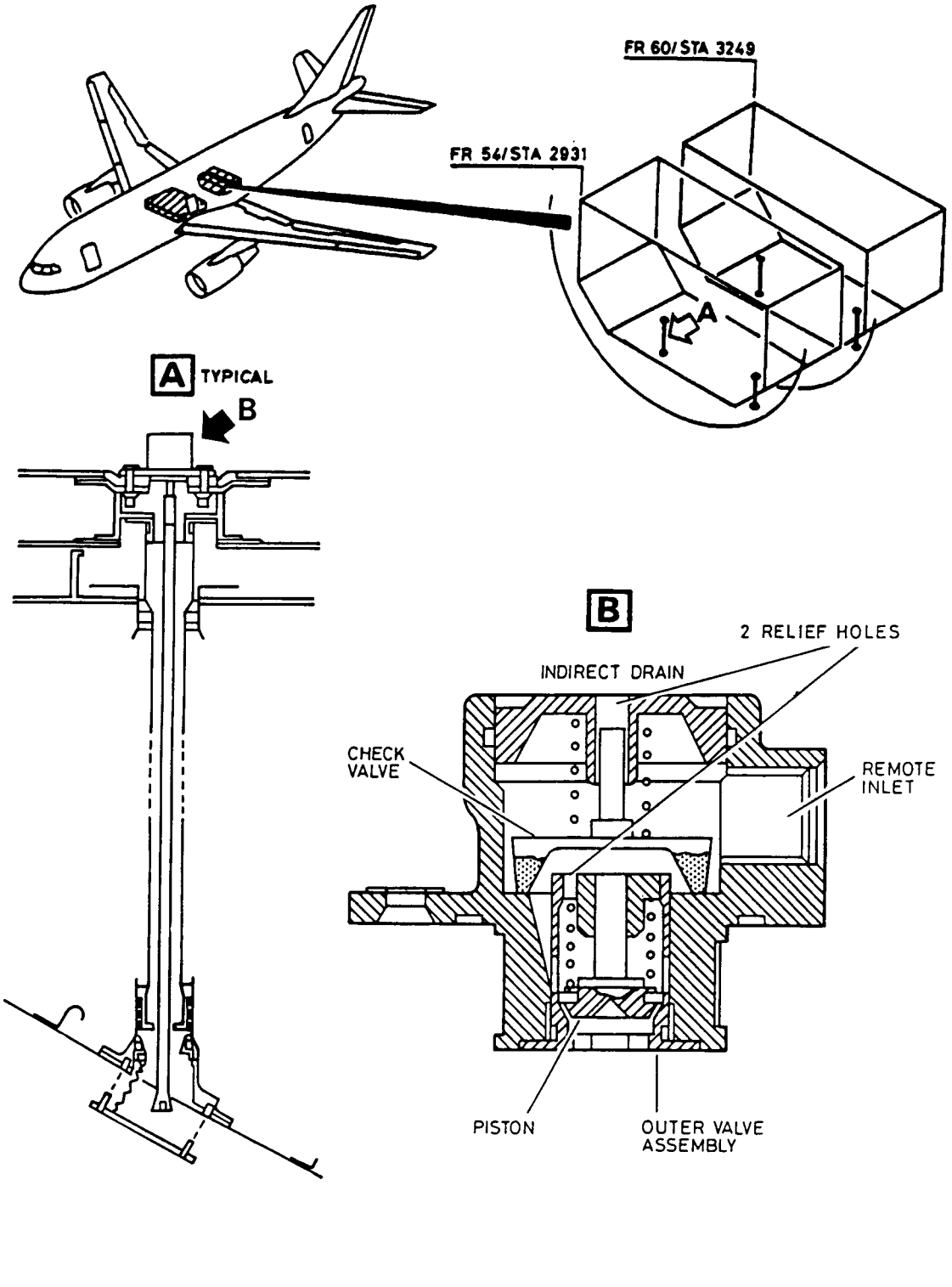
R Post SB 28-2105 For A/C 101-200,

The drain valves in each ACT (if ACT(s) fitted) are operated by a plunger accessible through the fuselage lower skin. When pushed, the plunger opens the valve and water drains through the plunger shroud.



BM8 28 11 00 0 TPMO 00

ACT Water Drain Valves - Installation
Figure 007



ACT Water Drain Valves - Installation
Figure 008

R **ON A/C ALL

All water drains discharge clear of the aircraft structure.
Water drain valves are located as follows:
- Center Tank: one each side inboard of STA0(RIB1)
- Inner Tanks: one adjacent STA0(RIB1)
- Outer Tanks: one adjacent STA874(RIB14)
  one adjacent STA935(RIB15)
- Vent Tanks: one adjacent STA1713(RIB28)
- Trim Tank: one each side inboard of STA126 (RIB 4)
- Trim Tank Vent Tank: one outboard of STA673 (RIB 18)

R **ON A/C 101-200,

- ACT (if fitted): aft of STA 2931 (FR 54).

R **ON A/C 101-200,

R Post SB 28-2105 For A/C 101-200,

- ACT(s) (if fitted): one aft of STA 2931 (FR 54) and one aft of STA 3090 (FR 54.3).

R **ON A/C ALL

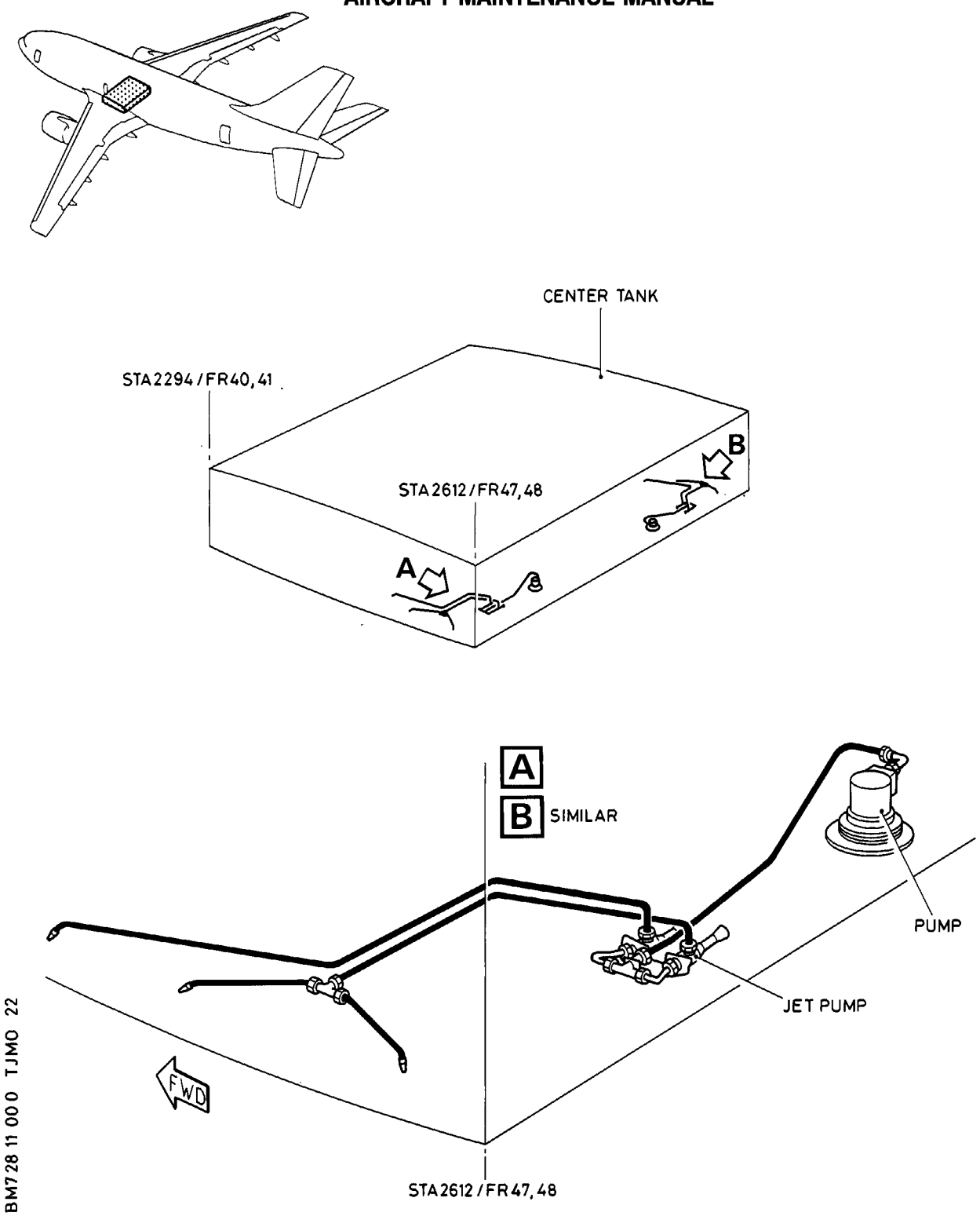
Periodic operation of the water drain valves will ensure that water does not collect in the bottom of the tanks in sufficient quantities to cause malfunction of the fuel system or engine operation.

D. Water Scavenge System - Center Tank
(Ref. Fig. 009)
To prevent the accumulation of large quantities of water, the center tank incorporates a water scavenging system. The system consists of jet pumps, check valves and scavenge pick up pipes. The four jet pumps, two each side, are located towards the rear of the tank. Each pair of pumps uses motive fuel flow derived from the booster pump on that side. Each jet pump incorporates a check valve to prevent air being drawn into the feed system during gravity feed operation.
While the center tank booster pumps are operating, the system continually draws any water laden fuel which collects at the tank low points and discharges it as a fine dispersion towards the booster pump inlet, where it is picked up and pumped into the engine feed system.

**ON A/C ALL

Post SB 28-2049 For A/C 001-003,

E. Water Scavenge System - Inner Tanks



Water Scavenge System
Figure 009

**ON A/C 001-003,

E. Not Applicable

**ON A/C ALL

Post SB 28-2049 For A/C 001-003,

(Ref. Fig. 010)

**ON A/C ALL

Post SB 28-2049 For A/C 001-003,

To prevent the accumulation of large quantites of water, the inner tanks incorporate a water scavenging system. The system consists of an electrical fuel pump, two jet pumps and scavenge pick-up pipes. The jet pumps are driven using motive fuel derived from the electrical fuel pump. The control of the system is fully automatic with no cockpit controls. Providing the inner-tank calibration sensor is wet the system will become active automatically if there is one main pump in the left inner tank, the center tank and the right inner tank operational (selected in), the engine HP fuel valves are open and the slats retracted.

NOTE : The system is not operational on the ground or when the slats are extended more than 16 degrees.

The electrical fuel pump will switch off when the calibration sensor becomes dry. The system, when operating, draws in any water laden fuel which collects at the tank low points and discharges it as a fine dispersion back into the tank. A memorized fault annunciator (MFA) is provided on the cockpit maintenance panel 472VU. The MFA indicates when abnormal current is being supplied to the scavenge fuel pump. It will come on when the ANN LT SWITCH (2WB) is set to the READ position (Ref. 33-17-00).

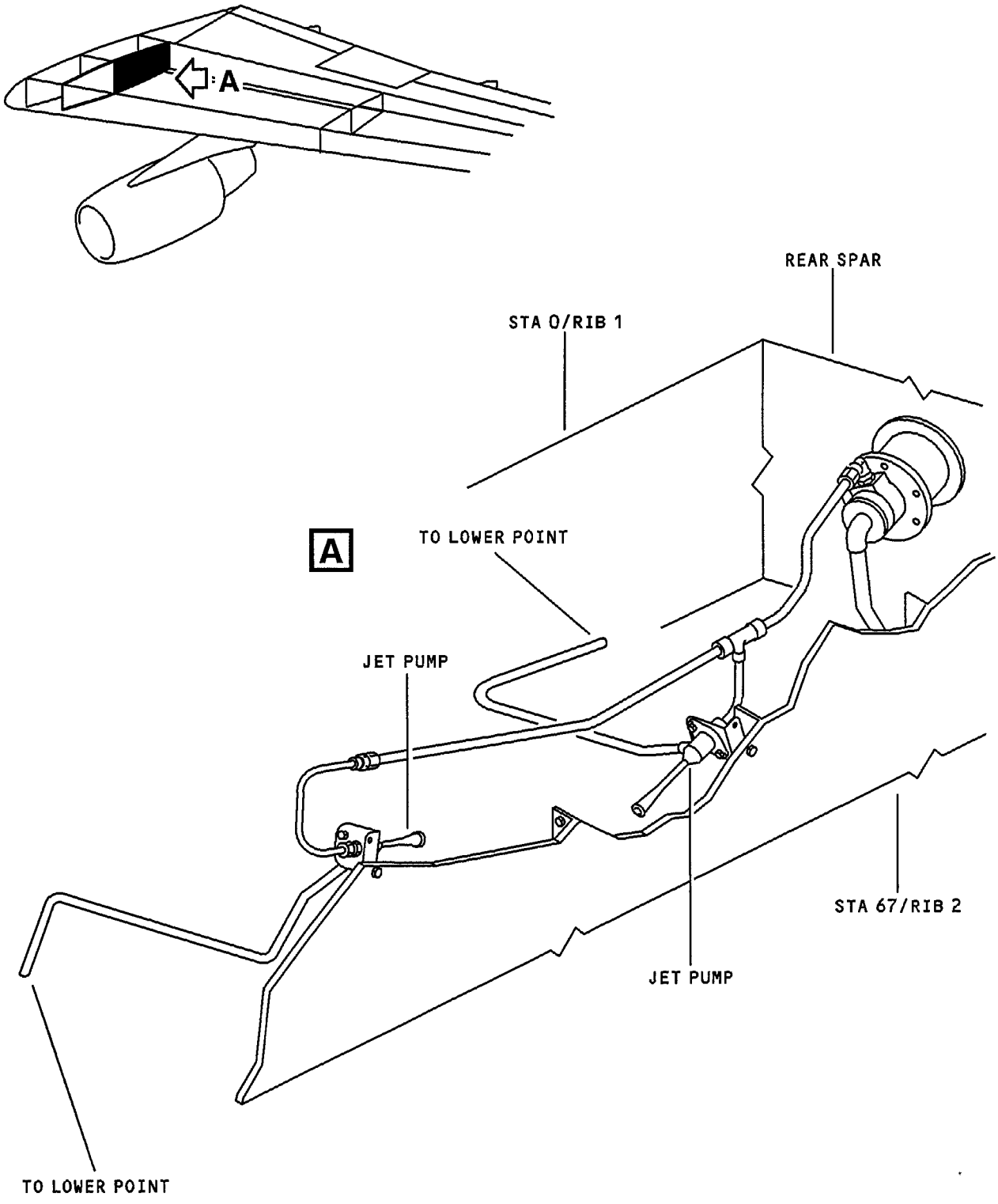
**ON A/C ALL

Post SB 28-2049 For A/C 001-003,

F. Water Scavenge System - Trim Tank

**ON A/C 001-003,

F. Not Applicable



Water Scavenge System - Inner Tanks
Figure 010

**ON A/C ALL

Post SB 28-2049 For A/C 001-003,

(Ref. Fig. 011)

**ON A/C ALL

Post SB 28-2049 For A/C 001-003,

To prevent the accumulation of large quantities of water, the trim tank incorporates a water scavenge system. The system consists of an electrical fuel pump, two jet pumps and scavenge pick-up pipes. The jet pumps are driven using motive fuel derived from the electrical fuel pump. The control of the system is fully automatic with no cockpit controls. Providing the trim-tank calibration sensor is wet the system will become active automatically if there is one main pump in the left inner tank, the center tank and the right inner tank operational (selected in), the engine HP fuel valves are open and the slats are retracted.

NOTE : The system is not operational on the ground or when the slats are extended more than 16 degrees.

The electrical fuel pump will switch off when the calibration sensor becomes dry. The system, when operating, draws in any water laden fuel which collects at the tank low points and discharges it as a fine dispersion back into the tank. A memorized fault annunciator (MFA) is provided on the cockpit maintenance panel 472VU. The MFA indicates when abnormal current is being supplied to the scavenge fuel pump. It will come on when the ANN LT SWITCH (2WB) is set to the READ position (Ref. 33-17-00).

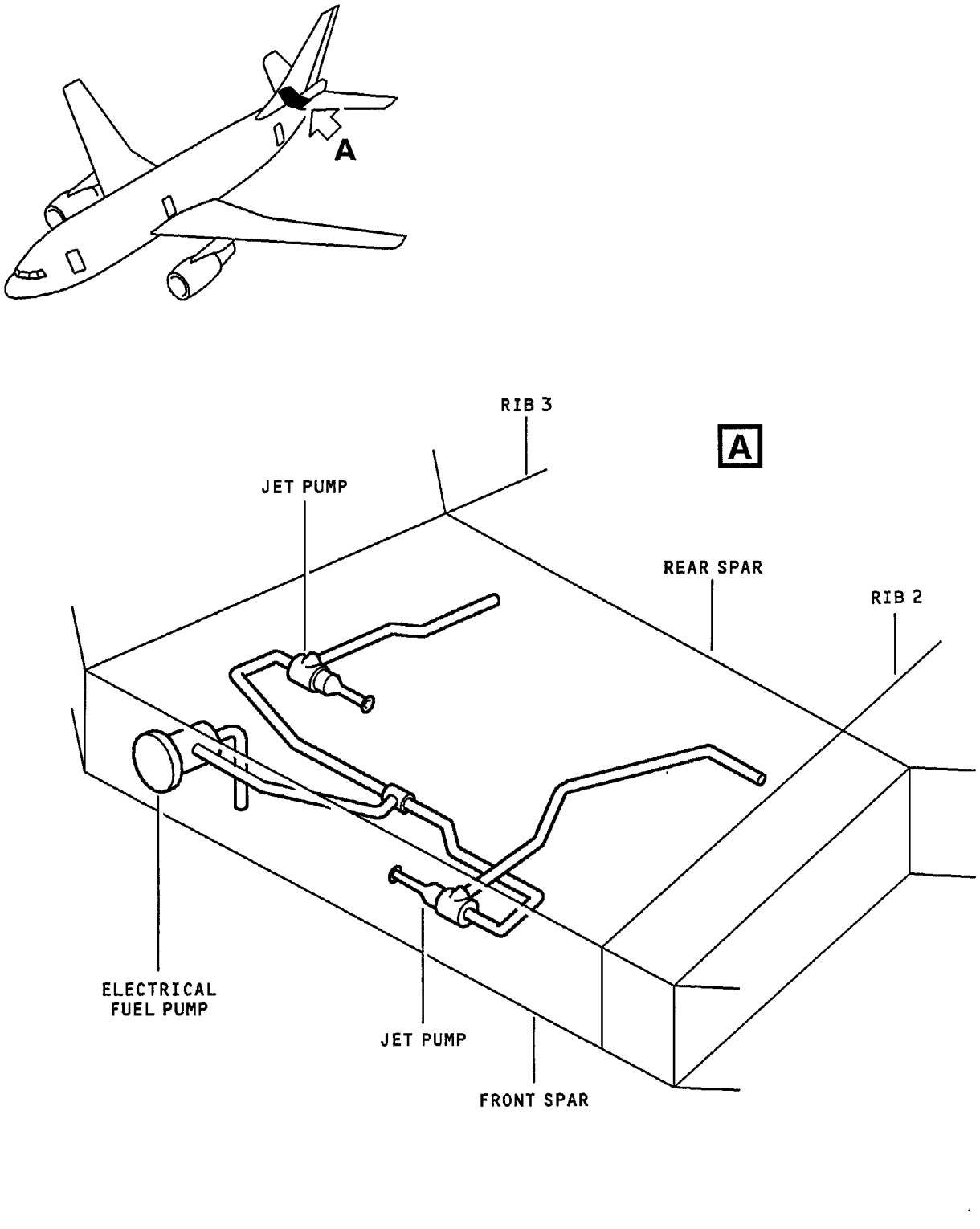
**ON A/C ALL

G. Flap Valves
Flap valves are installed at the bottom of RIBS 2 and 15 in the wing and RIBS 3 in the Trim-Tank horizontal stabilizer, to prevent fuel fuel surging away from the booster pumps during wing down maneuvres.

**ON A/C ALL

Post SB 28-2049 For A/C 001-003,

4. Water Scavenge System Power Supplies



Water Scavenge System - Trim Tank
Figure 011

**ON A/C ALL

Post SB 28-2049 For A/C 001-003,

(Ref. Fig. 012)

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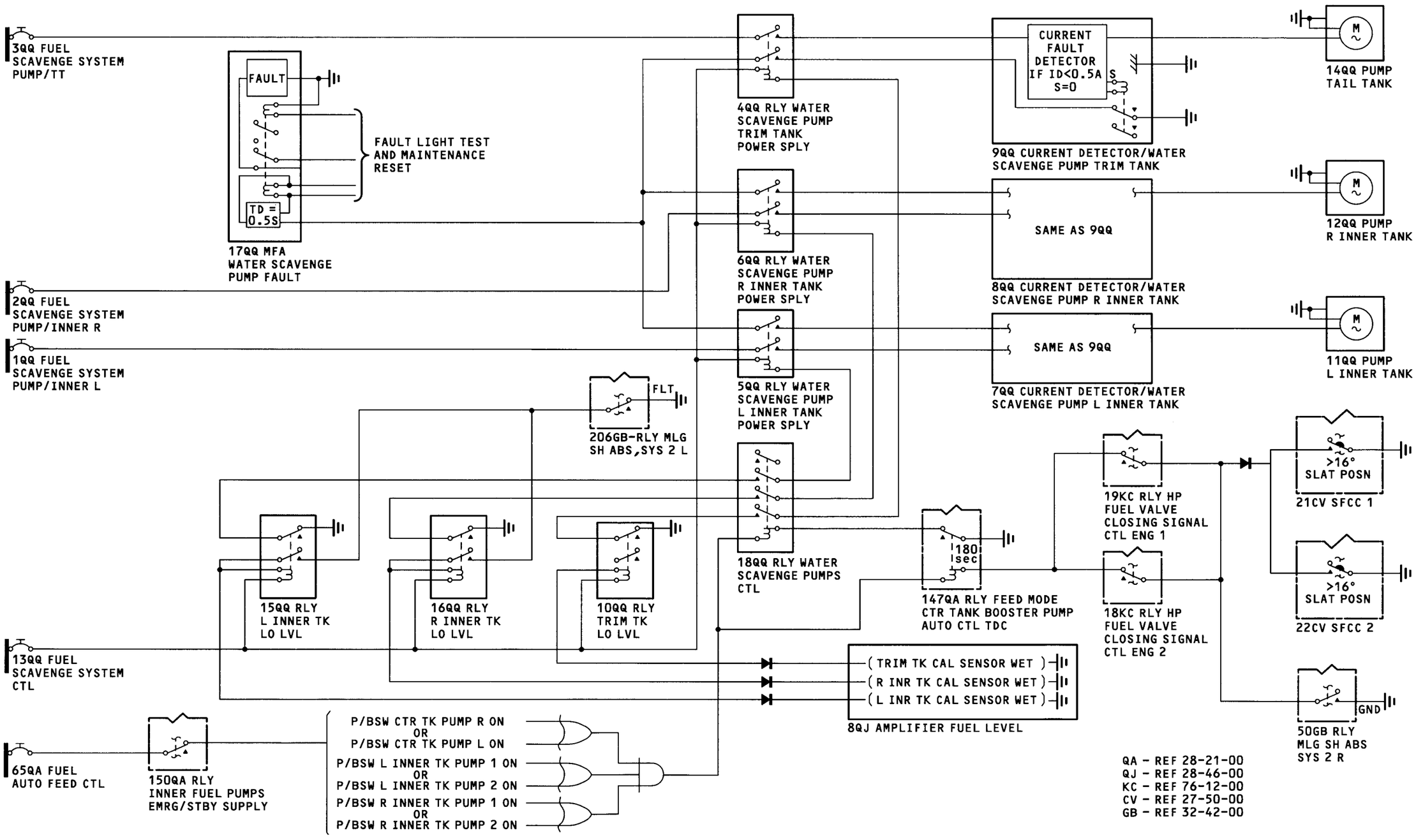
3QQ FUEL SCAVENGE SYSTEM PUMP/TT
FAULT
FAULT LIGHT TEST AND MAINTENANCE RESET
TD = 0.5S
17QQ MFA WATER SCAVENGE PUMP FAULT
2QQ FUEL SCAVENGE SYSTEM PUMP/INNER R
1QQ FUEL SCAVENGE SYSTEM PUMP/INNER L
4QQ RLY WATER SCAVENGE PUMP TRIM TANK POWER SPLY
6QQ RLY WATER SCAVENGE PUMP R INNER TANK POWER SPLY
5QQ RLY WATER SCAVENGE PUMP L INNER TANK POWER SPLY
FLT
206GB-RLY MLG SH ABS,SYS 2 L
18QQ RLY WATER SCAVENGE PUMPS CTL
CURRENT FAULT DETECTOR IF ID<0.5A S=0
S
9QQ CURRENT DETECTOR/WATER SCAVENGE PUMP TRIM TANK
SAME AS 9QQ
8QQ CURRENT DETECTOR/WATER SCAVENGE PUMP R INNER TANK
SAME AS 9QQ
7QQ CURRENT DETECTOR/WATER SCAVENGE PUMP L INNER TANK
M
14QQ PUMP TAIL TANK
12QQ PUMP R INNER TANK
11QQ PUMP L INNER TANK
10QQ PUMP L TRIM TANK
15QQ RLY L INNER TK LO LVL
16QQ RLY R INNER TK LO LVL
10QQ RLY TRIM TK LO LVL
180 sec
147QA RLY FEED MODE CTR TANK BOOSTER PUMP AUTO CTL TDC
19KC RLY HP FUEL VALVE CLOSING SIGNAL CTL ENG 1
18KC RLY HP FUEL VALVE CLOSING SIGNAL CTL ENG 2
>16° SLAT POSN
21CV SFCC 1
22CV SFCC 2
GND
50GB RLY MLG SH ABS SYS 2 R
13QQ FUEL SCAVENGE SYSTEM CTL
(TRIM TK CAL SENSOR WET)
(R INR TK CAL SENSOR WET)
(L INR TK CAL SENSOR WET)
8QJ AMPLIFIER FUEL LEVEL
65QA FUEL AUTO FEED CTL
150QA RLY INNER FUEL PUMPS EMRG/STBY SUPPLY
P/BSW CTR TK PUMP R ON
OR
P/BSW CTR TK PUMP L ON
P/BSW L INNER TK PUMP 1 ON
OR
P/BSW L INNER TK PUMP 2 ON
P/BSW R INNER TK PUMP 1 ON
OR
P/BSW R INNER TK PUMP 2 ON
QA - REF 28-21-00
QJ - REF 28-46-00
KC - REF 76-12-00
CV - REF 27-50-00
GB - REF 32-42-00
BM8 28 11 00 0 AAM0 00

Water Scavenge System - Power Supplies
Figure 012

TANKS - SERVICING

WARNING : THE BIOCIDE FUEL ADDITIVE BIOBOR (MATERIAL NO. 17-003) IS DANGEROUS. DO NOT LET IT CONTACT YOUR SKIN. WEAR GOGGLES, RUBBER GLOVES AND PROTECTIVE CLOTHING.

THE BIOCIDE FUEL ADDITIVE KATHON (MATERIAL NO. 17-003A) IS DANGEROUS. DO NOT LET IT TOUCH YOUR SKIN. WEAR GOGGLES, RUBBER GLOVES AND PROTECTIVE CLOTHING.

R BEFORE YOU DO MAINTENANCE WORK ON THE FUEL SYSTEM OR IN THE FUEL
R TANKS, OBSERVE THE GENERAL SAFETY PRECAUTIONS (REF. 28-00-00, P. BLOCK 301 AND 28-10-00, P. BLOCK 301).

NOTE : These procedures give the instructions for the use of biocide fuel additives to do:
- the biocidal shock treatment of fuel tanks
- the biocidal preventative treatment for aircraft in long-term storage
- the removal of microbiological contamination from the tanks.

The procedures in paragraphs 1. thru 6. are for the use of the biocide fuel additive Biobor (Material No. 17-003).
The procedures in paragraphs 7. thru 12. are for the use of the biocide fuel additive Kathon (Material No. 17-003A).

1. Biobor Biocidal Shock Treatment for Moderate Contamination - Metered Injection Rig Method

NOTE : This procedure uses metering equipment to add the correct proportion of Biobor biocide (Material No. 17-003) to the fuel when you refuel the aircraft. The concentration of the Biobor biocide in the fuel necessary for the shock treatment is 270 ppm (by weight). It is recommended that the mixture of Biobor biocide and fuel stay in the tank for between 36 and 72 hours to complete a satisfactory de-contamination. The procedure is only necessary when moderate contamination is known to be present.

A. Equipment and Materials

ITEM	DESIGNATION
A.	Metering Equipment - Biocide, Hammonds Fuel Additives INC. (Cage Code 0U7J1)
B. Material No. 17-003	Microbiological Contamination Protection Materials (Ref. 20-31-00)
Referenced Procedures	
- 12-11-28, P. Block 301	Replenishing of Fuel Tanks
- 12-32-28, P. Block 301	Fuel - Servicing
- 28-00-00, P. Block 301	General
- 28-10-00, P. Block 301	Storage
- 28-25-00, P. Block 301	Refuel/Defuel System

ITEM	DESIGNATION
- 49-31-14, P. Block 301	Fuel Filter - Servicing
R - 73-12-02, P. Block 401	Fuel Filter Element - Removal/Installation

B. Procedure

NOTE : AIRBUS recommends that this procedure be done with the minimum amount of fuel on board, after flight and before fuel servicing. It is not necessary to defuel the aircraft before you do the biocide treatment.

(1) Drain water from the aircraft fuel tanks (Ref. 12-32-28, P. Block 301).
(2) Record the fuel quantity already on board the aircraft for each fuel tank and calculate the quantity of fuel necessary to be added to each fuel tank (Ref. 12-11-28, P. Block 301).
(3) Calculate the proportion of Biobor (Material No. 17-003) required to be added to the fuel quantities calculated in step (2). Use the formula that follows for each fuel tank:

$$C(uf) = \frac{270(FOB + UPLIFT)}{UPLIFT}$$

Where:
C(uf) = proportion of the Biobor (Material No. 17-003) required.
FOB = fuel quantity (kg/lbs) already on board the aircraft, without added Biobor (Material No. 17-003).
UPLIFT = refuel quantity (kg/lbs) with Biobor (Material No. 17-003) to be added to the aircraft.

Example:

$$C(uf) = \frac{270(10\ 000 + 10\ 000)}{10\ 000}$$

$$C(uf) = \frac{5\ 400\ 000}{10\ 000}$$

$$C(uf) = 540$$

Thus the amount of Biobor (Material No. 17-003) to be added to the UPLIFT is 540 ppm (by weight). If the result of the calculation is more than 1000 ppm, you must:
- defuel the aircraft (Ref. 28-25-00, P. Block 301)
- refuel all tanks (Ref. 12-11-28, P. Block 301) with the correct concentration of fuel and Biobor (Material No. 17-003).

(4) Use the biocide metering equipment to refuel the aircraft with fuel and

the correct proportion of Biobor (Material No. 17-003) as follows:

NOTE : The final concentration in each tank must be 270 ppm (by weight).

(a)Put the calculated amount of Biobor (Material No. 17-003) into the metered injection rig.
(b)Make sure that the metered injection rig is electrically bonded.
(c)Connect the fuel tanker to the input side of the metered injection rig.
(d)Connect the output side of the metered injection rig to the aircraft.
(e)Do a manual refuel of each fuel tank to its maximum capacity (Ref. 12-11-28, P. Block 301) with fuel treated with Biobor (Material No. 17-003) as required for each tank. The final concentration in each tank must be 270 ppm (by weight).

NOTE : AIRBUS recommends that you refuel the aircraft to the maximum capacity. If this is not done, (for operational reasons) microbiological contamination can stay in the upper parts of the fuel tanks.

(5)Let the fuel stay in the tanks for between 36 and 72 hours.

NOTE : In a high ambient temperature, the soak time must be a minimum of 36 hours. In a low ambient temperature, the soak time must be a minimum of 72 hours. AIRBUS recommends that you always let the fuel stay in the tanks for 72 hours.

(6)During the soak time:
- do not move the aircraft
- do not operate the fuel pumps
- do not drain water from the aircraft fuel tanks, a high concentration of Biobor (Material No. 17-003) will be in the water.

(7)After the soak time, the fuel and the Biobor is burned through the APU and the engines during normal operations.

NOTE : Obey the engine manufacturer's restrictions and guidelines for your aircraft.

(8)After 50-75 flight hours, do the steps that follow:
R - replace the fuel filter element on each engine (Ref. 73-12-02, P. Block 401)
R - replace the APU fuel filter elements (Ref. 49-31-14, P. Block 301).

2. Biobor Biocidal Shock Treatment for Moderate Contamination - Fuel Premixed with Biobor

NOTE : This procedure puts fuel premixed with the Biobor biocide (Material No. 17-003) into the fuel tanks. The concentration of the Biobor biocide in the fuel necessary for the shock treatment is 270 ppm (by weight). It is recommended that the mixture of Biobor biocide and fuel stay in the tank for between 36 and 72 hours to complete a satisfactory de-contamination. The procedure is only

necessary when moderate contamination is known to be present.

A. Equipment and Materials

ITEM	DESIGNATION
A. Material No. 17-003	Microbiological Contamination Protection Materials (Ref. 20-31-00)
Referenced Procedures	
- 12-11-28, P. Block 301	Replenishing of Fuel Tanks
- 12-32-28, P. Block 301	Fuel - Servicing
- 28-00-00, P. Block 301	General
- 28-10-00, P. Block 301	Storage
- 28-25-00, P. Block 301	Refuel/Defuel System
- 49-31-14, P. Block 301	Fuel Filter - Servicing
R - 73-12-02, P. Block 401	Fuel Filter Element - Removal/Installation

B. Procedure

NOTE : AIRBUS recommends that this procedure be done with the minimum amount of fuel on board, after flight and before fuel servicing.

(1)Defuel all tanks (Ref. 28-25-00, P. Block 301).
(2)Drain residual fuel from tanks through the water drain valves (Ref. 28-25-00, P. Block 301).

NOTE : Refer to the local regulations for disposal of the waste fuel.

(3)Refuel all tanks to capacity (Ref. 12-11-28, P. Block 301) with fuel premixed with Biobor (Material No. 17-003) at a concentration of 270 ppm (by weight).

NOTE : AIRBUS recommends that you refuel the aircraft to the maximum capacity. If this is not done, (for operational reasons) microbiological contamination can stay in the upper parts of the fuel tanks.

(4)Let the fuel stay in the tanks for between 36 and 72 hours.

NOTE : In a high ambient temperature, the soak time must be a minimum of 36 hours. In a low ambient temperature, the soak time must be a minimum of 72 hours. AIRBUS recommends that you always let the fuel stay in the tanks for 72 hours.

(5)During the soak time:
- do not move the aircraft
- do not operate the fuel pumps
- do not drain water from the aircraft fuel tanks, a high concentration of Biobor (Material No. 17-003) will be in the water.

(6)After the soak time, the fuel and the Biobor is burned through the APU and the engines during normal operations.

NOTE : Obey the engine manufacturer's restrictions and guidelines for your aircraft.

(7)After 50-75 flight hours, do the steps that follow:

R - replace the fuel filter element on each engine (Ref. 73-12-02, P. Block 401)

R - replace the APU fuel filter elements (Ref. 49-31-14, P. Block 301).

3. Biobor Biocidal Shock Treatment for Heavy Contamination - Metered Injection Rig Method

NOTE : This procedure requires access to the fuel tanks and removal of the microbial particles before you continue with the shock treatment. The procedure then uses metering equipment to add the correct proportion of Biobor biocide (Material No. 17-003) to the fuel when you refuel the aircraft. The concentration of the Biobor biocide in the fuel necessary for the shock treatment is 270 ppm (by weight). It is recommended that the mixture of Biobor biocide and fuel stay in the tank for between 36 and 72 hours to complete a satisfactory de-contamination. The procedure is only necessary when heavy contamination is known to be present.

A. Equipment and Materials

ITEM	DESIGNATION
A.	Metering Equipment - Biocide, Hammonds Fuel Additives INC. (Cage Code 0U7J1)
B. Material No. 17-003	Microbiological Contamination Protection Materials (Ref. 20-31-00)
Referenced Procedures	
- 12-11-28, P. Block 301	Replenishing of Fuel Tanks
- 12-32-28, P. Block 301	Fuel - Servicing
- 28-00-00, P. Block 301	General
- 28-10-00, P. Block 301	Storage
- 28-25-00, P. Block 301	Refuel/Defuel System
- 49-31-14, P. Block 301	Fuel Filter - Servicing
R - 73-12-02, P. Block 401	Fuel Filter Element - Removal/Installation

B. Procedure

NOTE : AIRBUS recommends that this procedure be done with the minimum amount of fuel on board, after flight and before fuel servicing.

(1)Defuel all tanks (Ref. 28-25-00, P. Block 301).
(2)Drain residual fuel from tanks through the water drain valves (Ref. 28-25-00, P. Block 301).

NOTE : Refer to the local regulations for disposal of the waste fuel.

(3)Do the procedure for the removal of microbiological particles Para. 13.

NOTE : Do this procedure as soon as possible. This will prevent corrosion of the fuel tank structure.

(4)Use the biocide metering equipment to refuel the aircraft with fuel and the correct proportion of Biobor (Material No. 17-003) as follows:

NOTE : The final concentration in each tank must be 270 ppm (by weight).

(a)Put the correct amount of Biobor (Material No. 17-003) into the metered injection rig.
(b)Make sure that the metered injection rig is electrically bonded.
(c)Connect the fuel tanker to the input side of the metered injection rig.
(d)Connect the output side of the metered injection rig to the aircraft.
(e)Do a manual refuel of each fuel tank to its maximum capacity (Ref. 12-11-28, P. Block 301) with fuel treated with Biobor (Material No. 17-003) as required for each tank. The final concentration in each tank must be 270 ppm (by weight).

NOTE : AIRBUS recommends that you refuel the aircraft to the maximum capacity. If this is not done, (for operational reasons) microbiological contamination can stay in the upper parts of the fuel tanks.

(f)Let the fuel stay in the tanks for between 36 and 72 hours.

NOTE : In a high ambient temperature, the soak time must be a minimum of 36 hours. In a low ambient temperature, the soak time must be a minimum of 72 hours. AIRBUS recommends that you always let the fuel stay in the tanks for 72 hours.

(g)During the soak time:
- do not move the aircraft
- do not operate the fuel pumps
- do not drain water from the aircraft fuel tanks, a high concentration of Biobor (Material No. 17-003) will be in the water.

(h)After the soak time, the fuel and the Biobor is burned through the APU and the engines during normal operations.

NOTE : Obey the engine manufacturer's restrictions and guidelines for your aircraft.

(j)After 50-75 flight hours, do the steps that follow:
R - replace the fuel filter element on each engine (Ref. 73-12-02,
R P. Block 401)
R - replace the APU fuel filter elements (Ref. 49-31-14, P. Block 301).

4. Biobor Biocidal Shock Treatment for Heavy Contamination

- Fuel Premixed with Biobor

NOTE : This procedure requires access to the fuel tanks and removal of the microbial particles before you continue with the shock treatment. The procedure then puts fuel premixed with the Biobor biocide (Material No. 17-003) into the fuel tanks. The concentration of the Biobor biocide in the fuel necessary for the shock treatment is 270 ppm (by weight). It is recommended that the mixture of Biobor biocide and fuel stay in the tank for between 36 and 72 hours to complete a satisfactory de-contamination. The procedure is only necessary when heavy contamination is known to be present.

A. Equipment and Materials

ITEM	DESIGNATION
A. Material No. 17-003	Microbiological Contamination Protection Materials (Ref. 20-31-00)
Referenced Procedures	
- 12-11-28, P. Block 301	Replenishing of Fuel Tanks
- 12-32-28, P. Block 301	Fuel - Servicing
- 28-00-00, P. Block 301	General
- 28-10-00, P. Block 301	Storage
- 28-25-00, P. Block 301	Refuel/Defuel System
- 49-31-14, P. Block 301	Fuel Filter - Servicing
R - 73-12-02, P. Block 401	Fuel Filter Element - Removal/Installation

B. Procedure

NOTE : AIRBUS recommends that this procedure be done with the minimum amount of fuel on board, after flight and before fuel servicing.

(1)Defuel all tanks (Ref. 28-25-00, P. Block 301).
(2)Drain residual fuel from tanks through the water drain valves (Ref. 28-25-00, P. Block 301).

NOTE : Refer to the local regulations for disposal of the waste fuel.

(3)Do the procedure for the removal of microbiological particles Para. 13.

NOTE : Do this procedure as soon as possible. This will prevent corrosion of the fuel tank structure.

(4)Refuel all tanks to capacity (Ref. 12-11-28, P. Block 301) with fuel premixed with Biobor (Material No. 17-003) at a concentration of 270 ppm (by weight).

NOTE : AIRBUS recommends that you refuel the aircraft to the maximum capacity. If this is not done, (for operational reasons) microbiological contamination can stay in the upper parts of the fuel tanks.

(5)Let the fuel stay in the tanks for between 36 and 72 hours.

NOTE : In a high ambient temperature, the soak time must be a minimum of 36 hours. In a low ambient temperature, the soak time must be a minimum of 72 hours. AIRBUS recommends that you always let the fuel stay in the tanks for 72 hours.

(6)During the soak time:
- do not move the aircraft
- do not operate the fuel pumps
- do not drain water from the aircraft fuel tanks, a high concentration of Biobor (Material No. 17-003) will be in the water.

(7)After the soak time, the fuel and the Biobor is burned through the APU and the engines during normal operations.

NOTE : Obey the engine manufacturers restrictions and guidelines for your aircraft.

(8)After 50-75 flight hours, do the steps that follow:
R - replace the fuel filter element on each engine (Ref. 73-12-02,
R P. Block 401)
R - replace the APU fuel filter elements (Ref. 49-31-14, P. Block 301).

5. Biobor Biocidal Preventative Treatment for Aircraft in Long-term Storage - Metered Injection Rig Method

NOTE : This procedure uses metering equipment to add the correct proportion of Biobor biocide (Material No. 17-003) to the fuel when you refuel the tanks ready for long-term storage. The concentration of the Biobor biocide in the fuel necessary for the preventative treatment is 135 ppm (by weight). The procedure is only necessary when an aircraft is put in long-term storage of 30 days or more.

A. Equipment and Materials

ITEM	DESIGNATION
A.	Metering Equipment - Biocide, Hammonds Fuel Additives INC. (Cage Code 0U7J1)
B. Material No. 17-003	Microbiological Contamination Protection Materials (Ref. 20-31-00)
Referenced Procedures	
- 12-11-28, P. Block 301	Replenishing of Fuel Tanks
- 28-25-00, P. Block 301	Refuel/Defuel System

B. Procedure

(1)Defuel all tanks (Ref. 28-25-00, P. Block 301).
(2)Drain residual fuel from tanks through the water drain valves (Ref. 28-25-00, P. Block 301).

NOTE : Refer to the local regulations for disposal of the waste fuel.

(3)Use the biocide metering equipment to refuel the aircraft with fuel and the correct proportion of Biobor (Material No. 17-003) as follows:

NOTE : The final concentration in each tank must be 135 ppm (by weight).

(a)Put the correct amount of Biobor (Material No. 17-003) into the metered injection rig.
(b)Make sure that the metered injection rig is electrically bonded.
(c)Connect the fuel tanker to the input side of the metered injection rig.
(d)Connect the output side of the metered injection rig to the aircraft.
(e)Do a manual refuel of each fuel tank (Ref. 12-11-28, P. Block 301) with fuel treated with Biobor (Material No. 17-003) as required for each tank. The final concentration in each tank must be 135 ppm (by weight).

6. Biobor Biocidal Preventative Treatment for Aircraft in Long-term Storage - Fuel Premixed with Biobor

NOTE : This procedure puts fuel premixed with the Biobor biocide (Material No. 17-003) into the fuel tanks ready for long-term storage. The concentration of the Biobor biocide in the fuel necessary for the preventative treatment is 135 ppm (by weight). The procedure is only necessary when an aircraft is put in long-term storage of 30 days or more.

A. Equipment and Materials

ITEM	DESIGNATION
A. Material No. 17-003	Microbiological Contamination Protection Materials (Ref. 20-31-00)
Referenced Procedures	
- 12-11-28, P. Block 301	Replenishing of Fuel Tanks
- 28-25-00, P. Block 301	Refuel/Defuel System

B. Procedure

(1)Defuel all tanks (Ref. 28-25-00, P. Block 301).
(2)Drain residual fuel from tanks through the water drain valves (Ref. 28-25-00, P. Block 301).

NOTE : Refer to the local regulations for disposal of the waste fuel.

(3)Refuel all tanks (Ref. 12-11-28, P. Block 301) with fuel premixed with Biobor (Material No. 17-003) at a concentration of 135 ppm (by weight).

**ON A/C ALL

7. Kathon Biocidal Shock Treatment for Moderate Contamination - Metered Injection Rig Method

NOTE : This procedure uses metering equipment to add the correct proportion of Kathon biocide (Material No. 17-003A) to the fuel when you refuel the aircraft. The concentration of the Kathon biocide in the fuel necessary for the shock treatment is 100 ppm (by volume). It is recommended that the mixture of Kathon biocide and fuel stay in the tank for between 12 and 24 hours to complete a satisfactory de-contamination. The procedure is only necessary when moderate contamination is known to be present.

A. Equipment and Materials

ITEM	DESIGNATION
A.	Metering Equipment - Biocide, Hammonds Fuel Additives INC. (Cage Code 0U7J1)
B. Material No. 17-003A	Microbiological Contamination Protection Materials (Ref. 20-31-00)
Referenced Procedures	
- 12-11-28, P. Block 301	Replenishing of Fuel Tanks
- 12-32-28, P. Block 301	Fuel - Servicing
- 28-00-00, P. Block 301	General
- 28-10-00, P. Block 301	Storage
- 28-25-00, P. Block 301	Refuel/Defuel System
- 49-31-14, P. Block 301	Fuel Filter - Servicing
R - 73-12-02, P. Block 401	Fuel Filter Element - Removal/Installation

B. Procedure

NOTE : AIRBUS recommends that this procedure be done with the minimum amount of fuel on board, after flight and before fuel servicing. It is not necessary to defuel the aircraft before you do the biocide treatment.

(1) Drain water from the aircraft fuel tanks (Ref. 12-32-28, P. Block 301).
(2) Record the fuel quantity already on board the aircraft for each fuel tank and calculate the quantity of fuel necessary to be added to each fuel tank (Ref. 12-11-28, P. Block 301).
(3) Calculate the proportion of Kathon (Material No. 17-003A) required to be added to the fuel quantities calculated in step (2). Use the formula that follows for each fuel tank:

$$C(uf) = \frac{100(FOB + UPLIFT)}{UPLIFT}$$

Where:
C(uf) = proportion of the Kathon (Material No. 17-003A) required.
FOB = fuel quantity (kg/lbs) already on board the aircraft, without added Kathon (Material No. 17-003A).
UPLIFT = refuel quantity (kg/lbs) with Kathon (Material No. 17-003A) to be added to the aircraft.

Example:

$$C(uf) = \frac{100\ (10\ 000 + 10\ 000)}{10\ 000}$$

$$C(uf) = \frac{2\ 000\ 000}{10\ 000}$$

$$C(uf) = 200$$

Thus the amount of Kathon (Material No. 17-003A to be added to the UPLIFT is 200 ppm (by volume). If the result of the calculation is more than 400 ppm, you must:
- defuel the aircraft (Ref. 28-25-00, P. Block 301)
- refuel all tanks (Ref. 12-11-28, P. Block 301) with the correct concentration of fuel and Kathon (Material No. 17-003A).

(4)Use the biocide metering equipment to refuel the aircraft with fuel and the correct proportion of Kathon (Material No. 17-003A) as follows:
(a)Put the calculated amount of Kathon (Material No. 17-003A) into the metered injection rig.
(b)Make sure that the metered injection rig is electrically bonded.
(c)Connect the fuel tanker to the input side of the metered injection rig.
(d)Connect the output side of the metered injection rig to the aircraft.
(e)Do a manual refuel of each fuel tank to its maximum capacity (Ref. 12-11-28, P. Block 301) with fuel treated with Kathon (Material No. 17-003A) as required for each tank. The final concentration in each tank must be 100 ppm (by volume).

NOTE : AIRBUS recommends that you refuel the aircraft to the maximum capacity. If this is not done, (for operational reasons) microbiological contamination can stay in the upper parts of the fuel tanks.

(5)Let the fuel stay in the tanks for between 12 and 24 hours.

NOTE : In a high ambient temperature, the soak time must be a minimum of 12 hours. In a low ambient temperature, the soak time must be a minimum of 24 hours. AIRBUS recommends that you always let the fuel stay in the tanks for 24 hours.

(6)During the soak time:
- do not move the aircraft

- do not operate the fuel pumps
- do not drain water from the aircraft fuel tanks, a high concentration of Kathon (Material No. 17-003A) will be in the water.

(7)After the soak time, the fuel and the Kathon is burned through the APU and the engines during normal operations.

NOTE : Obey the engine manufacturer's restrictions and guidelines for your aircraft.

(8)After 50-75 flight hours, do the steps that follow:

R - replace the fuel filter element on each engine (Ref. 73-12-02, P. Block 401)
R - replace the APU fuel filter elements (Ref. 49-31-14, P. Block 301).

**ON A/C ALL

8. Kathon Biocidal Shock Treatment for Moderate Contamination - Fuel Premixed with Kathon

NOTE : This procedure puts fuel premixed with the biocide Kathon (Material No. 17-003A) into the fuel tanks. The concentration of the Kathon biocide in the fuel necessary for the shock treatment is 100 ppm (by volume). It is recommended that the mixture of Kathon biocide and fuel stay in the tank for between 12 and 24 hours to complete a satisfactory de-contamination. The procedure is only necessary when moderate contamination is known to be present.

A. Equipment and Materials

ITEM	DESIGNATION
A. Material No. 17-003A	Microbiological Contamination Protection Materials (Ref. 20-31-00)
Referenced Procedures	
- 12-11-28, P. Block 301	Replenishing of Fuel Tanks
- 12-32-28, P. Block 301	Fuel - Servicing
- 28-00-00, P. Block 301	General
- 28-10-00, P. Block 301	Storage
- 28-25-00, P. Block 301	Refuel/Defuel System
- 49-31-14, P. Block 301	Fuel Filter - Servicing
R - 73-12-02, P. Block 401	Fuel Filter Element - Removal/Installation

B. Procedure

NOTE : AIRBUS recommends that this procedure be done with the minimum amount of fuel on board, after flight and before fuel servicing.

(1)Defuel all tanks (Ref. 28-25-00, P. Block 301).
(2)Drain residual fuel from tanks through the water drain valves (Ref. 28-25-00, P. Block 301).

NOTE : Refer to the local regulations for disposal of the waste fuel.

(3)Refuel all tanks to capacity (Ref. 12-11-28, P. Block 301) with fuel premixed with Kathon (Material No. 17-003A) at a concentration of 100 ppm (by volume).

NOTE : AIRBUS recommends that you refuel the aircraft to the maximum capacity. If this is not done, (for operational reasons) microbiological contamination can stay in the upper parts of the fuel tanks.

(4)Let the fuel stay in the tanks for between 12 and 24 hours.

NOTE : In a high ambient temperature, the soak time must be a minimum of 12 hours. In a low ambient temperature, the soak time must be a minimum of 24 hours. AIRBUS recommends that you always let the fuel stay in the tanks for 24 hours.

(5)During the soak time:
- do not move the aircraft
- do not operate the fuel pumps
- do not drain water from the aircraft fuel tanks, a high concentration of Kathon (Material No. 17-003A) will be in the water.

(6)After the soak time, the fuel and Kathon is burned through the APU and the engines during normal operations.

NOTE : Obey the engine manufacturer's restrictions and guidelines for your aircraft.

(7)After 50-75 flight hours, do the steps that follow:
R - replace the fuel filter element on each engine (Ref. 73-12-02,
R P. Block 401)
R - replace the APU fuel filter elements (Ref. 49-31-14, P. Block 301).

9. Kathon Biocidal Shock Treatment for Heavy Contamination - Metered Injection Rig Method

NOTE : This procedure requires access to the fuel tanks and removal of the microbial particles before you continue with the shock treatment. The procedure then uses metering equipment to add the correct proportion of Kathon biocide (Material No. 17-003A) to the fuel when you refuel the aircraft. The concentration of the Kathon biocide in the fuel necessary for the shock treatment is 100 ppm (by volume). It is recommended that the mixture of Kathon biocide and fuel stay in the tank for between 12 and 24 hours to complete a satisfactory de-contamination. The procedure is only necessary when heavy contamination is known to be present.

A. Equipment and Materials

ITEM	DESIGNATION
A.	Metering Equipment - Biocide, Hammonds Fuel Additives INC. (Cage Code 0U7J1)
B. Material No. 17-003A	Microbiological Contamination Protection Materials (Ref. 20-31-00)
Referenced Procedures	
- 12-11-28, P. Block 301	Replenishing of Fuel Tanks
- 12-32-28, P. Block 301	Fuel - Servicing
- 28-00-00, P. Block 301	General
- 28-10-00, P. Block 301	Storage
- 28-25-00, P. Block 301	Refuel/Defuel System
- 49-31-14, P. Block 301	Fuel Filter - Servicing
R - 73-12-02, P. Block 401	Fuel Filter Element - Removal/Installation

B. Procedure

NOTE : AIRBUS recommends that this procedure be done with the minimum amount of fuel on board, after flight and before fuel servicing.

(1)Defuel all tanks (Ref. 28-25-00, P. Block 301).
(2)Drain residual fuel from tanks through the water drain valves (Ref. 28-25-00, P. Block 301).

NOTE : Refer to the local regulations for disposal of the waste fuel.

(3)Do the procedure for the removal of microbiological particles Para. 13.

NOTE : Do this procedure as soon as possible. This will prevent corrosion of the fuel tank structure.

(4)Refuel the aircraft (Ref. 12-11-28, P. Block 301), with the correct proportion of Kathon (Material No. 17-003A) and fuel as follows:
(a)Put the correct amount of Kathon (Material No. 17-003A) into the metered injection rig.
(b)Make sure that the metered injection rig is electrically bonded.
(c)Connect the fuel tanker to the input side of the metered injection rig.
(d)Connect the output side of the metered injection rig to the aircraft.
(e)Do a manual refuel of each fuel tank to its maximum capacity (Ref. 12-11-28, P. Block 301) with fuel treated with Kathon (Material No. 17-003A) as required for each tank. The final concentration in each tank must be 100 ppm (by volume).

NOTE : AIRBUS recommends that you refuel the aircraft to the maximum capacity. If this is not done, (for operational reasons) microbiological contamination can stay in the upper parts of the fuel tanks.

(5)Let the fuel stay in the tanks for between 12 and 24 hours.

NOTE : In a high ambient temperature, the soak time must be a minimum of 12 hours. In a low ambient temperature, the soak time must be a minimum of 24 hours. AIRBUS recommends that you always let the fuel stay in the tanks for 24 hours.

(6)During the soak time:
- do not move the aircraft
- do not operate the fuel pumps
- do not drain water from the aircraft fuel tanks, a high concentration of Kathon (Material No. 17-003A) will be in the water.

(7)After the soak time, the fuel and Kathon is burned through the APU and the engines during normal operations.

NOTE : Obey the engine manufacturer's restrictions and guidelines for your aircraft.

(8)After 50-75 flight hours, do the steps that follow:
R - replace the fuel filter element on each engine (Ref. 73-12-02, P. Block 401)
R - replace the APU fuel filter elements (Ref. 49-31-14, P. Block 301).

10. Kathon Biocidal Shock Treatment for Heavy Contamination - Fuel Premixed with Kathon

NOTE : This procedure requires access to the fuel tanks and removal of the microbial particles before you continue with the shock treatment. The procedure then puts fuel premixed with the Kathon biocide (Material No. 17-003A) into the fuel tanks. The concentration of the Kathon biocide in the fuel necessary for the shock treatment is 100 ppm (by volume). It is recommended that the mixture of Kathon biocide and fuel stay in the tank for between 12 and 24 hours to complete a satisfactory de-contamination. The procedure is only necessary when heavy contamination is known to be present.

A. Equipment and Materials

ITEM	DESIGNATION
A. Material No. 17-003A	Microbiological Contamination Protection Materials (Ref. 20-31-00)
Referenced Procedures	
- 12-11-28, P. Block 301	Replenishing of Fuel Tanks
- 12-32-28, P. Block 301	Fuel - Servicing
- 28-00-00, P. Block 301	General
- 28-10-00, P. Block 301	Storage
- 28-25-00, P. Block 301	Refuel/Defuel System
- 49-31-14, P. Block 301	Fuel Filter - Servicing
R - 73-12-02, P. Block 401	Fuel Filter Element - Removal/Installation

B. Procedure

NOTE : AIRBUS recommends that this procedure be done with the minimum amount of fuel on board, after flight and before fuel servicing.

(1)Defuel all tanks (Ref. 28-25-00, P. Block 301).
(2)Drain residual fuel from tanks through the water drain valves (Ref. 28-25-00, P. Block 301).

NOTE : Refer to the local regulations for disposal of the waste fuel.

(3)Do the procedure for the removal of microbiological particles (Ref. Para. 13).

NOTE : Do this procedure as soon as possible. This will prevent corrosion of the fuel tank structure.

(4)Refuel all tanks to capacity (Ref. 12-11-28, P. Block 301) with fuel premixed with Kathon biocide (Material No. 17-003A) at a concentration of 100 ppm (by volume).

NOTE : AIRBUS recommends that you refuel the aircraft to the maximum capacity. If this is not done, (for operational reasons) microbiological contamination can stay in the upper parts of the fuel tanks.

(5)Let the fuel stay in the tanks for between 12 and 24 hours.

NOTE : In a high ambient temperature, the soak time must be a minimum of 12 hours. In a low ambient temperature, the soak time must be a minimum of 24 hours. AIRBUS recommends that you always let the fuel stay in the tanks for 24 hours.

(6)During the soak time:
- do not move the aircraft
- do not operate the fuel pumps
- do not drain water from the aircraft fuel tanks, a high concentration of Kathon (Material No. 17-003A) will be in the water.

(7)After the soak time, the fuel and the Kathon is burned through the APU and the engines during normal operations.

NOTE : Obey the engine manufacturer's restrictions and guidelines for your aircraft.

(8)After 50-75 flight hours, do the steps that follow:
R - replace the fuel filter element on each engine (Ref. 73-12-02, P. Block 401)
R - replace the APU fuel filter elements (Ref. 49-31-14, P. Block 301).

11. Kathon Biocidal Preventative Treatment for Aircraft in Long-term Storage - Metered Injection Rig Method

NOTE : This procedure uses metering equipment to add the correct proportion

of Kathon biocide (Material No. 17-003A) to the fuel when you refuel the tanks ready for long-term storage. The concentration of the Kathon biocide in the fuel necessary for the preventative treatment is 50 ppm (by volume). The procedure is only necessary when an aircraft is put in long-term storage of 30 days or more.

A. Equipment and Materials

ITEM	DESIGNATION
A.	Metering Equipment - Biocide, Hammonds Fuel Additives INC. (Cage Code 0U7J1)
B. Material No. 17-003A	Microbiological Contamination Protection Materials (Ref. 20-31-00)
Referenced Procedures	
- 12-11-28, P. Block 301	Replenishing of Fuel Tanks
- 28-25-00, P. Block 301	Refuel/Defuel System

B. Procedure

(1)Defuel all tanks (Ref. 28-25-00, P. Block 301).
(2)Drain residual fuel from tanks through the water drain valves (Ref. 28-25-00, P. Block 301).

NOTE : Refer to the local regulations for disposal of the waste fuel.

(3)Use the biocide metering equipment to refuel the aircraft with fuel and the correct proportion of Kathon (Material No. 17-003A) as follows:

NOTE : The final concentration in each tank must be 50 ppm (by volume).

(a)Put the correct amount of Kathon (Material No. 17-003A) into the metered injection rig.
(b)Make sure that the metered injection rig is electrically bonded.
(c)Connect the fuel tanker to the input side of the metered injection rig.
(d)Connect the output side of the metered injection rig to the aircraft.
(e)Do a manual refuel of each fuel tank (Ref. 12-11-28, P. Block 301) with fuel treated with Kathon (Material No. 17-003A) as required for each tank. The final concentration in each tank must be 50 ppm (by volume).

12. Kathon Biocidal Preventative Treatment for Aircraft in Long-term Storage - Fuel Premixed with Kathon

NOTE : This procedure puts fuel premixed with Kathon biocide (Material No. 17-003A) into the fuel tanks ready for long-term storage. The concentration of the Kathon biocide in the fuel necessary for the preventative treatment is 50 ppm (by volume). The procedure is only necessary when an aircraft is put in long-term storage of 30 days or more.

A. Equipment and Materials

ITEM	DESIGNATION
A. Material No. 17-003A	Microbiological Contamination Protection Materials (Ref. 20-31-00)
Referenced Procedures	
- 12-11-28, P. Block 301	Replenishing of Fuel Tanks
- 28-25-00, P. Block 301	Refuel/Defuel System

B. Procedure

(1)Defuel all tanks (Ref. 28-25-00, P. Block 301).
(2)Drain residual fuel from tanks through the water drain valves (Ref. 28-25-00, P. Block 301).

NOTE : Refer to the local regulations for disposal of the waste fuel.

(3)Refuel all tanks (Ref. 12-11-28, P. Block 301) with fuel premixed with Kathon (Material No. 17-003A) at a concentration of 50 ppm (by volume).

13. Removal of Microbiological Particles

NOTE : Do this procedure when heavy microbiological contamination is known to be present in the fuel tanks.

A. Equipment and Materials

ITEM	DESIGNATION
A.	Approved Hot Air Blower
B.	Long Handled Stiff Brush
C.	Sponge
D.	Container
A. Material No. 11-006	Cleaning Agents (Ref. 20-31-00)
B. Material No. 11-009	Cleaning Agents (Ref. 20-31-00)
Referenced Procedures	
- 28-10-00, P. Block 301	Storage
- 28-11-22, P. Block 401	Manhole Cover, Type 1, 2, 2A, 3, 4, 4A, 5
- 28-11-29, P. Block 401	Manhole Cover, Center Tank
- 28-11-33, P. Block 401	Manhole Covers, Trim Tank
- 28-25-00, P. Block 301	Refuel/Defuel System

B. Procedure

(1)Remove the applicable manhole covers (Ref. 28-11-22, 28-11-29, 28-11-33, P. Blocks 401).

NOTE : You need only get access to the fuel tanks which show heavy microbiological contamination, but after removal of the microbial particals, the shock treatment must be done to all of the fuel

tanks.

(2)Do the procedures for entering and working in a fuel tank (Ref. 28-25-00, P. Block 301).
(3)Identify the areas of contamination, which can be seen as:
- brown slimy or white particles
- dark staining of the tank surface (when the tanks are dry)
- smooth oily gel material (when the tanks are wet)
- a mat of microbial particles on the tank surface
- sludge or slime (with a strong sulphide smell)
- surface damage to sealants.

NOTE : Take care when you do an inspection for contamination. The color of the contamination can be the same color as the sealants used in the fuel tanks.

(4)Mix a solution of one part cleaning agent (Material No. 11-009) to sixteen parts of water.
(5)Use the solution and a stiff bristle brush to clean the areas of contamination. Make sure that you fully clean the:
- lower surfaces of the tank structure (stringers, spars and ribs)
- fuel pump canister inlet screens
- water and fuel scavenge pumps
- fuel quantity probes.
(6)Remove the solution and microbiological particles with clean water. Remove any water from the tank with a sponge.

WARNING : DO NOT GET THE CLEANING AGENT (MATERIAL No. 11-006) ON YOUR SKIN OR IN YOUR EYES. IF YOU DO:
- FLUSH IT AWAY WITH CLEAN WATER
- GET MEDICAL AID.

(7)Mix a solution of one part cleaning agent (Material No. 11-006) to one part of water in a clean container.
(8)Apply the solution to the contaminated area and let it stay there for between 15 minutes and 2 hours.
(9)Rinse with clean water to remove the solution. Remove any water from the tank with a sponge.
(10)Use an air blower to make sure that the tank is dry.
(11)Examine the tanks for corrosion and degraded sealant.
(12)Comply with the procedures for leaving a fuel tank (Ref. 28-10-00, P. Block 301).

WARNING : LANDING GEAR - MAKE SURE THAT THE GROUND SAFETIES AND CHOCKS ARE IN POSITION.

FLIGHT CONTROLS - MAKE SURE THAT THE GROUND SAFETIES AND NOTICES ARE IN POSITION.

OBSERVE THE SAFETY PRECAUTIONS IN 28-00-00, P. BLOCK 301 AND 28-10-00, P. BLOCK 301.

MAKE SURE THAT THE FIRE FIGHTING EQUIPMENT IS AVAILABLE AND ADEQUATE.

R MAKE SURE THAT YOU ISOLATE THE ELECTRICAL CIRCUITS UPON WHICH WORK IS
R IN PROGRESS.

1. Reason for the Job

NOTE : The procedures contained in this topic use fuel to test the tanks for leaks. The procedures contained in topic 28-11-00, P. Block 601, do not use fuel to test the tanks for leaks.
You can use either topic to test the tanks for leaks.

A. To test the outer, inner and center tanks for leaks using fuel (Ref. Para. 2).

B. To test the vent surge tank for leaks using fuel (Ref. Para. 3).

C. To test the trim tank for leaks using fuel (Ref. Para. 4).

D. To test the trim tank vent surge tank for leaks using fuel (Ref. Para. 5).

E. To test the center tank water scavenge system using fuel (Ref. Para. 6).

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F. To test the inner wing tank water scavenge system using air (Ref. Para. 7).

G. To test the trim tank water scavenge system using air (Ref. Para. 8).

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2. Leak Test - Outer, Inner and Center Tanks

A. Equipment and Materials

ITEM	DESIGNATION
A.	Access Platform 4.5 m (15 ft) for Wing Tanks
B.	Access Platform 2 m (6.5 ft) for Center Tank
C.	Circuit Breaker Safety Clips and Tags

Referenced Procedures

- 12-11-28, P. Block 301	Replenishing of Fuel Tanks
- 24-41-00, P. Block 301	AC External Power Control
- 28-00-00, P. Block 301	Fuel - General
- 28-10-00, P. Block 301	Storage
- 28-11-00, P. Block 601	Tanks
- 28-11-22, P. Block 401	Manhole Covers (Wings)
- 28-11-29, P. Block 401	Manhole Cover (Center Tank)
- 28-12-21, P. Block 401	NACA Intake and Vent Protector
- 28-25-00, P. Block 301	Refuel/ Defuel System
- 32-12-11, P. Block 301	Main Gear Main Door

B. Procedure

(1)Job Set-Up

(a)Energize the aircraft electrical network and make certain that electronics racks are ventilated (Ref. 24-41-00, p. Block 301).

(b)Defuel the appropriate tanks (Ref. 28-25-00, P. Block 301).

1 For outer or center tank testing, defuel inner tank(s).

2 For inner tank testing, defuel outer and center tanks.

(c)On panel 110VU, make certain that the TRANSF VALVE switch is in CLOSED and guarded position.

(d)Open, safety and tag the following circuit breakers

- For outer and center tank testing

PANEL	SERVICE	IDENT.	LOCATION
132VU	FUEL/L INR TK/PUMP 1/CTL	69QA	322/N60
132VU	FUEL/L INR TK/PUMP 2/CTL	59QA	323/M61
132VU	FUEL/R INR TK/PUMP 1/CTL	60QA	322/N62
132VU	FUEL/R INR TK/PUMP 2/CTL	70QA	323/M63
132VU	FUEL/FUELLING/XFR VALVE	2QU	321/P55

- For inner tank testing

PANEL	SERVICE	IDENT.	LOCATION
22VU	FUEL/L OUTR TK PUMP 2/CTL	61QA	201/J15
22VU	FUEL/R OUTR TK PUMP 2/CTL	68QA	201/J18
132VU	FUEL/CTR TK/L/PUMP/CTL	63QA	322/N58
132VU	FUEL/CTR TK/R/PUMP/CTL	64QA	323/M59
132VU	FUEL/L OUTR TK/PUMP 1/CTL	67QA	322/N56
132VU	FUEL/R OUTR TK/PUMP 1/CTL	62QA	323/M57
132VU	FUEL/FUELLING/XFR VALVE	2QU	321/P55

(e)Position access platform(s).
(f)Open access doors:

R **ON A/C 001-100,

1 For inner tanks, remove manhole cover 550(650)AB (Ref. 28-11-24, P. Block 401) to allow inspection at STA874/RIB 14 outboard, and center tank manhole cover 147(148)AZ (Ref. 28-11-29, P. Block 401) to allow inspection at STA 0/RIB 1.
2 For outer tanks, remove manhole cover 540(640)AB (Ref. 28-11-22, P. Block 401) to allow inspection at STA874/RIB 14 inboard, and NACA intake door 560(660)AB (Ref. 28-12-21, P. Block 401) to allow inspection at STA1712/RIB 28 outboard.
3 For center tank, remove manhole cover 540(640)AB (Ref. 28-11-22, P. Block 401) to allow inspection at STA 0/RIB 1 outboard. Open main landing gear door (Ref. 32-12-11, P. Block 301) and remove manhole covers 147CZ, 147BZ and 148CZ (Ref. 28-11-29, P. Block 401) to allow inspection of center tank boundary at rear spar. Remove access doors in Zone 137/8 to allow inspection of center tank boundary at front spar.

R **ON A/C 101-200,

1 For the inner tanks, remove the manhole cover 550(650)AB (Ref. 28-11-24, P. Block 401) to inspect at STA874/RIB 14 outboard. Remove the center-tank manhole cover 147AZ (Ref. 28-11-24, P. Block 401) to inspect at STA 0/RIB 1.
2 For the outer tanks, remove the manhole cover 540(640)AB (Ref. 28-11-22, P. Block 401) to inspect at STA874/RIB 14 inboard. Open the NACA intake door 560(660)AB (Ref. 28-12-21, P. Block 401) to inspect at STA1712/RIB 28 outboard.
3 For the center tank, remove the manhole cover 540(640)AB (Ref. 28-11-22, P. Block 401) to inspect at STA 0/RIB 1 outboard. Open the main-landing-gear door (Ref. 32-12-11, P. Block 301) and remove the manhole covers 147CZ, 147BZ and 148CZ (Ref. 28-11-29, P. Block 401) to inspect the center tank boundary at the rear spar. Remove the access doors in Zone 137/8 to inspect the center tank boundary at the front spar.

R **ON A/C ALL

(2)Test

ACTION	RESULT
1. Refuel the appropriate tank(s) until fueling is stopped by high level sensors	
2. After 30 min, visually examine tank boundaries for leaks (Ref. 28-11-00,	

ACTION	RESULT

P. Block 601).

(3)Close-Up

R (a)Make sure that the work area is clean and clear of all tools and other
R items of equipment.

R CAUTION : MAKE SURE THAT ALL THE FASTENERS AND PIP PINS ARE CORRECTLY
R INSTALLED AND SECURED WHEN YOU CLOSE THE ACCESS DOORS AT FR47.

R (b)Close the access doors.
R (c)Remove the access platform(s).
(d)Remove safety clips and tags and close the following circuit breakers:

- For outer and center tank testing.

PANEL	SERVICE	IDENT.	LOCATION
132VU	FUEL/L INR TK/PUMP 1/CTL	69QA	322/N60
132VU	FUEL/L INR TK/PUMP 2/CTL	59QA	323/M61
132VU	FUEL/R INR TK/PUMP 1/CTL	60QA	322/N62
132VU	FUEL/R INR TK/PUMP 2/CTL	70QA	323/M63
132VU	FUEL/FUELLING/TRANSFER VALVE	2QU	321/P55

- For inner tank testing.

PANEL	SERVICE	IDENT.	LOCATION
22VU	FUEL/L OUTR TK PUMP 2/CTL	61QA	201/J15
22VU	FUEL/R OUTR TK PUMP 2/CTL	68QA	201/J18
132VU	FUEL/CTR TK/L/PUMP/CTL	63QA	322/N58
132VU	FUEL/CTR TK/R/PUMP/CTL	64QA	322/M59
132VU	FUEL/L OUTR TK/PUMP 1/CTL	67QA	322/N56
132VU	FUEL/R OUTR TK/PUMP 1/CTL	62QA	323/M57
132VU	FUEL/FUELLING/TRANSFER VALVE	2QU	321/P55

(e)Replenish defueled tanks as required (Ref. 12-11-28, P. Block 301).

3. Leak Test - Vent (Surge) Tank

A. Equipment and Materials

ITEM	DESIGNATION
A.	Access Platform (5 m) (17 ft)
B.	Container (10 liters) (3 US gals)
Referenced Procedures	
- 12-11-28, P. Block 301	Replenishing of Fuel Tanks
- 24-41-00, P. Block 301	AC External Power Control
- 28-11-00, P. Block 601	Tanks
- 28-25-00, P. Block 301	Refuel/Defuel System

B. Procedure

(1)Job Set-Up

(a)Energize the aircraft electrical network and make sure that the electronics racks are ventilated (Ref. 24-41-00, P. Block 301).

(b)On panel 110VU, make sure that the FUEL QTY indicator for the associated outer tank shows less than 2000 Kg (4400 LB). If necessary, defuel or transfer the fuel to the other tanks (Ref. 28-25-00, P. Block 301).

(c)Replenish associated inner tank until full (Ref. 12-11-28, P. Block 301). Leave tanker hose connected.

(d)For left vent (surge) tank testing only, replenish center tank until full (Ref. 12-11-28, P. Block 301).

(e)Position access platform.

(f)Position the container on the access platform below the vent (surge) tank NACA intake duct.

(g)On panel 110VU, put all the REFUEL-DEFUEL-VALVES switches in the SHUT position.

CAUTION: WHEN THE MODE SELECTOR SWITCH IS SET TO DEFUEL, ALL THE TANK HIGH LEVEL SENSORS ARE INHIBITED.

(h)On panel 110VU, put the MODE SELECTOR switch to DEFUEL.

NOTE: The test that follows is applicable to the two vent (surge) tanks.

(2)Test

ACTION	RESULT
1. Set tanker to minimum pressure and flow rate.	
2. On panel 110VU: - for left vent (surge) tank test, set left inner and center tank REFUEL-DEFUEL-VALVE switches to OPEN - for right vent (surge) tank test, set right inner tank REFUEL-DEFUEL-VALVE switches to OPEN.	
3. Pump fuel into selected tank(s) until overflow occurs at vent (surge) tank NACA intake duct(s).	On panel 110VU: - relevant OVERFLOW warning light(s) come on.
4. Immediately stop refueling.	

NOTE: Overflow will occur with approximately 318 liters (84 US gals) in each vent tank.

ACTION	RESULT
5. On panel 110VU: - set REFUEL-DEFUEL-VALVES switches to SHUT - set MODE SELECTOR switch to OFF.	
6. Remove all traces of fuel from external surface of vent (surge) tank.	
7. After 30 min, visually examine vent (surge) tank for leaks (Ref. 28-11-00, P. Block 601).	
8. Disconnect tanker hose.	
9. On panel 110VU: - set all REFUEL-DEFUEL-VALVE switches to NORMAL.	
10. Transfer fuel from overfull tank to outer tank until normal fuel levels are restored (Ref. 28-25-00, P. Block 301).	On panel 110VU: - OVERFLOW warning light(s) go off.

(3)Close-Up
(a)Make certain that working area is clean and clear of tools and miscellaneous items of equipment.
(b)Close access doors.
(c)Remove container and access platform.
(d)De-energize the aircraft electrical network (Ref. 24-41-00, P. Block 301).

4. Leak Test - Trim Tank

A. Equipment and Materials

ITEM	DESIGNATION
A.	Access Platform 7 m (23 ft)
Referenced Procedures	
- 12-11-28, P. Block 301	Replenishing of Fuel Tanks
- 24-41-00, P. Block 301	AC External Power Control
- 28-00-00, P. Block 301	Fuel - General
- 28-10-00, P. Block 301	Storage
- 28-11-00, P. Block 601	Tanks
- 28-12-33, P. Block 401	Trim Tank NACA Intake and Vent Protector

ITEM	DESIGNATION
- 28-25-00, P. Block 301	Refuel/Defuel System
- 55-00-00, P. Block 301	Stabilizers - Standard Warnings and Procedures
- 55-13-13, P. Block 401	Trailing Edge Access Panels

B. Procedure

(1)Job Set-Up

(a)Energize the aircraft electrical network (Ref. 24-41-00, P. Block 301).

(b)Make the horizontal and the vertical stabilizers safe (Ref. 55-00-00, P. Block 301).

(c)Open the access door 144DR.

1 On panel 110VU, make sure that the TRANSF. VALVE switch is in the CLOSED and guarded position.

(d)Refuel the wing tanks, the center tank and the trim tank (Ref. 12-11-28, P. Block 301) until the high level sensors stop the refuel.

(e)De-energize the aircraft electrical network (Ref. 24-41-00, P. Block 301) and obey the safety precautions (Ref. 28-10-00, P. Block 301).

(f)Put the access platform in position.

(g)Open the access doors:

1 For the trim tank, open the access panel 334JB (Ref. 55-13-13, P. Block 401) to inspect at STA723/RIB 19 outboard.

2 Remove the NACA intake 346AB to inspect at STA673/RIB 18 outboard (Ref. 28-12-33, P. Block 401). Get access through panel 312AR to inspect the center section of the trim tank boundary.

(2)Test

ACTION	RESULT
1. After 30 min, visually examine the tank boundaries for leaks (Ref. 28-11-00, P. Block 601).	

(3)Close-Up

(a)Make sure that the work area is clean and clear of tools and miscellaneous items of equipment.

(b)Close the access doors 334JB, 346AB, 312AR.

(c)Remove the access platform(s).

(d)Refuel or defuel the aircraft as required (Ref. 12-11-28 or 28-25-00, P. Block 301).

(e)Put the horizontal and vertical stabilizers back to the normal operational condition (Ref. 55-00-00, P. Block 301).

(f)Close the access door 144DR.

(g)De-energize the aircraft electrical network (Ref. 24-41-00, P. Block 301).

5. Leak Test - Trim Tank Vent (Surge) Tank

A. Equipment and Materials

ITEM	DESIGNATION
A.	Access Platform 7m (23 ft)
Referenced Procedures	
- 05-57-00, P. Block 1	Aircraft Stability
- 28-11-00, P. Block 601	Tanks
- 28-25-00, P. Block 301	Refuel/Defuel System
- 55-13-13, P. Block 401	Trailing Edge Access Panels

B. Procedure

WARNING: FOLLOW THE AIRCRAFT STABILITY PRECAUTIONS (REF. 05-57-00, P. BLOCK 1), WHILE REARWARD FUEL TRANSFER TO THE TRIM TANK IS TAKING PLACE.

(1)Job Set-Up
(a)Refuel the trim tank to the overflow sensor level (Ref. 28-25-00, P. Block 301).
(b)Position access platform and open access panel 344JB (Ref. 55-13-13, P. Block 401).
(2)Test

ACTION	RESULT
1. Clean the external surface of the vent (surge) tank	
2. After 30 minutes, visually examine the vent (surge) tank for leaks (Ref. 28-11-00, P. Block 601).	

(3)Close-Up
(a)Defuel on transfer fuel from the trim tank until the OVERFLOW and HIGH LEVEL (FULL) lights on the refuel panel go off (Ref. 28-25-00, P. Block 301).
(b)Defuel or transfer fuel from the trim tank as required (Ref. 28-25-00, P. Block 301).
(c)Make certain that working areas are clean and clear of tools and miscellaneous items of equipment.
(d)Close access doors 344JB and 312AR.
(e)Return stabilisers to operating condition (Ref. 55-00-00, P. Block 301).

6. Functional Test - Center Tank Water Scavenge System

A. Reason for the Job
(1)To prove primary flow through center tank jet pumps.
(2)To prove scavenge lines are unobstructed.

B. Equipment and Materials

ITEM	DESIGNATION
A. 97A28002094000	Dummy Body - Pump Canister
B.	Container 10 liters (3 US gals)
C.	Air Supply, controlled to 30 psi
Referenced Procedures	
- 12-11-28, P. Block 301	Replenishing of Fuel Tanks
- 24-41-00, P. Block 301	AC External Power Control
- 28-00-00, P. Block 301	Fuel - General
- 28-10-00, P. Block 301	Storage
- 28-11-29, P. Block 401	Cover - Manhole, Center Tank
- 28-21-36, P. Block 401	Pump - Booster, Center Tank
- 28-25-00, P. Block 301	Refuel/Defuel System

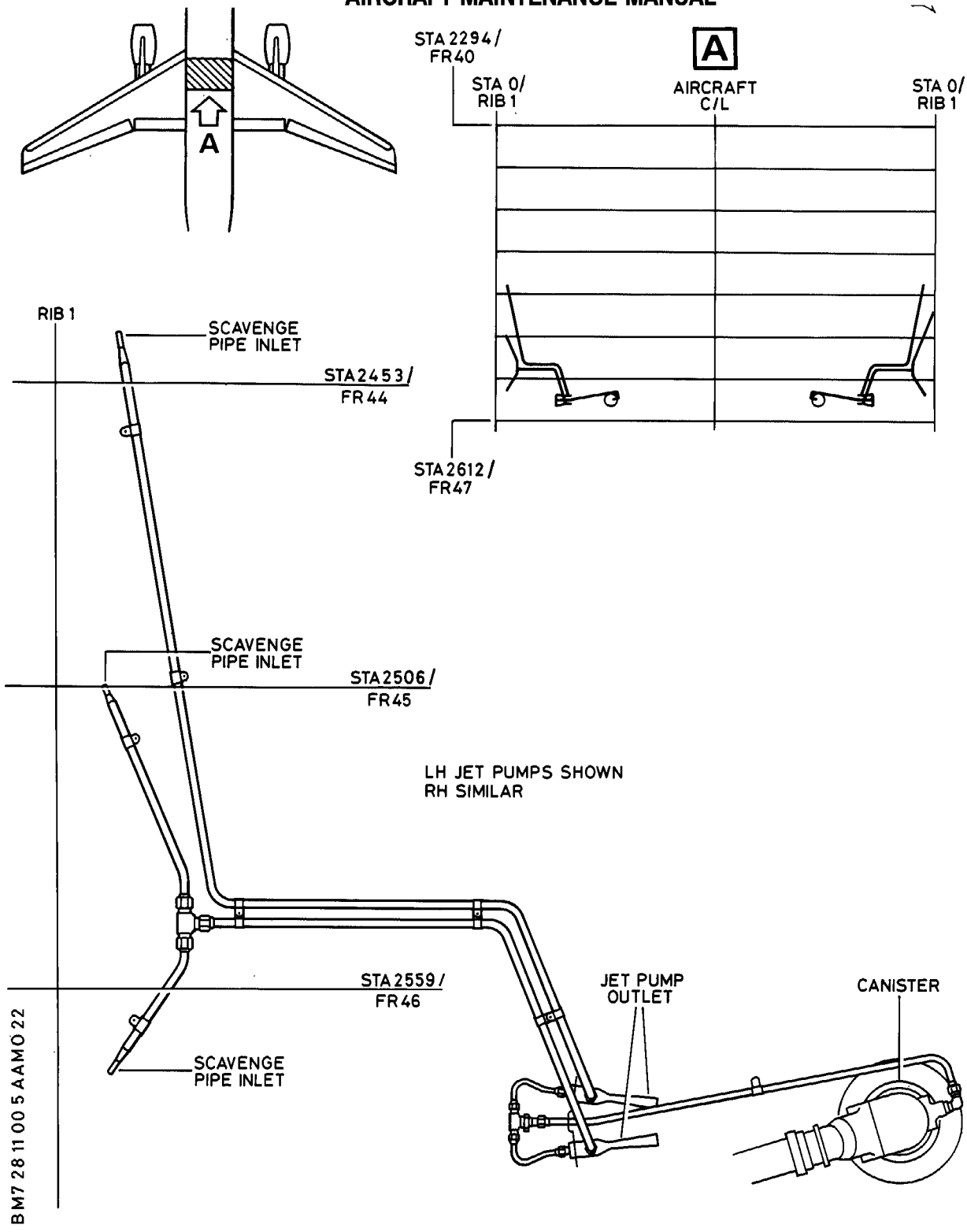
C. Procedure

(Ref. Fig. 501)
(1)Jet Pump Primary Flow
(a)Job Set-Up
1 Energize the aircraft electrical network and make certain that electronics racks are ventilated (Ref. 24-41-00, P. Block 301).
2 Defuel inner LH(RH) tank, or transfer contents to other tanks (Ref. 28-25-00, P. Block 301).

NOTE: The center tank contents must not exceed 10000 Kg (22050 LB).

3 Make sure that the outer LH(RH) tank contains at least 1000 Kg (2200 LB).
4 Make sure that the following circuit breakers are closed:

PANEL	SERVICE	IDENT.	LOCATION
133VU	ENGINES/ENG 1/FUEL HP VALVE/CTL	3KC	333/T69
133VU	ENGINES/ENG 1/FUEL HP VALVE/WARN	1KC	333/T68
133VU	ENGINES/ENG 2/FUEL HP VALVE/WARN	2KC	335/R73
133VU	ENGINES/ENG 2/FUEL HP VALVE/CTL	4KC	333/T70
132VU	FUEL/ISOL VALVES/L/INR TK SUPPLY	3QB	324/L55
132VU	FUEL/ISOL VALVES/R/INR TK SUPPLY	4QB	324/L56
132VU	FUEL/L OUTR TK/PUMP 1 CTL	67QA	322/N56
132VU	FUEL/L OUTR TK/PUMP 1/WARN	15QA	323/M56
132VU	FUEL/R OUTR TK/PUMP 1/WARN	14QA	322/N57
132VU	FUEL/R OUTR TK/PUMP 1/CTL	62QA	323/M57
132VU	FUEL/X FEED VALVE/POSS ANN	3QE	324/L59
132VU	FUEL/X FEED VALVE/MOTOR 1	2QE	324/L60
132VU	FUEL/X FEED VALVE/MOTOR 2	1QE	324/L61



Scavenge Lines - Location
Figure 501

5 On panel 9VU, make certain that ENG 1 (ENG2) HP VALVE lever is in OFF position.
6 On panel 430VU
- make certain that all PUMP pushbutton switch OFF legends are on
- make certain that X FEED annunciator is crossline
- raise guard and release inner LH(RH) tank ISOL VALVES pushbutton switch. Make certain that OFF legend comes on, flowbar flashes then remains off.

7 Remove center tank LH(RH) pump (Ref. 28-21-36, P. Block 401).
8 Position container, then manually open canister check valve to drain fuel line to inner tank isolation valve.
9 Hold open canister check valve with stop attached to dummy body, then install dummy body to seal canister.

(b)Test

ACTION	RESULT
1. On panel 430VU:	
- press inner LH(RH) tank ISOL VALVES pushbutton switch	- OFF legend goes off
	- flowbar flashes when valve is in transit, then remains on
- press L(R) OUTR TK PUMP 1 pushbutton switch	- OFF legends go off
	- pumps run
	- FUEL QTY indicator shows fuel transfer to center tank, through jet pumps, at minimum rate of 450 Kg (992 LB) per hour.
- release (out) L(R) OUTR TK PUMP 1 P/BSW	- OFF legends come on
	- pumps stop
- release (out) inner LH(RH) tank ISOL VALVES P/BSW	- OFF legend comes on
	- flowbar flashes while valve is in transit then remains off.

(c)Close-Up
1 Position container, then remove blanking cap from dummy body and drain fuel line to inner tank isolation valve.
2 Remove dummy body complete with check valve stop. Make certain that check valve is correctly seated.
3 Install center tank LH(RH) pump (Ref. 28-21-36, P. Block 401).
4 On panel 430VU, press inner LH(RH) tank ISOL VALVES pushbutton switch and close guard. Make certain that OFF legend goes off, flowbar

flashes then remains on.
5 Replenish tanks as required (Ref. 12-11-28, P. Block 301).
6 De-energize the aircraft electrical system and disconnect electrical ground power unit.
7 Make certain that working area is clean and clear of tools and miscellaneous items of equipment.

(2)Scavenge Lines - Check for Obstruction
(a)Job Set-Up
1 Remove center tank manhole covers (Ref. 28-11-29, P. Block 401).
(b)Test

ACTION	RESULT
1. Connect airline to one jet pump outlet	
2. Apply air pressure (30 psi) maximum at jet pump outlet	- air flows from scavenge line inlet(s)
3. Remove any debris expelled from scavenge line inlet	
4. Turn off air supply	- airflow from scavenge line inlet ceases
5. Disconnect airline from jet pump outlet	
6. Repeat test at each jet pump outlet	

(c)Close-Up
1 Make certain that working area is clean and clear of tools and miscellaneous items of equipment.
2 Install center tank manhole covers (Ref. 28-11-29, P. Block 401).
3 Replenish center tank as required (Ref. 12-11-28, P. Block 301).

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7. Functional Test - Inner-Tank Water Scavenge System

A. Reason for the Job
(1)To prove that the scavenge lines are unobstructed.

B. Equipment and Materials

ITEM	DESIGNATION
A.	Air supply, not to exceed 1.7 bar (25 psi)
B.	Special Blanks, to install in outlets of the jet pumps during test.
C.	Special Blanks, to install in scavenge pipe inlets (water pick-up points) during test
Referenced Procedures	
- 12-11-28, P. Block 301	Replenishing of Fuel Tanks
- 28-00-00, P. Block 301	Fuel - General
- 28-10-00, P. Block 301	Fuel - Storage
- 28-11-22, P. Block 401	Cover - Manhole, Wings
- 28-11-41, P. Block 401	Fuel-Pump Scavenge
- 28-11-43, P. Block 401	Jet-Pump Scavenge
- 28-25-00, P. Block 301	Refuel/Defuel System

C. Procedure

**ON A/C ALL

Post SB 28-2049 For A/C 001-003,

(Ref. Fig. 502)

**ON A/C ALL

Post SB 28-2049 For A/C 001-003,

(1)Job Set-Up
(a)Defuel the inner tanks or transfer the fuel to the other tanks (Ref. 28-25-00, P. Block 301).
(b)Remove the inner tank manhole covers (Ref. 28-11-22, P. Block 401).

**ON A/C ALL

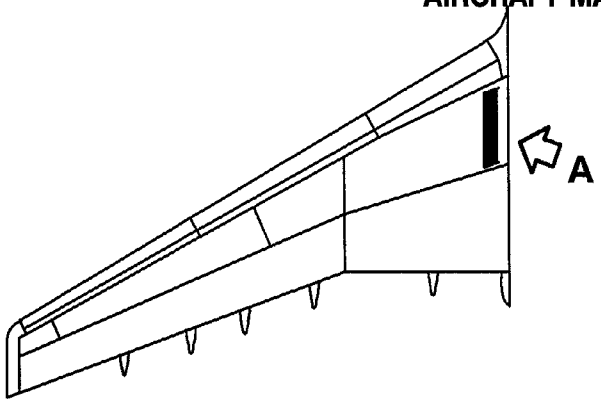
Post SB 28-2049 For A/C 001-003,

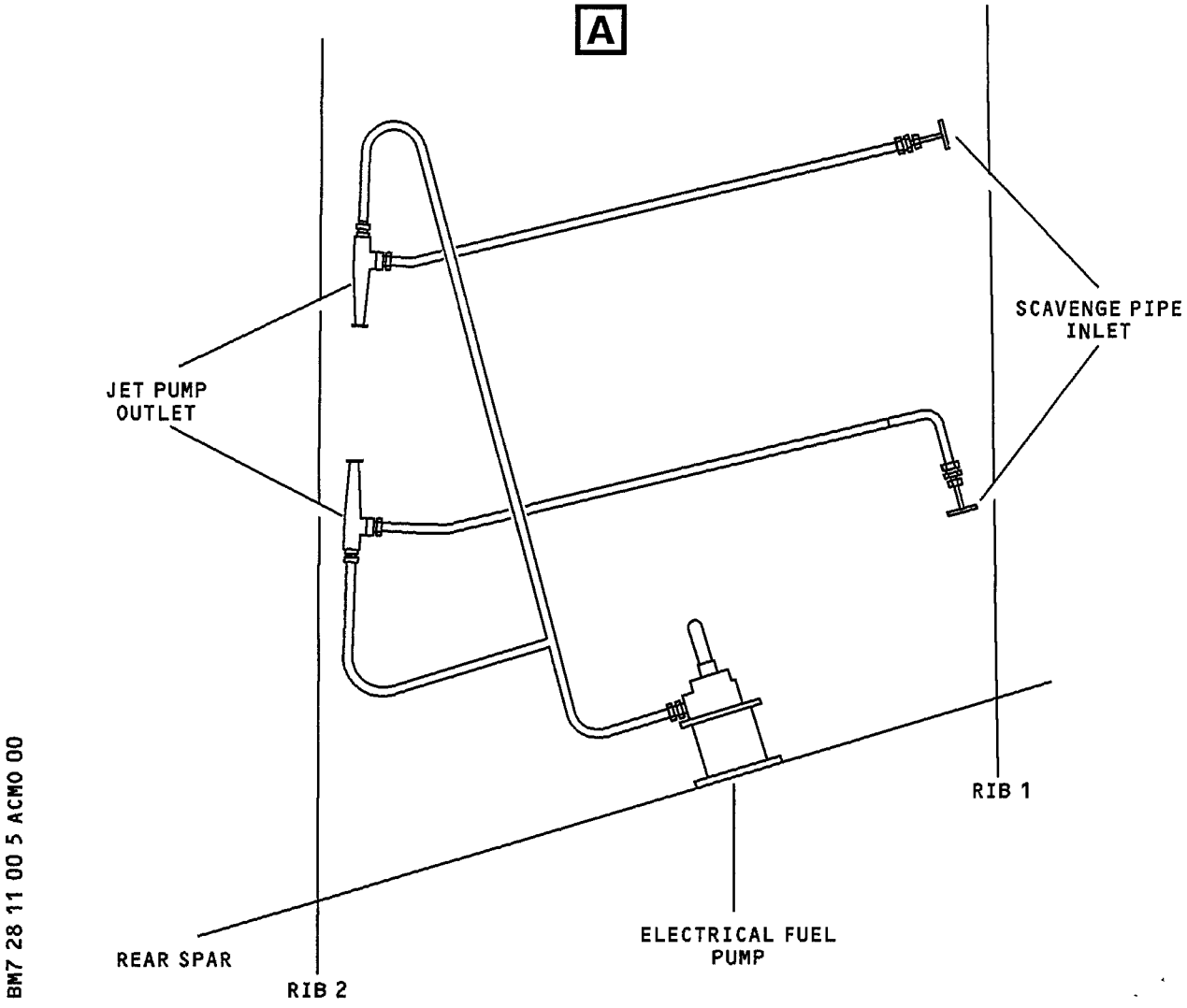
(2)Test

ACTION	RESULT
The actions and results that follow are carried out inside the main wing tanks between Rib 1 and Rib 2, for the left hand and/or the right hand wing.	
1. Connect the airline to the fuel pick-up of the	

ACTION	RESULT
electrical fuel pump.	
2. Install the special blanks onto the inlets of the two scavenge pipes (water pick-up points).	- the inlets of the two scavenge pipes are now blanked.
3. Start the air supply and increase the air delivery pressure to 1.7 bar (25 psi) maximum through the fuel pick-up of the electrical fuel pump.	- the air flows from the two jet pump outlets.
NOTE: If there is no airflow from the lines tested, disconnect the lines and clear the obstruction (Ref. 28-11-41 and/or 28-11-43, P. Block 401). Repeat the test.	
4. Turn off the air supply.	- the air flow stops from the jet pump outlets.
5. Remove the blanks from the inlets of the two scavenge pipes (water pick-up points).	- the inlets of both scavenge pipes are now open.
6. Install the special blanks onto the outlets of the two jet pumps.	- the outlets of the two jet pumps are now blanked.
7. Start the air supply and increase the air delivery pressure to 1.7 bar (25 psi) maximum through the fuel pick-up of the electrical fuel pump.	- the air flows from the inlets of the two scavenge pipes (water pick-up points).
NOTE: If there is no airflow from the lines tested, disconnect the lines and clear the obstruction (Ref. 28-11-41 and/or 28-11-43, P. Block 401). Repeat the test.	
8. Turn off the air supply.	- the air flow stops from the inlets of the two scavenge pipes (water pick-up points).

**ON A/C ALL





Scavenge Lines - Location
Figure 502

Post SB 28-2049 For A/C 001-003,

(3)Close-Up
(a)Remove the special blanks installed on the outlets of the two jet pumps.
(b)Disconnect and remove the airline from the fuel pick-up of the electrical fuel pump.
(c)Make sure that the work area is clean and clear of all blanks, tools and miscellaneous items of equipment.
(d)Install the inner tank manhole covers (Ref. 28-11-22, P. Block 401).
(e)Replenish the inner tank as required (Ref. 12-11-28 or 28-25-00, P. Block 301).

**ON A/C ALL

Post SB 28-2049 For A/C 001-003,

8. Functional Test - Trim-Tank Water Scavenge System

A. Reason for the Job
(1)To prove that the scavenge lines are unobstructed.

B. Equipment and Materials

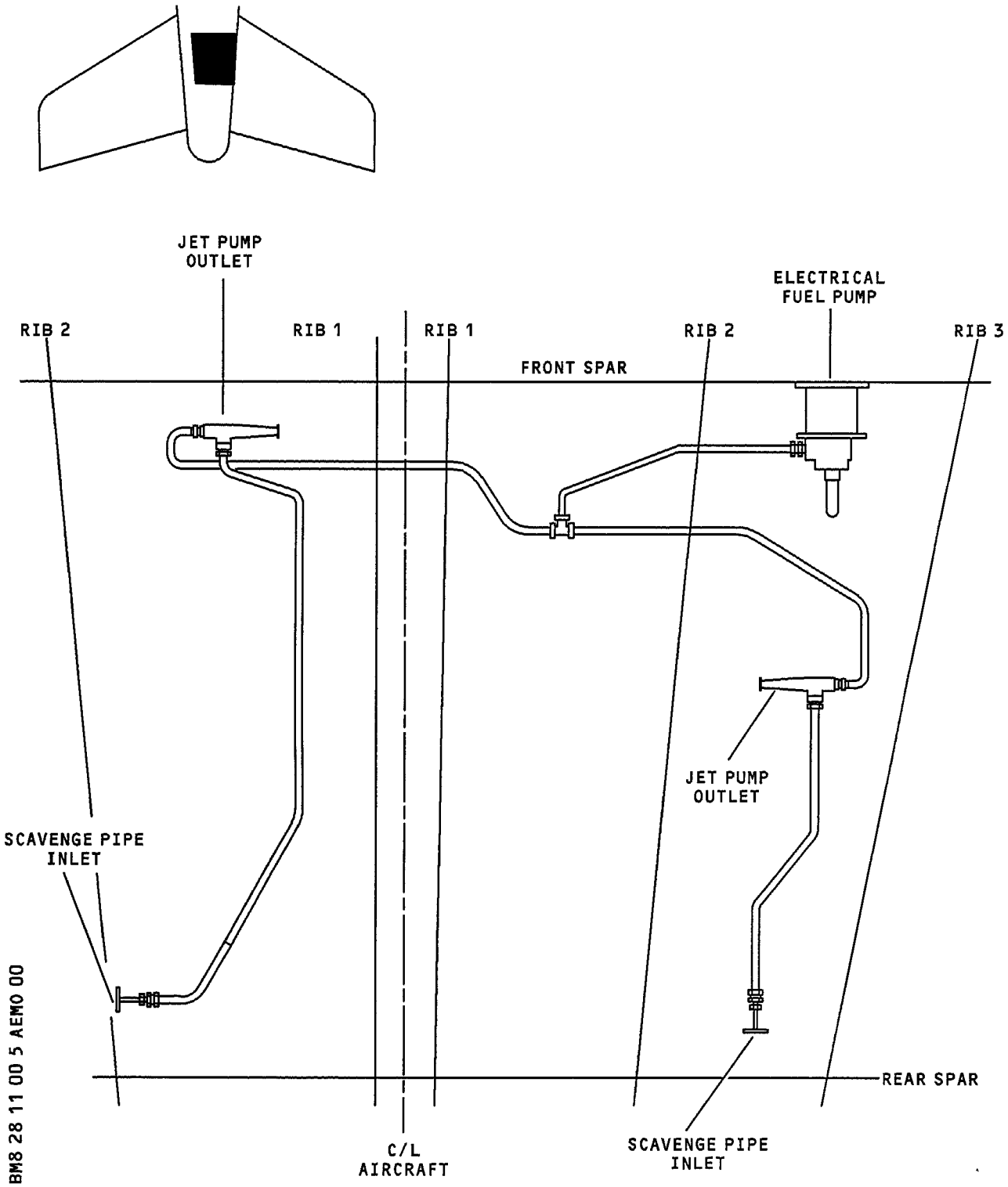
ITEM	DESIGNATION
A.	Air supply, not to exceed 1.7 bar (25 psi)
B.	Special Blanks, to install in outlets of the jet pumps during test
C.	Special Blanks, to install in scavenge pipe inlets (water pick-up points) during test
Referenced Procedures	
- 12-11-28, P. Block 301	Replenishing of Fuel Tanks
- 28-00-00, P. Block 301	Fuel - General
- 28-10-00, P. Block 301	Fuel - Storage
- 28-11-33, P. Block 401	Cover - Manhole, Trim Tank
- 28-11-41, P. Block 401	Fuel-Pump Scavenge
- 28-11-43, P. Block 401	Jet-Pump Scavenge
- 28-25-00, P. Block 301	Refuel/Defuel System

C. Procedure

**ON A/C ALL

Post SB 28-2049 For A/C 001-003,

(Ref. Fig. 503)



Scavenge Lines - Location
Figure 503

**ON A/C ALL

Post SB 28-2049 For A/C 001-003,

(1)Job Set-Up
(a)Defuel the trim tank or transfer the contents to other tanks (Ref. 28-25-00, P. Block 301).
(b)Remove the trim-tank manhole covers from the central compartment (Ref. 28-11-33, P. Block 401).

**ON A/C ALL

Post SB 28-2049 For A/C 001-003,

(2)Test

ACTION	RESULT
The actions and results that follow are carried out inside the trim tank between Rib 2 (left hand) and Rib 3 (right hand).	
1. Connect the airline to the fuel pick-up of the electrical fuel pump.	
2. Install the special blanks onto the inlets of the two scavenge pipes (water pick-up points).	- the inlets of the two scavenge pipes are now blanked.
3. Start the air supply and increase the air delivery pressure to 1.7 bar (25 psi) maximum through the fuel pick-up of the electrical fuel pump.	- the air flows from the two jet pump outlets.
NOTE: If there is no airflow from the lines tested, disconnect the lines and clear the obstruction (Ref. 28-11-41 and/or 28-11-43, P. Block 401). Repeat the test.	
4. Turn off the air supply.	- the air flow stops from the two jet pump outlets.
5. Remove the blanks from the inlets of both scavenge pipes (water pick-up points).	- the inlets of the two scavenge pipes are now open.
6. Install the special blanks	- the outlets of the two jet

ACTION	RESULT
onto the outlets of the two jet pumps.	pumps are now blanked.
7. Start the air supply and increase the air delivery pressure to 1.7 bar (25 psi) maximum through the fuel pick-up of the electrical fuel pump.	- the air flows from the inlets of the two scavenge pipes (water pick-up points).
NOTE: If there is no airflow from the lines tested, disconnect the lines and clear the obstruction (Ref. 28-11-41 and/or 28-11-43, P. Block 401). Repeat the test.	
8. Turn off the air supply.	- the air stops flowing from the inlets of the two scavenge pipes (water pick-up points).

**ON A/C ALL

Post SB 28-2049 For A/C 001-003,

(3)Close-Up
(a)Remove the special blanks installed on the outlets of the two jet pumps.
(b)Disconnect and remove the airline from the fuel pick-up of the electrical fuel pump.
(c)Make sure that the work area is clean and clear of all blanks, tools and miscellaneous items of equipment.
(d)Install the trim tank manhole covers to the central compartment (Ref. 28-11-33, P. Block 401).
(e)Replenish the trim tank as required (Ref. 12-11-28 or 28-25-00, P. Block 301).

TANKS - INSPECTION/CHECK

WARNING : LANDING GEAR - MAKE SURE THAT THE GROUND SAFETIES AND CHOCKS ARE IN POSITION.

FLIGHT CONTROLS - MAKE SURE THAT THE GROUND SAFETIES AND NOTICES ARE IN POSITION.

OBSERVE THE SAFETY PRECAUTIONS IN 28-00-00 P. BLOCK 301 AND 28-10-00, P. BLOCK 301.

R ALWAYS MAKE SURE THAT THE AIRCRAFT ELECTRICAL SYSTEM IS DE-ENERGIZED
R WHEN THE FUEL-TANK MANHOLE COVERS ARE REMOVED. FUEL FUMES ARE
R FLAMMABLE, AND ELECTRICAL SPARKS CAN CAUSE FIRES.

MAKE SURE THAT THE FIRE FIGHTING EQUIPMENT IS AVAILABLE AND ADEQUATE.

MAKE SURE THAT YOU ISOLATE THE ELECTRICAL CIRCUITS UPON WHICH WORK IS IN PROGRESS.

OBSERVE THE SAFETY PRECAUTIONS IN 24-00-00, P. BLOCK 301.

R NOTE : The procedures contained in this topic do not use fuel to test the
R tanks for leaks. The procedures contained in topic 28-11-00, P. Block
R 501, do use fuel to test the tanks for leaks. You can use the
R procedures in either P. Block to test the tanks for leaks.

R 1. Structural Fuel Tank Leaks - General Information

R WARNING : DO NOT GET AIRCRAFT FUEL:
R - IN YOUR MOUTH
R - IN YOUR EYES
R - ON YOUR CLOTHES
R - ON YOUR SKIN FOR A LONG TIME.
R AIRCRAFT FUEL IS POISONOUS AND CAN GO THROUGH YOUR SKIN INTO YOUR BODY.
R FLUSH FUEL AWAY WITH CLEAN WATER AND IF NECESSARY, GET MEDICAL HELP.

R A. Reason for the Job
R This procedure is only applicable for the aircraft structure.
R It is not applicable to the components of the fuel system.
R (1)Use the STRUCTURAL FUEL LEAK REPORTING FORM (SFLRF) to make a record of
R your fuel leak(s).
(Ref. Fig. 601) (Sheet 1/4)
(Ref. Fig. 601) (Sheet 2/4)
(Ref. Fig. 601) (Sheet 3/4)
(Ref. Fig. 601) (Sheet 4/4)

R NOTE : When you find fuel leakage, we recommend you use the SFLRF to keep

Airbus Customer Support Structure Engineering A300-600/A310
FAX +33(0)561933614

AIRBUS

STRUCTURAL FUEL LEAK REPORTING FORM

One form to be used per leak reported. Please complete / tick all the applicable boxes

Report Ref #:

Customer / Airline: A/C Reg: Aircraft Type:
Date: Station: A/C Hours: A/C Cycles:

Ref#: Tech Log Other

Initial Report: ☐ or Follow Up: ☐ Follow Up Ref:

Leak Location

Wing ☐ Pylon ☐ HTP ☐ Fuselage ☐ Engine ☐

Fuel System Leak ☐ or Structural Leak ☐

Fuel System Leak Description

Detailed Description of the Leak:

Structural Leak

Location: Wing ☐ HTP ☐ L/H ☐ R/H ☐ Top ☐ Bottom ☐

Front Spar ☐ Mid Spar ☐ Rear Spar ☐

Specific Features : (eg. Flap Fittings - Skin Joint - Slat Can - etc)

Leak Exit Point - (eg. Indicate area using rib bays or rib#'s and stringer locations or specific features, sketch or describe bolt locations, include sketches or photographs etc on page 3)

Rib ☐ to Rib ☐ - Stringer ☐ to Stringer ☐

Specific fitting or feature

Leak Entry Point - (eg. Indicate area using rib bays or rib#'s and stringer locations or specific features, sketch or describe bolt locations, include sketches or photographs etc on page 3)

Rib ☐ to Rib ☐ - Stringer ☐ to Stringer ☐

Specific fitting or feature

Page 1 of 4

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Fuel Leak Reporting Form
(Sheet 1/4)
Figure 601

R

Leak Rate

Define Leak Type as per AMM 28-11-00, Page Block 601:

Light Leakage ☐ Heavy Leakage ☐ Continuous Leakage ☐

When / Where Located

A/C on Ramp (in service): ☐ Hangar (maint): ☐ Before Refueling: ☐ After Refueling: ☐

Fuel Qty in Tank # ☐ ☐ kgs / ltrs

Fuel Qty in Tank # ☐ ☐ kgs / ltrs

If yes to A/C on Ramp - Was any abnormality reported?
(eg. Heavy or overweight landing, birdstrike, lightning strike or a ground occurrence etc):

YES: ☐ NO: ☐ Tech Log Ref: ☐

Description of reported abnormality:

If yes to leak discovered at maintenance location, was any maintenance or repairs carried out that may have had an impact on the fuel leak.

YES: ☐ NO: ☐ Job Card Ref: ☐

Description of maintenance performed:

Repair Actions

What repair actions were carried out? Refer to SRM 51-76-00

Permanent Repair: ☐ Temporary Repair: ☐

Datails of Repair:

Results

Results of previous repair - Did the leak re-occur? YES: ☐ NO: ☐
Details:

Result of Fuel Leak - Late out of maint: ☐ Flight Delay: ☐ Flight Cancellation: ☐

Name:	Signature:	Date:

Page 2 of 4

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Fuel Leak Reporting Form
(Sheet 2/4)
Figure 601

R

Additional Information, Comments, Sketches or Photographs

BM8 28 11 00 6 BAMM 00

Fuel Leak Reporting Form
(Sheet 3/4)
Figure 601

R

Additional Information, Comments, Sketches or Photographs

BM8 28 11 00 6 BAMU 00

Fuel Leak Reporting Form
(Sheet 4/4)
Figure 601

R

R your record.
R You must use the SFLRF when you make the decision to get Airbus
R analysis or support.
R You can also use the SFLRF to report fuel leak data for Airbus
R records only. When you do this, Airbus will not send a reply to you.

R B. Equipment and Materials

ITEM	DESIGNATION
A.	Container - Fuel Resistant, Transparent Plastic
B.	Ruler - Steel
C. Material No. 05-002	Putty - General Purpose (Ref. 20-31-00)
D. Material No. 19-003	Lint-Free Cloths (Ref. 20-31-00)
Referenced Procedures	
- 24-00-00, P. Block 301	Electrical Power - General
- 28-00-00, P. Block 301	Fuel - General
- 28-10-00, P. Block 301	Storage
- 28-11-00, P. Block 801	Fuel Tanks
- SRM 51-76-20, P. Block 201	Repair of Integral Tank Sealing

R C. Safety Precautions

R WARNING : YOU MUST OBEY ALL THE SAFETY PROCEDURES WHEN YOU DO WORK IN OR
R NEAR A FUEL TANK.
R IF YOU DO NOT OBEY THE SAFETY PROCEDURES, THERE IS A RISK OF:
R - DEATH OR INJURY TO PERSONS
R - DAMAGE TO THE AIRCRAFT OR TO OTHER EQUIPMENT.

R (1)You must obey the fuel safety procedures when you do work in or near a
R fuel tank (Ref. 28-00-00, P. Block 301 and 28-10-00, P. Block 301).

R D. Analysis of the Leak Sample

R NOTE : One of the properties of aircraft fuel is that it can flow easily
R through very small holes. Thus the parts of the aircraft structure
R that contain fuel tanks are sealed to prevent leaks. If the sealant
R in these areas is damaged, or becomes defective, a fuel leak can
R occur. Fuel leakage from leaks can be dangerous.

R (1)You must make sure that the leakage is fuel and is not a fluid from a
R different system.
R (2)Use a container-fuel resistant, transparent plastic to collect a
R sample of the fluid from each leak and do an analysis of each sample.
R If possible, you can smell the sample to try to identify the type of
R fluid.

R E. Analysis of the Leak Types (Ref. Fig. 602)
R (1)You must do an analysis of the leakage. It can be:
R - light leakage

R - heavy leakage
R - continuous leakage.
R (2)You must measure the leakage so you can operate your aircraft safely.
R (3)To identify the type of leakage that you have, you must measure the leakage after a given time:
R (a)Use a clean lint-free cotton cloth (Material No. 19-003) to fully remove the leakage and to fully dry the area.
R (b)Wait ten minutes and then use a steel-ruler to measure the distance across the wet area.
R 1 You have light leakage if the wet area measures 100 mm (4 in.) or less across its longest dimension.
R 2 You have heavy leakage if the wet area measures between 100 mm (4 in.) and 180 mm (7 in.) across its longest dimension.
R 3 You have continuous leakage if the wet area measures more than 180 mm (7 in.) across its longest dimension.

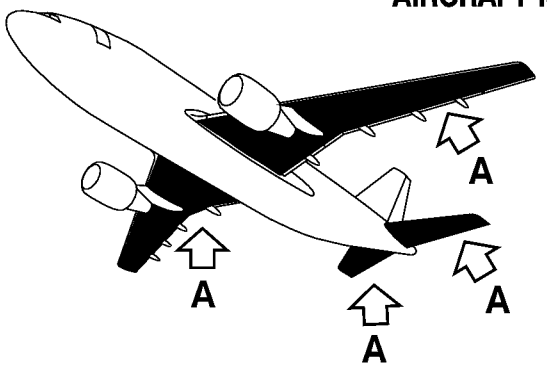
R F. Identify the Applicable Action for Each Leak (Ref. Fig. 603)

R NOTE : It is important that you identify the related action for each leak that you find.

R (1)Use the Fuel Leak Analysis Chart to find the specified action(s) (scheduled inspection or repair) for the location and leakage type of each fuel leak.
R (2)The possible fuel leak locations are identified for each area as follows:
R (a)Open areas where leakage cannot flow to a possible fire source:
R - the top and bottom of the outer wing surfaces.
R (b)Areas that are not fully closed:
R - the rear walls of tanks.
R (c)Closed areas:
R - the front wall of each tank
R - each engine pylon
R - the top and bottom of the center wing surfaces (belly)
R - the THS inside the tail cone.
R (3)If you decide to do a permanent repair, refer to the SRM (Ref. SRM 51-76-20).

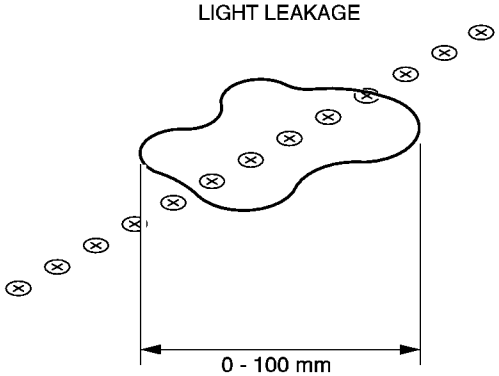
R G. Recommended Procedures Before You do an Analysis of the Leak Path or do a Repair
R (1)Before you defuel a fuel tank that has a leak, try to find all of the leaks from the fuel tank.
R (2)Use SPECIAL MATERIALS (Material No. 05-002) to make a wall around the exit point of a leak where you have identified heavy or continuous leakage. This will help you find smaller adjacent leaks.
R (3)Mark the locations of all of the fuel leaks on the outer skin.

R H. Do the structural fuel-leaks analysis procedure to locate the route and source of each of your leaks Reference Paragraph 2.



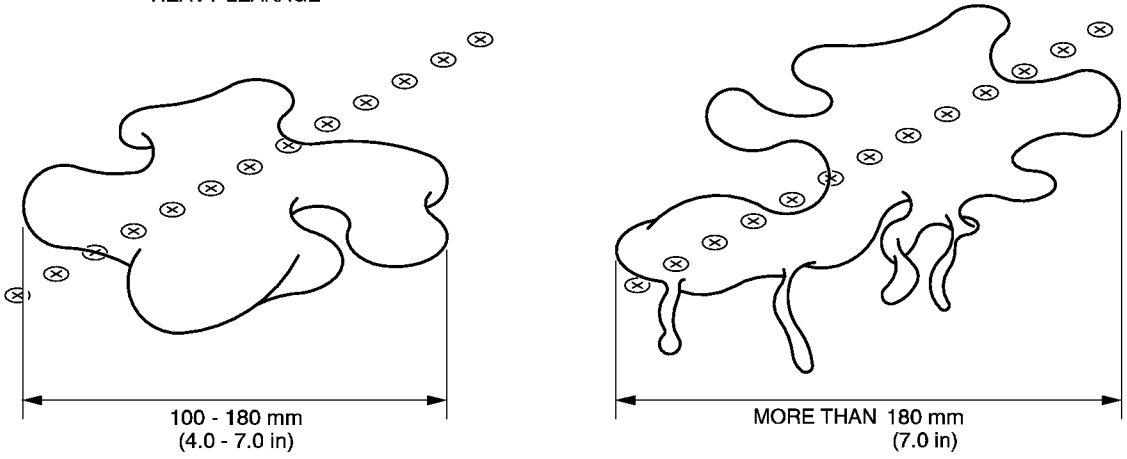
A

LIGHT LEAKAGE



CONTINUOUS LEAKAGE

HEAVY LEAKAGE



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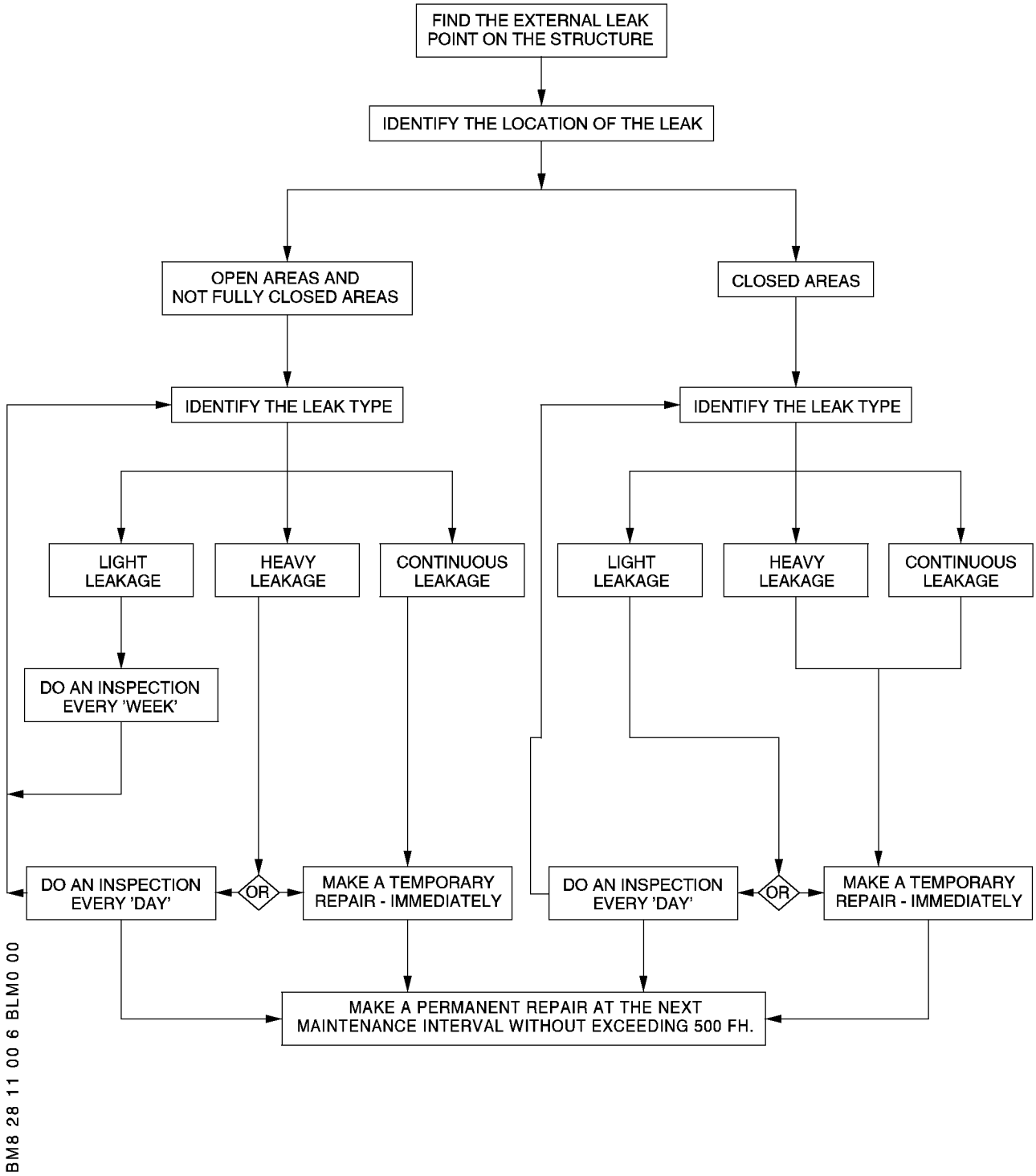
Fuel Leakage Types
Figure 602

R


FIND THE EXTERNAL LEAK POINT ON THE STRUCTURE
IDENTIFY THE LOCATION OF THE LEAK
OPEN AREAS AND NOT FULLY CLOSED AREAS
CLOSED AREAS
IDENTIFY THE LEAK TYPE
IDENTIFY THE LEAK TYPE
LIGHT LEAKAGE
HEAVY LEAKAGE
CONTINUOUS LEAKAGE
LIGHT LEAKAGE
HEAVY LEAKAGE
CONTINUOUS LEAKAGE
DO AN INSPECTION EVERY 'WEEK'
DO AN INSPECTION EVERY 'DAY'
OR
MAKE A TEMPORARY REPAIR - IMMEDIATELY
DO AN INSPECTION EVERY 'DAY'
OR
MAKE A TEMPORARY REPAIR - IMMEDIATELY
MAKE A PERMANENT REPAIR AT THE NEXT MAINTENANCE INTERVAL WITHOUT EXCEEDING 500 FH.
BM8 28 11 00 6 BLM0 00

Fuel Leak Analysis Chart
Figure 603

R

R 2. Structural Fuel Leaks - Analysis of the Route, Location of the Source and
R the Identification of Applicable Leak Tests

R **WARNING : DO NOT GET AIRCRAFT FUEL:**
R **- IN YOUR MOUTH**
R **- IN YOUR EYES**
R **- ON YOUR CLOTHES**
R **- ON YOUR SKIN FOR A LONG TIME.**
R **AIRCRAFT FUEL IS POISONOUS AND CAN GO THROUGH YOUR SKIN INTO YOUR BODY.**
R **FLUSH FUEL AWAY WITH CLEAN WATER AND IF NECESSARY, GET MEDICAL HELP.**

R A. Reason for the Job
This procedure is only applicable for aircraft structure, it is not applicable to fuel system components.

R To do an analysis of the route of a fuel leak. To find the source of the leak and to give the different fuel-leak detection procedures.

R B. Equipment and Materials

R ITEM	DESIGNATION
R Referenced Procedures	
R - 24-00-00, P. Block 301	Electrical Power - General
R - 28-00-00, P. Block 301	Fuel - General
R - 28-10-00, P. Block 301	Storage
R - 28-11-00, P. Block 501	Tanks - Adjustment/Test

R C. Safety Precautions

R **WARNING : YOU MUST OBEY ALL THE SAFETY PROCEDURES WHEN YOU DO WORK IN OR NEAR A FUEL TANK.**
R **IF YOU DO NOT OBEY THE SAFETY PROCEDURES, THERE IS A RISK OF:**
R **- DEATH OR INJURY TO PERSONS**
R **- DAMAGE TO THE AIRCRAFT OR TO OTHER EQUIPMENT.**

R (1)You must obey the fuel safety procedures when you do work in or near a fuel tank (Ref. 28-00-00, P. Block 301 and 28-10-00, P. Block 301).

R D. Causes of Fuel Leaks

R (1)The general causes of fuel leaks are:
R - damaged or loose fasteners
R - failed or damaged internal sealant
R - sealant incorrectly mixed
R - sealant incorrectly applied
R - damage of the structure
R - damaged seals or O-rings
R - incorrect installation of components.

R (2)If the fuel leak is caused by damaged seals, O-rings or incorrectly
R installed components then:
R - do the removal/installation procedure for the applicable component
R again.
R (3)For all other causes of fuel leaks, continue with this procedure.

R E. Fuel Leak Route Analysis
R (1)You must find the exact location of the fuel leak on the outer
R surface of the fuel tank. When you find the location of the leak, you
R can make a decision for the most applicable leak test.
R (2)The point on the outer surface where fuel leakage occurs can be some
R distance from the source of the fuel leak inside the fuel tank. You
R must monitor all of the possible leakage flow directions between the
R external and the internal leak points.
R (3)When the fuel leaks through a seal, an O-ring or the sealant, the
R space between the adjacent surfaces (which makes an overlap) becomes
R a wet area. The wet area extends in all directions until stopped at a
R seal.
R (4)Make an analysis of the fuel tank structure and the sealant to help
R you find the route of the leak.
R (5)The fuel will leak through at the point of least resistance. If you
R seal this point, the fuel will leak through the next point of least
R resistance. You can do this step again and again to find the route of
R the leak (from its exit point on the external surface to its source
R in the tank).

R F. Fuel Leak Detection Procedures
R (1)You can use different procedures to help you find the fuel leaks.
R Some of these procedures will require you to refuel the aircraft/tank
R first and some you can do without fuel.
R (2)To decide which leak test is most applicable to your aircraft,
R consider:
R - its location
R - its configuration
R - available conditions
R - available equipment.
R (3)Applicable leak tests that are available without fuel include:
R (a)Test for External leaks with Fuel and Talcum Powder - Wing Tanks and
R Trim Tank (Reference Paragraph 5.).
R (b)Test for External leaks with Positive Pressure Procedure - Wing Tanks
R (Reference Paragraph 8.).
R (c)Test for External leaks with Positive Pressure Procedure - Trim Tank
R (Reference Paragraph 9.).
R (d)Test for External leaks with Air/Helium positive pressure - Wing
R Tanks and Trim Tank (Reference Paragraph 11.).
R (e)Test for Internal leaks with Local Blowing and Bubble Solution -
R Wing Tanks and Trim Tank (Reference Paragraph 6.).
R (f)Test for Internal leaks with Vacuum and Dye Solution - Wing Tanks and
R Trim Tank (Reference Paragraph 7.).
R (g)Test for Internal leaks with Helium and external pressure - Wing Tanks
R and Trim Tank (Reference Paragraph 10.).

R (h)Test for internal leaks with vacuum and dye solution - center tank
R (Reference Paragraph 12.).
R (4)Applicable leak tests that are available with fuel include:
R (a)Leak test of the outer, inner and center tanks (Ref. 28-11-00,
R P. Block 501).
R (b)Leak test of the vent (surge) tank (Ref. 28-11-00, P. Block 501).
R (c)Leak test of the trim tank (Ref. 28-11-00, P. Block 501).
R (d)Leak test of the trim tank vent-surge tank (Ref. 28-11-00,
R P. Block 501).

R 4. Internal Inspection of Fuel Tanks

R A. Reason for the Job
R (1)Inspection of tank interior for damage to structure, sealant and
R fuel system components.

R B. Equipment and Materials

ITEM	DESIGNATION
A.	Inspection Lamp - Spark Proof
Referenced Procedures	
- 12-11-28, P. Block 301	Replenishment of Fuel Tanks
- 28-00-00, P. Block 301	Fuel - General
- 28-10-00, P. Block 301	Storage
- 24-00-00, P. Block 301	Electrical Power - General

R C. Procedure
R (1)Job Set-Up
R (a)Prepare tank for access (Ref. 28-10-00, P. Block 301).
R (2)Inspection
R (a)Using a spark proof lamp, examine exposed structure, brackets
R and clamps for damage, corrosion and security of attachments.
R (b)Examine tank sealing for deterioration.
R (c)Examine all fuel system pipelines, couplings, bonding, brackets and
R clamps for damage, corrosion and security of attachments.
R (3)Close-Up
R (a)Carry out procedure for leaving a fuel tank (Ref. 28-10-00,
R P. Block 301).
R (b)Remove all ground handling and maintenance equipment, standard and
R special tools, ground power, all access equipment and miscellaneous
R items.

R 5. Locating Leaks - Wing and Trim Tanks - Talcum Powder Method

A. Equipment and Materials

ITEM	DESIGNATION
A.	White Talcum Powder
B.	Soft-Hair Brush
C.	Access Platform 2 to 7 m (6.5 to 23 ft)
D.	Lint-Free Cloths
E.	Low Pressure Air Supply
F.	Plasticine (or equivalent)

B. Procedure
(1)Job Set-Up
(a)Position access platform.
(2)Leak Locating Procedure
(a)Dam existing running leaks with plasticine or equivalent to

reveal any other leaks.
(b)Using a lint-free cloth, dry leak area.

CAUTION: DAMAGE TO TANK SEALANT MAY RESULT IF AIR PRESSURE HOSE IS HELD CLOSE TO TANK STRUCTURE.

(c)Using a low pressure air supply, blow out all wet seams and corners.
(d)Using a soft-hair brush, apply white talcum powder to leak area.
(e)Check for discoloration of talcum powder and mark location of leak.
(f)Repeat steps (2) (a) thru (d) until all external leaks are located and marked.
(g)Perform procedure for locating internal leaks (Ref. paragraph 6).
(3)Close-Up
(a)Remove access platform.
(b)Make certain that working area is clean and clear of tools and miscellaneous items of equipment.

6. Locating Leaks - Wing and Trim Tanks - Local Blowing Method

A. Equipment and Materials

ITEM	DESIGNATION
A.	Dry and Filtered Air Supply - 6.2 - 6.89 bar (90-100 psi)
B.	Nozzle for Air-Hose
C.	Access Platform 2 m to 6 m (6.5 ft to 19.5 ft)
D.	Soft-Hair Brush
E.	Lint-Free Cloths
F.	Inspection Lamp - Spark Proof
G. Material No. 05-004	Special Materials (Ref. 20-31-00)
Referenced Procedures	
- 28-00-00, P. Block 301	Fuel - General
- 28-10-00, P. Block 301	Fuel Storage
- 28-11-00, P. Block 801	Fuel Tanks

B. Procedure
(1)Job Set-Up
(a)Prepare tank for access (Ref. 28-10-00, P. Block 301).
(2)Leak Locating Procedure
(a)Enter tank (Ref. 28-10-00, P. Block 301).
(b)Mop up fuel puddles within tank using clean lint free cloths.
(c)Using a soft-hair brush, apply GC1 and GC2 Solution (Material No. 05-004) to interior surface of tank.
(d)Using a dry and filtered air supply with a pressure of 6.2 to 6.89 bar (90 to 100 psi), hold the nozzle approximately 13 mm (0.5 in) from external surface of tank and direct a jet of air at the leak point.
(e)Check inner surface of the tank for bubbles, and when observed, mark location of leak.
(f)Perform the necessary approved repair (Ref. 28-11-00, P. Block 801).

(3)Close-Up
(a)Perform procedure for leaving a fuel tank (Ref. 28-10-00 P. Block 301).
(b)Remove all ground handling and maintenance equipment, standard and special tools, together with ground power, all access equipment and miscellaneous items.

7. Locating Leaks - Wing and Trim Tanks - Vacuum and Dye Method

A. Equipment and Materials

ITEM	DESIGNATION
A.	Access Platform 2 m to 7 m (6.5 ft to 23 ft)
B.	Inspection Lamp - Spark Proof Or Inspection Lamp, Ultra-Violet - Spark Proof
C.	Manometer Capable of Measuring Minus 248.9 mb (3.6 psi)
D.	Warning Notices - NO SMOKING
E. 98A28104003000	Vacuum Equipment Capable of Negative Pressure 248.9 mb (3.6 psi)
F. 98A28104006000	Blank Assembly for Outer Tank Bellmouth Aperture in Vent Surge Tank
G. 98A28104008000	Blank Assembly for Inner Tank Bellmouth Aperture in Vent Surge Tank
H. 98A28104017000	Blank Adapter for Trim Tank pipe in Vent Surge Tank
J. 98A28104018000	Blank Assembly for Vent Valve Port in Vent Surge Tank Or for Trim Tank Bellmouth Aperture in Vent Surge Tank
K. 98A55104000000	Slave Access Panel Assembly - Trim Tank
L. 99A57304006000	Slave Access Panel - Wing Tanks
M. Material No. 05-046 Or	Special Materials (Ref. 20-31-00)
N. Material No. 05-045	Special Materials (Ref. 20-31-00)
P.	Soft-Hair Brush
Q.	Syringe
R.	Plasticine (or equivalent)
S.	Plastic bag
T.	Tape
U.	Wax crayon, non - black
Referenced Procedures	
- 12-11-28, P. Block 301	Replenishing of fuel tanks
- 24-41-00, P. Block 301	AC External Power Control
- 28-10-00, P. Block 301	Storage
- 28-11-00, P. Block 801	Tanks
- 28-11-22, P. Block 401	Manhole Covers (Wings)
- 28-11-33, P. Block 401	Trim Tank, Manhole Covers

ITEM	DESIGNATION
- 28-12-21, P. Block 401	NACA Intake and Vent Protector
- 28-12-33, P. Block 401	Trim Tank - NACA Intake and Vent Protector
- 28-25-00, P. Block 301	Refuel/Defuel System

B. Procedure

(1)Job Set-Up

NOTE : For these procedures, make sure that all the circuit breakers applicable with the fuel system are closed and that the HP shut-off valves are shut.

(a)Outer Tank

1 Defuel or transfer the fuel from the outer tank (Ref. 28-25-00, P. Block 301).
2 Drain all the fuel from the outer tank (Ref. 28-10-00, P. Block 301).
3 Energize the aircraft electrical network (Ref. 24-41-00, P. Block 301).
4 On panel 430VU:
- make sure that each ISOL VALVES P/BSW OFF legend is on and that the flowbar is off (inner and outer tanks isolation valves closed). If necessary, release (out) the ISOL VALVES P/BSW.
- make sure that the X FEED P/BSW flowbar is crossline (crossfeed valve closed).

5 On the panel 429VU:
- make sure that the APU MASTER SW is in the OFF position.

6 Open the access door 144DR.

NOTE : When the aircraft electrical network is energized, the refuel/defuel panel 110VU, is energized automatically when the access door 144DR, is opened.

7 On panel 110VU, make sure that:
- all the REFUEL-DEFUEL-VALVES switches are in the NORM and guarded position
- the MODE SELECT/SELECTOR switch is in the OFF and guarded position
- the TRANSF. VALVE switch is in the CLOSED and guarded position.

8 Close the access door 144DR.

NOTE : The refuel/defuel panel 110VU, is now de-energized.

9 De-energize the aircraft electrical network (Ref. 24-41-00, P. Block 301).
10 Put the access platform and the warning notices in position.
11 Remove a manhole cover from the outer tank (Ref. 28-11-22, P. Block 401).
12 Remove the wing tank NACA intake 560(660)AB (Ref. 28-12-21, P. Block 401).
13 In the vent surge tank, install the blank PN 98A28104018000 on the

vent valve port and install the blank PN 98A28104006000 on the bellmouth opening of the outer tank vent pipe.

14 Install the slave access panel PN 99A57304007000.

15 Connect the vacuum equipment PN 98A28104003000 to the slave access panel.

16 Connect the manometer to the slave access panel.

(b)Inner Tank

1 Defuel or transfer the fuel from the inner tank and the center tank (Ref. 28-25-00, P. Block 301).

NOTE : It is necessary to empty the center tank to prevent the suction of fuel from the center tank to the inner tank.

2 Drain all the fuel from the inner tank and the center tank (Ref. 28-10-00, P. Block 301).

3 Energize the aircraft electrical network (Ref. 24-41-00, P. Block 301).

4 On panel 430VU:
- make sure that each ISOL VALVES P/BSW OFF legend is on and that the flowbar is off (inner and outer tanks isolation valves closed). If necessary, release (out) the ISOL VALVES P/BSW.
- make sure that the X FEED P/BSW flowbar is crossline (crossfeed valve closed).

5 On the panel 429VU:
- make sure that the APU MASTER SW is in the OFF position.

6 Open the access door 144DR.

NOTE : When the aircraft electrical network is energized, the refuel/defuel panel 110VU, is energized automatically when the access door 144DR, is opened.

7 On panel 110VU, make sure that:
- all the REFUEL-DEFUEL-VALVES switches are in the NORM and guarded position
- the MODE SELECT/SELECTOR switch is in the OFF and guarded position
- the TRANSF. VALVE switch is in the CLOSED and guarded position.

8 Close the access door 144DR.

NOTE : The refuel/defuel panel 110VU, is now de-energized.

9 De-energize the aircraft electrical network (Ref. 24-41-00, P. Block 301).

10 Put the access platform and the warning notices in position.

11 Remove a manhole cover from the inner tank (Ref. 28-11-22, P. Block 401).

12 Remove the wing tank NACA intakes 560(660)AB (Ref. 28-12-21, P. Block 401)

13 In the vent surge tank, install the blank PN 98A28104018000 on the vent valve port and install the blank PN 98A28104006000 on the

bellmouth opening of the inner tank vent pipe.
14 Install the slave access panel PN 99A57304006000.
15 Connect the vacuum equipment PN 98A28104003000 to the slave access panel.
16 Connect the manometer to the slave access panel.

(c)Trim Tank

1 Defuel or transfer the fuel from the trim tank (Ref. 28-25-00, P. Block 301).
2 Drain all the fuel from the trim tank (Ref. 28-10-00, P. Block 301).
3 Energize the aircraft electrical network (Ref. 24-41-00, P. Block 301).
4 On panel 430VU:
- make sure that each ISOL VALVES P/BSW OFF legend is on and that the flowbar is off (inner and outer tanks isolation valves closed). If necessary, release (out) the ISOL VALVES P/BSW.
- make sure that the X FEED P/BSW flowbar is crossline (crossfeed valve closed).
- make sure that the TRIM TK ISOL VALVE legend displays OFF (trim tank isolation valve closed).
5 On the panel 429VU:
- make sure that the APU MASTER SW is in the OFF position.
6 Open the access door 144DR.

NOTE : When the aircraft electrical network is energized, the refuel/defuel panel 110VU, is energized automatically when the access door 144DR, is opened.

7 On panel 110VU, make sure that:
- all the REFUEL-DEFUEL-VALVES switches are in the NORM and guarded position
- the MODE SELECT/SELECTOR switch is in the OFF and guarded position
- the TRANSF. VALVE switch is in the CLOSED and guarded position
- lift the guard and put the TRIM TK REFUEL-DEFUEL VALVES switch to the SHUT position.
8 Close the access door 144DR.

NOTE : The refuel/defuel panel 110VU, is now de-energized.

9 De-energize the aircraft electrical network (Ref. 24-41-00, P. Block 301).
10 Put the access platform and the warning notices in position.
11 Remove the wing tank NACA intakes 346 AB (Ref. 28-12-33, P. Block 401)
12 Install the slave access panel PN 99A55104000000 to the trim tank.
13 Connect the vacuum equipment PN 98A28104003000 to the slave access panel.
14 Connect the manometer to the slave access panel.

(2)Leak Location Procedure

(a)Mix the dye solution as follows:
1 Fluorescent Dye (Material No.05-045)
- 28 grms (1 oz) of dye to 3.79 liters (1 US gal.) of fuel.
2 Blue Dye (Material No.05-046)
- 56 grms (2 ozs) of dye to 379 liters (100 US gals.) of fuel.

WARNING : THE NEGATIVE PRESSURE IN THE TANK MUST NOT BE MORE THAN 248.9 mb (3.6 psi).

(b)Apply a vacuum of 248.9 mb (3.6 psi) maximum to the tank. Keep the vacuum for one hour.
(c)With the vacuum in the tank, apply the dye solution to the external leak point with a soft-hair brush or syringe. Keep the leak point wet with the dye for a minimum of thirty minutes:
- on the upper surface, a dam can be shaped from plasticine (or equivalent) and filled with the dye solution
- a plastic bag which contains the dye solution can be attached to the lower surface with tape to keep the leak point wet.
(d)Slowly allow the vacuum in the tank to decrease. Disconnect the vacuum equipment PN 98A28104003000 and the manometer from the slave access panel.
(e)Remove the slave access panel from the applicable tank.
(f)Prepare the tank for access (Ref. 28-10-00, P. Block 301).

WARNING : OBEY THE SAFETY PRECAUTIONS AND THE PROCEDURES WHEN YOU GO INTO A FUEL TANK (REF. 28-10-00, P. BLOCK 301).

(g)Go into the fuel tank. Use an approved spark-proof inspection lamp and do a check for signs of dye on the inner surfaces of the tank.

NOTE : Use an approved spark-proof ultraviolet lamp if a fluorescent dye has been applied to the tank. The flourescent dye will show bright green or bluish white with the ultraviolet light.

(h)If the dye has not gone into the tank, install the slave access panel, connect the vacuum equipment PN 98A28104003000 and do steps (2) (b) thru (g) again for a longer period of time.
(j)Use a non-black wax crayon to make a mark at the location of the leak. Remove all signs of the dye.
(k)Do an approved repair as necessary (Ref. 28-11-00, P. Block 801).

(3)Close-Up
(a)Do the procedure for when you go away from a fuel tank (Ref. 28-10-00, P. Block 301).
(b)In the wing vent surge tank remove the blank PN 98A28104018000 from the vent valve port.
(c)Remove the blank from the bellmouth of the vent pipe:
- for the Outer Tank PN 98A28104006000
- for the Inner Tank PN 98A28104008000
- for the Trim Tank front vent pipe PN 98A28104018000

- for the Trim Tank rear vent pipe PN 98A28104017000.

(d)Not applicable.

(e)Install the applicable NACA intake:
- for the wing-tanks 560(660)AB (Ref. 28-12-21, P. Block 401).
- For the trim-tank 346AB (Ref. 28-12-33, P. Block 401).

(f)Install the applicable manhole cover:
- for the wing-tanks (Ref. 28-11-22, P. Block 401).
- for the trim-tank (Ref. 28-11-33, P. Block 401).

(g)Remove the access platform.

(h)Remove the warning notices.

(j)Energize the aircraft electrical network (Ref. 24-41-00, P. Block 301).

(k)Open the access door 144DR.

NOTE : When the aircraft electrical network is energized, the refuel/defuel panel 110VU, is energized automatically when the access door 144DR, is opened.

(l)On the panel 110VU:
- put the TRIM TK REFUEL-DEFUEL-VALVES switch in the NORM position and lower the switch guard.

(m)Refuel or transfer the fuel as applicable (Ref. 12-11-28 or 28-25-00, P. Block 301).

(n)Close the access door 144DR.

NOTE : The refuel/defuel panel 110VU, is now de-energized.

(p)De-energize the aircraft electrical network (Ref. 24-41-00, P. Block 301).

(q)Remove the ground support and maintenance equipment, the special and standard tools and all other items.

8. Locating Leaks - Wing and Center Tanks - Positive Pressure Method

A. Test of the LH wing and center tank.
B. Test of the RH wing.

C. Equipment and Materials

ITEM	DESIGNATION
A.	Access Platform 5 m (16.5 ft)
B.	Clean Air Supply with Pressure Limiter (to deliver moisture free air at maximum pressure 0.14 bar (2 psi))
C.	Gage (calibrated to read 0.14 bar (2 psi))
D.	In-Line Air Shut-Off Valve (air tight)
E.	Dry and Filtered Air Supply 6.2 - 6.89 bar (90 - 100 psi)
F.	Nozzle for Air-Hose
G.	Lockwire - Corrosion Resistant Steel, Dia. 0.8 mm (0.032 in)

ITEM	DESIGNATION
H.	Manometers (Qty 2 off) - to measure 0.14 bar (2 psi)
J. 98A57304013000	Slave Door Assembly
K.	Soft-Hair Brush
L.	Soft Non-Black Wax Crayon or Adhesive Tape to Mark the Leak Area
M.	Warning Notices - DO NOT ENTER TEST AREA
N. Material No. 05-004	Special Materials (Ref. 20-31-00)
Referenced Procedures	
- 24-41-00, P. Block 301	AC External Power Control
- 28-11-00, P. Block 801	Fuel Tanks
- 28-11-22, P. Block 401	Manhole covers (Wings)
- 28-11-29, P. Block 401	Center tank manhole cover
- 28-12-00, P. Block 501	Tank Venting System
- 28-12-21, P. Block 401	NACA Intake and Vent Protector
- 28-21-00, P. Block 501	Fuel Pump System
- 28-25-00, P. Block 301	Refuel/Defuel System
- 28-25-00, P. Block 501	Refuel/Defuel System
- 28-25-18, P. Block 401	Drain Valves
- 28-25-19, P. Block 401	Air Vent Valves
- SRM 51-76-20	Repair of Integral Tank Sealing

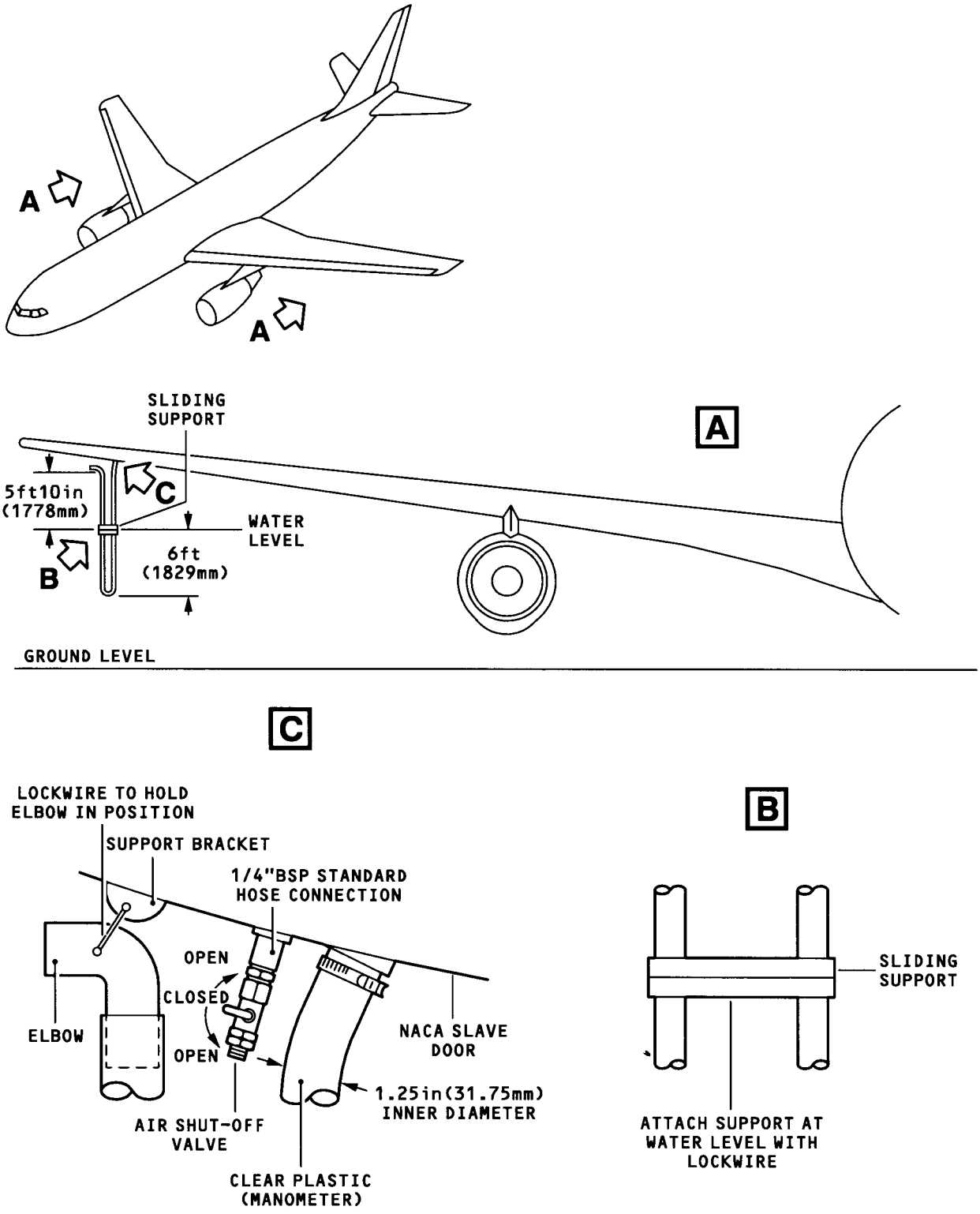
D. Procedure

NOTE : This procedure does not check for leakage between the tanks and their vent tanks.

CAUTION : MAKE SURE THAT THE TEST EQUIPMENT HAS A SAFETY SYSTEM TO ABSORB ANY OVERPRESSURE THAT CAN CAUSE DAMAGE TO THE AIRCRAFT. DO A CALIBRATION CHECK OF THE SAFETY SYSTEM ON THE TEST EQUIPMENT BEFORE YOU TEST THE COMPONENT ON THE AIRCRAFT.

(1)Job Set-Up
(Ref. Fig. 604)
(a)Defuel the aircraft (Ref. 28-25-00, P. Block 301).
(b)Energize the aircraft electrical network (Ref. 24-41-00, P. Block 301).
(c)In the flight compartment on panel 430VU:
- make sure that each ISOL VALVES P/BSW OFF legend is on and the flowbar is off (inner and outer tanks isolation-valves closed)
- make sure that the X FEED P/BSW flowbar is crossline (crossfeed valve closed).

(d)Open the access door 144DR.
1 On the panel 110VU:
- make sure that the CTR, INNER and OUTER TK REFUEL-DEFUEL-VALVES switches are in the NORM and guarded position.



Installation of Test Equipment
Figure 604

**ON A/C 001-100,

- make sure that the MODE SELECTOR switch is in the OFF position and guarded.

**ON A/C 101-200,

- make sure that the MODE SELECT switch is in the OFF position and guarded.

**ON A/C ALL

- make sure that the TRANSF. VALVE switch is in the closed and guarded position. Make sure that the OPEN indicator light is off.

(e) Close the access door 144DR
(f) De-energize the aircraft electrical network (Ref. 24-41-00, P. Block 301).
(g) Remove the NACA intakes from the LH and the RH wings (Ref. 28-12-21, P. Block 401).
(h) Install the slave door assembly PN 98A57304013000 to the LH and RH wings.
(j) Remove the fuel drain valves from the inner wing tank to be pressurized and install the pressure blanks (Ref. 28-25-18, P. Block 401).
(k) Remove the air vent valve from the inner wing tank to be pressurized (Ref. 28-25-19, P. Block 401) and install a pressure blank.
(l) Make sure that all the wing tank and the center-tank manhole covers are correctly installed (Ref. 28-11-22 and 28-11-29, P. Block 401).
(m) Connect the manometers to each door assembly.
(n) Fill the manometers to the correct level with clean water.
(p) Install the air-tight air shut-off valve onto the delivery connection of the ground air-supply line and set the valve to open.
(q) Do a check to make sure that the pressure limiter of the ground air supply system is set at 0.14 bar (2 psi) maximum.
(r) Operate the ground air-supply system to deliver the 0.14 bar (2 psi) supply of clean moist-free air.
(s) Slowly shut the air shut-off valve and use a calibrated gage to check that the 0.14 bar (2 psi) maximum air supply pressure is correct. Adjust and set the pressure limiter if necessary.
(t) Open the air shut-off valve and make sure that air flows through the valve.
(u) Close the air shut-off valve and make sure that the air flow through the valve stops.
(v) Stop the ground air supply and open the air shut-off valve to release the pressure in the air supply line.

NOTE : The pressure limiter is now set and should stay set during the test procedure.

(w) If the LH wing and center tank are to be tested, continue with para.

D. (2).
(x)If the RH wing is to be tested, continue with para. D. (3).

(2)Test of the LH wing and center tank.
(a)Make sure that the blank is installed on the RH door assembly.
(b)Remove the blank from the LH door assembly.
(c)Connect the ground air supply to the LH slave door assembly PN 98A57304013000.

NOTE : Use the manometer on the air inlet (LH) side to measure the pressure in the tank(s) to be tested. The manometer installed on the (RH) blanked side is to monitor any build up of pressure caused by an inter-tank leak.
When you test the LH wing the center tank is also tested.

(d)Put the warning notices in position, a distance of 10 m (33 ft) from the tanks that you will test.
(e)Start the ground air-supply system.

WARNING : DO NOT EXCEED MAXIMUM PRESSURE 0.14 BAR (2 PSI). OVERPRESSURE CAN CAUSE INJURY TO PERSONS AND SEVERE DAMAGE TO AIRCRAFT.

(f)Slowly and fully, open the ground air supply to give a supply pressure of 0.14 bar (2 psi).
(g)Pressurize and keep the air supply pressure at 0.14 bar (2 psi).
(h)Monitor the air inlet manometer, to measure the pressure in the tank.
(j)If you get the tank pressure to 0.14 bar (2 psi) in less than 1 minute, stop the test immediately and investigate the vent system for a possible blockage/restriction (Ref. 28-12-00, P. Block 501).
(k)If the tank pressure does not become stable at 0.14 bar (2 psi), try to keep the air pressure supplied to help you find the leak.
1 Use a soft-hair brush to apply the leak detector fluid (Material No. 05-004) to:
- the external surface of the tank(s)
- the components installed through the external surface of the tank.
2 Bubbles in the leak detector fluid show the location(s) of any leak(s).
3 Use a soft non-black wax crayon or adhesive tape to mark the exact location of the leak(s).
4 Stop the ground air-supply system and release any air pressure that remains.
5 Remove the manhole cover(s) and get access to the applicable fuel tank(s) and/or components (Ref. 28-11-22 or 28-11-29, P. Block 401).
6 Use a dry and filtered air supply with a pressure of 6.2 - 6.89 bar (90 - 100 psi), hold the nozzle approximately 13 mm (0.5 in) from the external surface of the tank and/or components and direct a jet of air at the leak point.
7 Use a soft-hair brush to apply the leak detector fluid (Material No. 05-004) to:
- the internal surface of the tank(s)
- the components installed through the internal surface of the tank.

8 Bubbles in the leak detector fluid show the location of any leaks.
9 Repair the leak(s) (Ref. 28-11-00, P. Block 801 or SRM 51-76-20), as applicable.
10 Remove all traces of the leak detecting solution with demineralized water and use a clean lint-free cloth to dry the affected area(s).

(l) Make sure that the manhole cover(s) that were removed to repair the leaks, are installed (Ref. 28-11-22 or 28-11-29, P. Block 401) and that the tank(s) is/are prepared for the test to continue.

WARNING : DO NOT EXCEED MAXIMUM PRESSURE 0.14 BAR (2 PSI). OVERPRESSURE CAN CAUSE INJURY TO PERSONS AND SEVERE DAMAGE TO AIRCRAFT.

(m) Continue with the timed test. Slowly and fully, open the ground air supply to get a pressure of 0.14 bar (2 psi) on the air inlet (LH side) manometer.
(n) Check the manometer, on the blanked (RH) door assembly PN 98A5730401300, at regular times, for the pressure indication.

NOTE : An increase in pressure on the manometer on the RH wing could be caused by a leak through the structure at RIB 1.

(p) Let the tank pressure stabilize at 0.14 bar (2 psi), then close the air shut-off valve.
(q) Do a check to make sure that the 0.14 bar (2 psi) pressure does not decrease for a time of 1.5 hours.
(r) If the test pressure of 0.14 bar (2 psi) can not be kept for 1.5 hours then do steps (k) thru (q) again.
(s) Do one more check and make sure that the manometer, on the blanked (RH) slave door assembly PN 98A57304013000, shows no pressure indication.
(t) If the manometer on the blanked side does show a pressure indication then:
1 Stop the ground air-supply system, open the air shut-off valve and release the fuel tank pressure.
2 Remove the manhole cover(s) on the RH wing between RIB 2 and RIB 3 to get access to RIB 1 (Ref. 28-11-22, P. Block 401).
3 Start the ground air-supply system.

WARNING : DO NOT EXCEED MAXIMUM PRESSURE 0.14 BAR (2 PSI). OVERPRESSURE CAN CAUSE INJURY TO PERSONS AND SEVERE DAMAGE TO AIRCRAFT.

5 Pressurize and keep the tank pressure at 0.14 bar (2 psi).
6 Monitor the air inlet manometer, to measure the pressure in the tank.
7 Put a person in position in the RH wing to apply the leak detector fluid (Material No. 05-004), with a soft-hair brush to the internal surfaces/joint areas of RIB 1.
8 Bubbles in the leak detector fluid show the location of any leaks.
9 Use a soft non-black wax crayon or adhesive tape to mark the exact location of the leak(s).
10 Stop the ground air-supply system, open the air shut-off valve and release the fuel tank pressure.

11 If leak(s) were found at the internal surfaces/joint areas of RIB 1 then:
- Remove the center-tank manhole cover (Ref. 28-11-29, P. Block 401).
- Put a person in position in the center tank to apply the leak detector fluid (Material No. 05-004) with a soft-hair brush to the internal surfaces/joint areas of RIB 1.
- Use a dry and filtered air supply with a pressure of 6.2 - 6.89 bar (90 - 100 psi), hold the nozzle approximately 13 mm (0.5 in) from the surface of the inner tank at RIB 1 and direct a jet of air at the leak point(s).
- Bubbles in the leak detector fluid show the location of any leak(s).
- When the location of the leak(s) is/are known on both sides of RIB 1, repair the leak(s) (Ref. SRM 51-76-20).

12 Remove all traces of the leak detecting solution with demineralized water and use a clean lint-free cloth to dry the affected area(s).

13 Make sure that the manhole cover(s) that were removed to repair the leak(s) are installed (Ref. 28-11-22 or 28-11-29, P. Block 401) and that the tank(s) is/are prepared for the test to continue.

(u)Do steps (m) thru (q) again. If satisfactory, continue with the close-up procedure ref. para. D. (4).

(v)If the manometer on the blanked (RH) side still shows an increase in pressure and the RIB 1 area between the center tank and the RH inner tank has been checked to have no leaks then, the inter-tank leak could be caused by leaks in the refuel/defuel gallery and/or the fuel feed pipeline.

1 Stop the pressure test and:
- Do the system leak test of the refuel/defuel gallery (Ref. 28-25-00, P. Block 501).
- Do the leak test of the fuel feed pipeline (Ref. 28-21-00, P. Block 501).

2 Do steps (m) thru (q) again and continue with the close-up procedure ref. para. D. (4).

(3)Test of the RH wing.

(a)Make sure that the blank is installed on the LH door assembly.

(b)Remove the blank from the RH door assembly.

(c)Connect the ground air supply to the RH slave door assembly PN 98A57304013000.

NOTE : Use the manometer on the air inlet (RH) side to measure the pressure in the tank to be tested. The manometer installed on the (LH) blanked side is to monitor any build up of pressure caused by an inter-tank leak.

(d)Put the warning notices in position, a distance of 10 m (33 ft) from the tanks that you will test.

(e)Start the ground air-supply system.

WARNING : DO NOT EXCEED MAXIMUM PRESSURE 0.14 BAR (2 PSI). OVERPRESSURE CAN CAUSE INJURY TO PERSONS AND SEVERE DAMAGE TO AIRCRAFT.

(f)Slowly and fully, open the ground air supply to give a pressure of 0.14 bar (2 psi) or less.
(g)Pressurize and keep the air supply pressure at 0.14 bar (2 psi).
(h)Monitor the air inlet manometer, to measure the pressure in the tank.
(j)If you get the tank pressure to 0.14 bar (2 psi) in less than 1 minute, stop the test immediately and investigate the vent system for a possible blockage/restriction (Ref. 28-12-00, P. Block 501).
(k)If the tank pressure does not become stable at 0.14 bar (2 psi), try to keep the air pressure supplied, to help you find the leak:
1 Use a soft-hair brush to apply the leak detector fluid (Material No. 05-004) to:
- to the external surface of the tank (s)
- the components installed through the external surfaces of the tank.
2 Bubbles in the leak detector fluid show the location of any leak(s).
3 Use a soft non-black wax crayon or adhesive tape to mark the exact location of the leak(s).
4 Stop the ground air-supply system and release any air pressure that is left.
5 Remove the manhole cover(s) and get access to the applicable fuel tank(s) and/or components (Ref. 28-11-22, P. Block 401).
6 Use a dry and filtered air supply with a pressure of 6.2 - 6.89 bar (90 - 100 psi), hold the nozzle approximately 13 mm (0.5 in) from the external surface of the tank and/or components and direct a jet of air at the leak point.
7 Use a soft-hair brush to apply the leak detector fluid (Material No. 05-004) to:
- the internal surface of the tank(s)
- the components installed through the internal surface of the tank.
8 Bubbles in the leak detector fluid show the location of any leaks.
9 Repair the leak(s) (Ref. 28-11-00, P. Block 801 or SRM 51-76-20), as applicable.
10 Remove all traces of the leak detecting solution with demineralized water and use a clean lint-free cloth to dry the affected area(s).
(l)Make sure that the manhole cover(s) that were removed to repair the leaks, are installed (Ref. 28-11-22, P. Block 401) and that the tank is prepared for the test to continue.

WARNING : DO NOT EXCEED MAXIMUM PRESSURE 0.14 BAR (2 PSI). OVERPRESSURE CAN CAUSE INJURY TO PERSONS AND SEVERE DAMAGE TO AIRCRAFT.

(m)Continue with the timed test. Slowly and fully, open the ground air supply to get a pressure of 0.14 bar (2 psi), on the air inlet (RH side) manometer.
(n)Examine the manometer, on the blanked (LH) slave door assembly PN 98A5730401300, at regular times, for the pressure indication.

NOTE : An increase in pressure on the manometer could be caused by a leak through the structure at RIB 1.

(p)Let the tank pressure stabilize at 0.14 bar (2 psi), then close the air shut-off valve.

(q)Do a check to make sure that the 0.14 bar (2 psi) tank pressure does not decrease for a time of 1.5 hours.
(r)If the test pressure of 0.14 bar (2 psi) cannot be kept for 1.5 hours then do steps (k) thru (q) again.
(s)Do one more check and make sure that the manometer, on the blanked (LH) slave door assembly PN 98A57304013000, shows no pressure indication.
(t)If the manometer on the blanked side does show a pressure indication then:

1 Stop the ground air-supply system, open the air shut-off valve and release the fuel tank pressure.
2 Remove the manhole cover(s) on the center tank to get access to RIB 1 (Ref. 28-11-29, P. Block 401).
3 Start the ground air-supply system.

WARNING : DO NOT EXCEED MAXIMUM PRESSURE 0.14 BAR (2 PSI). OVERPRESSURE CAN CAUSE INJURY TO PERSONS AND SEVERE DAMAGE TO AIRCRAFT.

4 Slowly and fully open the ground air supply to give a pressure of 0.14 bar (2 psi).
5 Pressurize and keep the tank pressure at 0.14 bar (2 psi).
6 Monitor the air inlet manometer, to measure the pressure in the tank.
7 Put a person in position in the center tank to apply the leak detector fluid (Material No. 05-004), with a soft-hair brush to the internal surfaces/joint areas of RIB 1.
8 Bubbles in the leak detector fluid show the location of any leaks.
9 Use a soft non-black wax crayon or adhesive tape to mark the exact location of the leak(s).
10 Stop the ground air-supply system,open the air shut-off valve and release the fuel tank pressure.
11 If leak(s) were found at the internal surfaces/joint areas of RIB 1 then:
- Remove the manhole cover(s) on the RH wing between RIB 2 and RIB 3 to get access to RIB 1 (Ref. 28-11-22, P. Block 401).
- Put a person in position in the inner tank to apply the leak detector fluid (Material No. 05-004), with a soft-hair brush to the internal surfaces/joint areas of RIB 1.
- Use a dry and filtered air supply with a pressure of 6.2 - 6.89 bar (90 - 100 psi), hold the nozzle approximately 13 mm (0.5 in) from the surface of the center tank at RIB 1 and direct a jet of air at the leak point(s).
- Bubbles in the leak detector fluid show the location of any leak(s).
- When the location of the leak(s) is/are known on both sides of RIB 1, repair the leak(s) (Ref. SRM 51-76-20).

12 Remove all traces of the leak detecting solution with demineralized water and use a clean lint-free cloth to dry the affected area(s).
13 Make sure that the manhole cover(s) that were removed to repair the leak(s) are installed (Ref. 28-11-22 and 28-11-29, P. Block 401) and that the tank(s) is/are prepared for the test to continue.

(u)Do steps (m) thru (q) again. If satisfactory, continue with the close-up procedure ref. para. D. (4).
(v)If the manometer on the blanked (LH) side still shows an increase in

pressure and the RIB 1 area between the center tank and the RH inner tank has been checked to have no leaks then, the inner-tank leak could be caused by leaks in the refuel/defuel gallery and/or the fuel feed pipeline.

1 Stop the pressure test and:
- Do the system leak test of the refuel/defuel gallery (Ref. 28-25-00, P. Block 501).
- Do the leak test of the fuel feed pipeline (Ref. 28-21-00, P. Block 501).

2 Do steps (m) thru (q) again and continue with the close-up procedure ref. para. D. (4).

(4)Close-Up

(a)Open the air shut-off valve, stop the ground air-supply system, release the fuel tank pressure and disconnect the air supply hose.

(b)Install the blank on the air supply adaptor on the LH (RH) door assembly.

(c)Remove the manometers from the LH and the RH door assemblies.

(d)Remove the slave door assembly PN 98A57304013000 from the LH and RH wings.

(e)Install the LH and the RH NACA intakes (Ref. 28-12-21. P. Block 401).

(f)Remove the air vent-valve blank and install the air vent valve (Ref. 28-25-19, P. Block 401).

(g)Remove the fuel drain-valve blanks and install the fuel drain valves (Ref. 28-25-18, P. Block 401).

(h)Make sure that the work area is clean and clear of tools and miscellaneous items of equipment.

(j)Remove the access platform.

(k)Remove the warning notices.

9. Locating Leaks - Trim Tank - Positive Pressure Method

A. Equipment and Materials

ITEM	DESIGNATION
A.	Access Platform 5 m (16 ft) (Qty 2 off)
B.	Access Platform 8 m (26 ft) (Qty 2 off)
C.	Clean Air Supply with Pressure Limiter (to deliver moisture free air at maximum pressure 0.14 bar (2 psi))
D.	Clean Lint-Free Cloth
E.	Demineralized Water
F.	Gage (calibrated to read 0.14 bar (2 psi))
G.	In-Line Air Shut-Off Valve (air tight)
H.	Dry and Filtered Air Supply 6.2 - 6.89 bar (90 - 100 psi)
J.	Lockwire - Corrosion Resistant Steel, Dia. 0.8 mm (0.032 in)
K.	Manometer (clear plastic tube 31.75 mm (1.25 in) ID)- to Measure 0.14 bar (2 psi)
L.	Nozzle for Air-Hose
M. 97A28002542000	Adapter
N. 98A55104001000	Slave Door Assembly
P.	Soft-Hair Brush
Q.	Soft Non-Black Wax Crayon or Adhesive Tape to Mark the Leak Area
R.	Warning Notices - DO NOT ENTER TEST AREA
S. Material No. 05-004	Special Materials (Ref. 20-31-00)
Referenced Procedures	
- 12-11-28, P. Block 301	Fuel
- 24-41-00, P. Block 301	AC External Power Control
- 28-11-00, P. Block 801	Fuel Tanks
- 28-11-33, P. Block 401	Manhole covers (Trim Tank)
- 28-11-35, P. Block 401	Seal - Vapor
- 28-12-00, P. Block 501	Tank Venting System
- 28-12-33, P. Block 401	NACA Intake and Vent Protector
- 28-13-00, P. Block 501	External Ventilating System
- 28-25-00, P. Block 301	Refuel/Defuel System
- 51-76-20, P. Block 201	SRM - Repair of Integral Tank Sealing
- 55-00-00, P. Block 301	Stabilizers - General
- 55-15-11, P. Block 401	Apron - Trimmable Horizontal Stabilizer

B. Procedure

(1) For the pressure test that follows, it is necessary that the accessible areas of the trim tank to be checked first, to avoid unnecessary removal procedures.
Only when you are sure that the leak(s) is/are between RIB 3 LH and RIB 3 RH, should you remove the vapor seal and/or the THS aprons.

NOTE : This procedure does not check for leakage from the trim tank to its vent surge tank.

(2)Job Set-Up
(Ref. Fig. 605)
(a)Defuel and drain the residual fuel from the trim tank (Ref. 28-25-00, P. Block 301).
(b)Energize the aircraft electrical network (Ref. 24-41-00, P. Block 301).
(c)Make sure that the access door 144DR is closed. If necessary, close the door.

NOTE : When the aircraft electrical network is energized and the access door 144DR, is closed, the trim-tank isolation valve will be in the shut position.

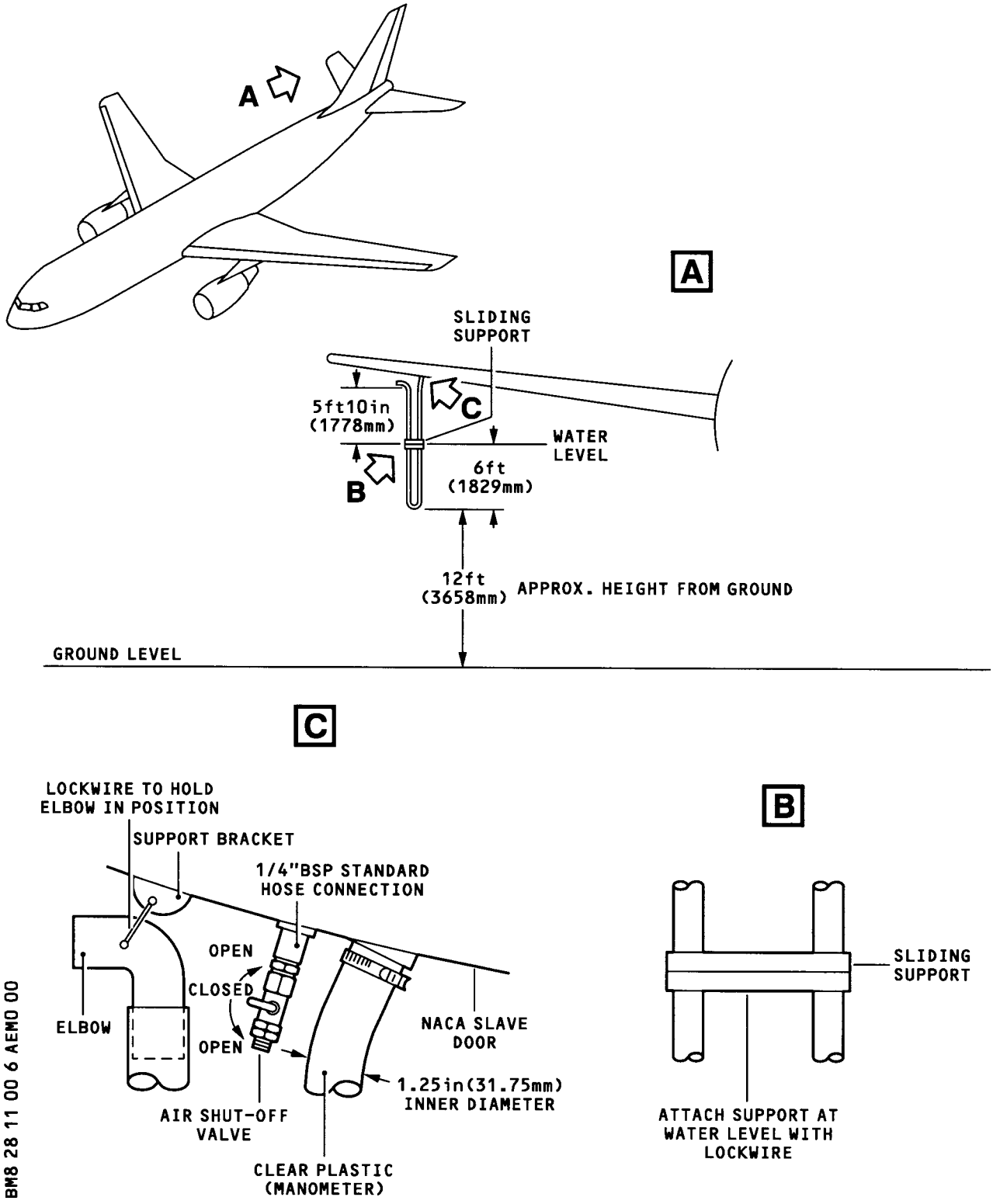
(d)De-energize the aircraft electrical network (Ref. 24-41-00, P. Block 301).
(e)Put the warning notices in position, a distance of 10 m (33 ft) from the tanks that you will test.
(f)Put the trimmable horizontal stabiliser (THS) in the 0 deg. position and make it safe (Ref. 55-00-00, P. Block 301).
(g)Remove the NACA intake from the trim tank (Ref. 28-12-33, P. Block 401) and install the slave door assembly PN 98A55104001000.
(h)Make sure that all the trim-tank manhole covers are correctly installed (Ref. 28-11-33, P. Block 401).
(j)Put the 7 m (23 ft) access platforms in position each side of the trim tank.
(k)Connect the manometer to the slave door assembly.
(l)Fill the manometer to the correct level with clean water.

NOTE : Use the manometer to measure the air pressure in the tank during the test.

(m)Install the sliding support on the manometer at the water level position and safety with lockwire.

CAUTION : MAKE SURE THAT THE TEST EQUIPMENT HAS A SAFETY SYSTEM TO RELEASE ANY OVERPRESSURE THAT CAN CAUSE DAMAGE TO THE AIRCRAFT. DO A CALIBRATION CHECK OF THE SAFETY SYSTEM ON THE TEST EQUIPMENT BEFORE YOU TEST THE COMPONENT ON THE AIRCRAFT.

(n)Install the air-tight air shut-off valve onto the delivery connection of the ground air-supply line and set the valve to open.
(p)Do a check to make sure that the pressure limiter of the ground air supply system is set at 0.14 bar (2 psi) maximum.
(q)Operate the ground air-supply system to deliver the 0.14 bar (2 psi) supply of clean moist-free air.
(r)Slowly shut the air shut-off valve and use a calibrated gage to check that the 0.14 bar (2 psi) maximum air supply pressure is correct. Adjust and set the pressure limiter if necessary.
(s)Open the air shut-off valve and make sure that air flows through the



Installation of Trim Tank Test Equipment
Figure 605

valve.
(t)Close the air shut-off valve and make sure that the air flow through the valve stops.
(u)Stop the ground air supply and open the air shut-off valve to release the pressure in the air supply line.

NOTE : The pressure limiter is now set and should stay set during the test procedure.

WARNING : SECURE THE GROUND AIR-SUPPLY LINE TO A SUITABLE POINT AS CLOSE AS POSSIBLE TO THE SLAVE ACCESS DOOR. THE WEIGHT OF THE GROUND AIR-SUPPLY LINE THAT PULLS ON THE DOOR CONNECTION COULD DAMAGE THE SLAVE DOOR ASSEMBLY OR CAUSE THE AIR-SUPPLY LINE TO SLIP OFF AND INJURE SOMEONE ON THE GROUND.

(v)Safety the ground air-supply to a suitable point.
(w)Remove the blank from the slave door assembly.
(x)Connect the ground air supply to the slave door assembly PN 98A55104001000.

(3)Test.
(a)Start the ground air-supply system.

WARNING : DO NOT EXCEED MAXIMUM PRESSURE 0.14 BAR (2 PSI). OVERPRESSURE CAN CAUSE INJURY TO PERSONS AND SEVERE DAMAGE TO AIRCRAFT.

(b)Slowly and fully, open the ground air supply to give a supply pressure of 0.14 bar (2 psi) or less.
(c)Pressurize and keep the air supply pressure at 0.14 bar (2 psi).
(d)Use the manometer to measure the pressure in the tank.
(e)If you get the tank pressure to 0.14 bar (2 psi) in less than 1 minute, stop the test immediately and investigate the vent system for a possible blockage/restriction (Ref. 28-12-00, P. Block 501).
(f)Let the tank pressure stabilize at 0.14 bar (2 psi), then close the air shut-off valve.
(g)Do a check to make sure that the 0.14 bar (2 psi) tank pressure does not decrease for a time of 1.5 hours. If satisfactory, continue with the cClose-uUp procedure (Ref. para. (4)).
(h)If the tank pressure does not become stable at 0.14 bar (2 psi), or cannot be kept for 1.5 hours then:
1 Put the 5 m (16 ft) access platforms in zones 312 and 313.
2 Open the access doors 312AR and 313AL.
3 Get access to these areas of the trim tank in zone 319:
- the front spar
- the rear spar
- the lower surface
- the vapor seal.

NOTE : You may have to remove the THS apron at a later stage to get access to the top surface of the trim tank, between RIB 3 LH and RIB 3 RH.

4 Open the air shut-off valve and keep the air pressure supplied, to help you find the leak(s).
5 Use a soft-hair brush to apply the leak detector fluid (Material No. 05-004) to:
- the external surface of the tank(s)
- the components installed through the external surface of the tank.
6 If the leak(s) is/are found then, continue with step (m) 6.

(j) If you cannot find the source of the leak(s) then, the top surface of the trim tank, between RIB 3 LH and RIB 3 RH, must be checked as follows:
1 Stop the ground air-supply system and release the fuel tank pressure.
2 Remove the THS aprons (Ref. 55-15-11, P. Block 401).

WARNING : DO NOT WORK ON OR AROUND THE TRIM TANK UNTIL IT HAS BEEN MADE SAFE (REF. 55-00-00, P. BLOCK 301).

3 Move the THS to a greater A/C nose-up position (Ref. 55-00-00, P. Block 301) to increase the access to the top surface of the trim tank, between RIB 3 LH and RIB 3 RH.
4 Continue with step (m).

(k) If you cannot find the source of the leak(s) then, the lower surface of the trim tank (above the vapor seal) must be checked. Continue as follows:
1 Keep the test pressure in the trim tank and install the adapter PN 97A28002542000 onto the drain mast outlet at FR 52/53.
2 Blank off the open line end on the adapter.
3 Blank off the APU ventilation air intake at FR 95.
4 Apply the leak detector fluid (Material No. 05-004) to the ventilation air intake connected to the vapor seal in zone 319.

NOTE : If you seal the drain mast outlet and the APU ventilation air intake at FR 95, any air that has leaked through the trim tank into the vapor seal, will be forced out through the ventilation air intake in zone 319.

(l) If you find bubbles in the leak detector fluid at the ventilation air intake then, there could be a leak into the vapor seal through the lower surface/front spar of the trim tank.
If you cannot find a leak from the ventilation air intake and you cannot find a leak from any other part of the trim tank, there may be a leak in the vapor seal or its components. Therefore the steps that follow will need to be carried out to check the lower surface/front spar of the trim tank.
1 Stop the ground air-supply system and release the fuel tank pressure.
2 Remove the vapor seal (Ref. 28-11-35, P. Block 401) to get to the lower surface of the trim tank.

(m) Continue with the test.
1 Start the ground air-supply system.

WARNING : DO NOT EXCEED MAXIMUM PRESSURE 0.14 BAR (2 PSI). OVERPRESSURE CAN CAUSE INJURY TO PERSONS AND SEVERE DAMAGE TO AIRCRAFT.

2 Slowly and fully open the ground air supply to give a supply pressure of 0.14 bar (2 psi) or less.
3 Pressurize and keep the air supply pressure at 0.14 bar (2 psi).
4 Use the manometer to measure the pressure in the tank.
5 Use a soft-hair brush to apply the leak detector fluid (Material No. 05-004) to the surface of the trim tank.
6 Bubbles in the leak detector fluid show the location(s) of any leak(s).
7 Use a soft non-black wax crayon or adhesive tape to mark the exact location of the leak(s).
8 Stop the ground air-supply system and release any air pressure that remains.
9 Remove the manhole cover(s) and get access to the applicable fuel tank and/or component (Ref. 28-11-33, P. Block 401).
10 Use a dry and filtered air supply with a pressure of 6.2 - 6.89 bar (90 - 100 psi), hold the nozzle approximately 13 mm (0.5 in) from the external surface of the tank and/or components and direct a jet of air at the leak point.
11 Use a soft-hair brush to apply the leak detector fluid (Material No. 05-004) to:
- the internal surface of the tank(s)
- the components installed through the internal surface of the tank.
12 Bubbles in the leak detector fluid show the location of any leaks.
13 Repair the leak(s) (Ref. 28-11-00, P. Block 801 or SRM 51-76-20), as applicable.
14 Remove all traces of the leak detecting solution with demineralized water and use a clean lint-free cloth to dry the affected area(s).

(n) Make sure that the manhole cover(s) that were removed to repair the leaks, are installed (Ref. 28-11-33, P. Block 401) and that the tank is prepared for the test to continue.

(p) Continue with the timed test as follows:

1 Start the ground air-supply system.

WARNING : DO NOT EXCEED MAXIMUM PRESSURE 0.14 BAR (2 PSI). OVERPRESSURE CAN CAUSE INJURY TO PERSONS AND SEVERE DAMAGE TO AIRCRAFT.

2 Slowly and fully, open the ground air supply to give a supply pressure of 0.14 bar (2 psi) or less.
3 Pressurize and keep the air supply pressure at 0.14 bar (2 psi).
4 Use the manometer to measure the pressure in the tank.
5 Let the tank pressure stabilize at 0.14 bar (2 psi), then close the air shut-off valve.

(q) Do a check to make sure that the 0.14 bar (2 psi) pressure does not decrease for a time of 1.5 hours. If satisfactory, continue with the close-up procedure (Ref. para. (4)).

(r) If the test pressure of 0.14 bar (2 psi) cannot be kept for 1.5 hours then do steps (k) thru (q) again as necessary.

(4) Close-Up

(a) Stop the ground air-supply system, open the air shut-off valve, release the fuel tank pressure and disconnect the air supply hose.

(b)Install the blank on the air supply adaptor on the slave door assembly.
(c)Remove the manometer from the slave door assembly.
(d)Remove the slave door assembly PN 98A55104001000 from the RH wing.
(e)Install the NACA intake on the trim tank (Ref. 28-12-33, P. Block 401).
(f)If the vapor seal or the access panels 319 AB/BB were removed during the pressure test then, do the Leak Test of the Vapor Seal Covers and Access Panels (Ref. 28-13-00, P. Block 501).
(g)If applicable, remove the adapter PN 97A28002542000 from the drain mast at FR 52/53.
(h)If applicable, remove the blank from the APU ventilation air intake at FR 95.
(j)Install the THS aprons if they were removed during the test (Ref. 55-15-11, P. Block 401).
(k)Return the THS and the vertical stabilizer to the normal operating condition (Ref. 55-00-00, P. Block 301).
(l)Make sure that the work area is clean and clear of tools and miscellaneous items of equipment.
(m)Install the access doors 312AR and 313AL.
(n)Remove the access platform(s).
(p)Remove the warning notices.
(q)Refuel or transfer fuel to the trim tank if required, (Ref. 12-11-28 or 28-25-00, P. Block 301).

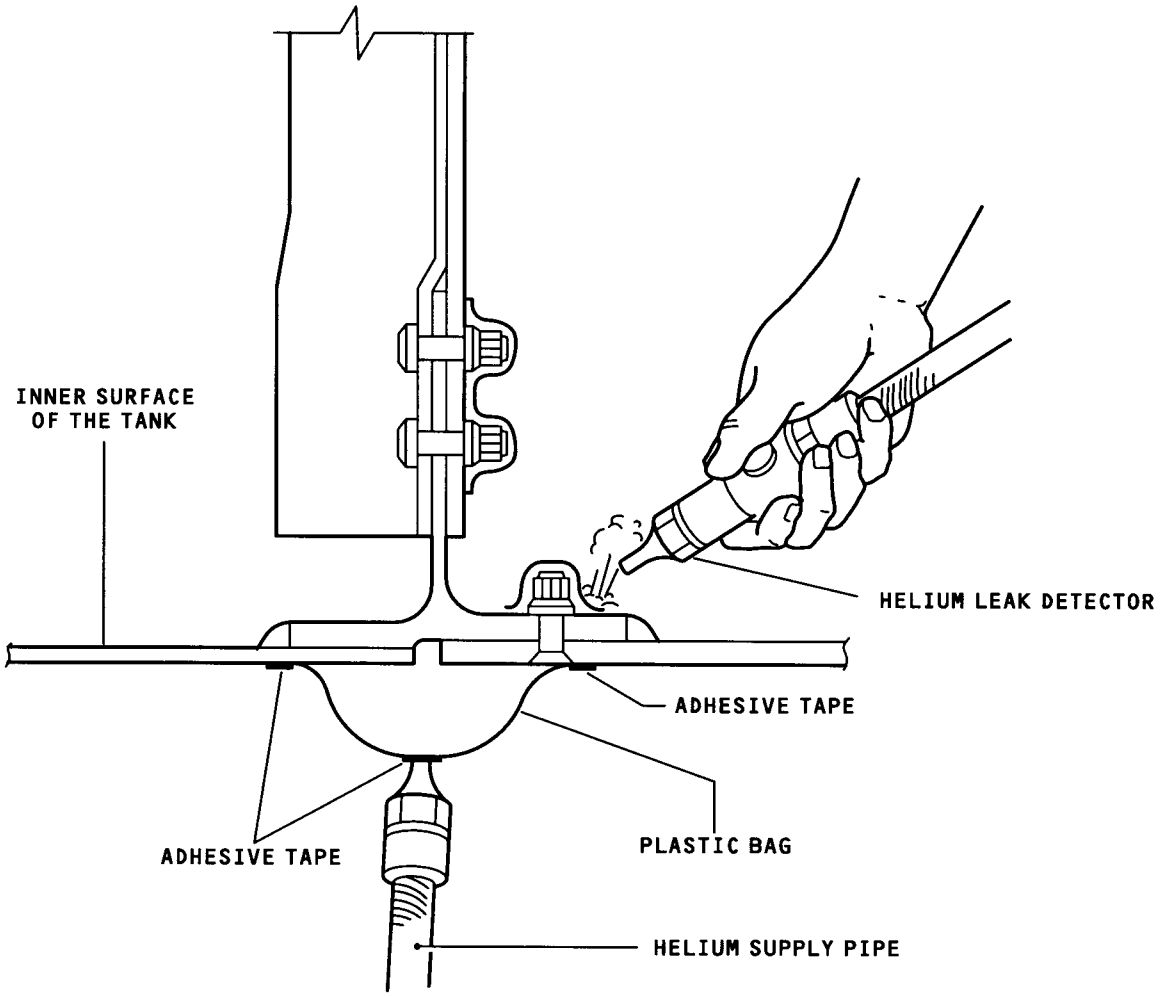
10. Locating Leaks - Wing, Center and Trim Tanks - Helium Method

A. Equipment and Materials

ITEM	DESIGNATION
A.	Clean Lint-free Cloths
B.	Cleaning Fluid
C.	Adjustable Helium Supply - that can be connected to a plastic bag (Item E)
D.	Leak Detector - that can be used in fuel tanks that contain fuel fumes, and can find small areas of above average helium concentration in a fuel tank
E.	Plastic Bag - that can be connected to the outer surface of fuel tank with Item J, and be pressurised to 0.2 bar (2.9 psi)
F.	Regulator - Adjustable, for use with helium supply
G.	Soft Non-Black Wax Crayon or Adhesive Tape to Mark the Leak Area
H.	Warning Notice
J. Material No. 08-052	USA MIL-T-23397 and/or L-T-80B Self-Adhesive Aluminium Tape (Ref. 20-31-00)
Referenced Procedures	
- 12-11-28, P. Block 301	Replenishing of Fuel Tanks
- 27-50-00, P. Block 301	Lift Augmenting (Flaps)
- 27-80-00, P. Block 301	Lift Augmenting (Slats and Kruger Flaps)
- 28-10-00, P. Block 301	Storage
- 28-11-00, P. Block 801	Tanks - Approved Repairs
- 28-11-22, P. Block 401	Cover Manhole (Wing Tanks)
- 28-11-24, P. Block 401	Cover - Manhole Booster Pump
- 28-11-29, P. Block 401	Cover - Manhole Center Tank
- 28-11-33, P. Block 401	Cover - Manhole Trim Tank
- 28-25-00, P. Block 301	Refuel/Defuel System - Servicing
- 51-76-20, P. Block 201	SRM - Repair of Integral Tank Sealing

B. Procedure
(Ref. Fig. 606)

(1) Job Set-Up
(a) Fully fuel the applicable tank and let it stand for sufficient time to know the leak point(s) (24 hours maximum) (Ref. 12-11-28 or 28-25-00, P. Block 301).
(b) Make sure you know the leak point(s) (on the outer surface of the tank) and the leak rate. Use a soft non-black wax crayon or adhesive tape to mark the exact location of the leak.
(c) Defuel the tank (Ref. 28-25-00, P. Block 301).
(d) Drain all the fuel from the tank (Ref. 28-25-00, P. Block 301).
(e) For the wing tanks, if applicable:



Locating Leaks - Helium Method
Figure 606

- fully extend the flaps (Ref. 27-50-00, P. Block 301)
- fully extend the slats (Ref. 27-80-00, P. Block 301).

(f)Put a warning notice in the flight compartment to tell persons not to operate the flight controls.

(g)Remove the applicable tank manhole cover(s)
- for the wing tanks (Ref. 28-11-22, P. Block 401)
- for the outer tank pumps (Ref. 28-11-24, P. Block 401)
- for the center tank (Ref. 28-11-29, P. Block 401)
- for the trim tank (Ref. 28-11-33, P. Block 401)

(h)Vent the fuel tank (Ref. 28-10-00, P. Block 301).

(j)Use clean lint-free cloths and cleaning fluid and make sure the area around the leak (on the outer surface of the fuel tank) is clean and dry.

(k)Connect the equipment in position at the leak area on the outer surface of the fuel tank (Ref. Fig. 606). Make sure you seal the plastic bag around the leak, and around the helium inlet to the plastic bag, with self-adhesive tape (Material No. 08-052).

(2)Test

WARNING : DO NOT EXCEED MAXIMUM PRESSURE 0.2 BAR (2.9 PSI). OVERPRESSURE CAN CAUSE INJURY TO PERSONS AND SEVERE DAMAGE TO AIRCRAFT.

(a)Supply the helium to the plastic bag at a constant pressure (a maximum pressure of 0.2 bar (2.9 psi) is permitted).

NOTE : The plastic bag must be able to withstand a maximum pressure of 0.2 bar (2.9 psi).

NOTE : Make an estimate of the pressure necessary for the type of leak and the location. Use your experience and knowledge to make a decision.

(b)On the outer surface of the tank, seal all the helium leaks with the self-adhesive aluminium tape (Material No. 08-052).

WARNING : DO NOT ENTER THE FUEL TANK BEFORE YOU HAVE COMPLETELY DRAINED AND VENTILATED IT, AND MADE SURE THE LOWER EXPLOSION LIMIT (LEL) IS SATISFACTORY (REF. 28-10-00, P. BLOCK 301).

(c)Enter the tank when it is safe to do so (Ref. 28-10-00, P. Block 301).

(d)Use clean lint-free cloths and make sure that no traces of fuel stay in the tank. Fully dry the tank.

(e)Use the leak detector in the tank to find the leak point. Start at the position opposite the outer surface leak and move the detector along the adjacent stringers and ribs until the exit for the helium is found.

NOTE : A fuel leak can track for a long distance in the aircraft structure.

NOTE : You can only increase the pressure rate to 0.2 bar (2.9 psi)

maximum.

(f)When you have located the leak, remove the helium supply and the plastic bag from the tank.
(g)Do the applicable repair procedure (Ref. 28-11-00, P. Block 801 or Ref SRM. 51-76-20, P. Block 201).
(h)Do the test again.
(j)If removed to get access to the leak, install the center tank coating and fume membrane.

(3)Close-Up
(a)Do the procedure for leaving a fuel tank (Ref. 28-10-00, P. Block 301).
(b)Install the applicable manhole covers(s).
- for the wing tank (Ref. 28-11-22, P. Block 401)
- for the outer tank booster pumps (Ref. 28-11-24, P. Block 401)
- for the center tank (Ref. 28-11-29, P. Block 401)
- for the trim tank (Ref. 28-11-33, P. Block 401)

(c)Remove the warning notice from the flight compartment.
(d)For the wing tanks, if applicable:
- fully retract the flaps (Ref. 27-50-00, P. Block 301)
- fully retract the slats (Ref. 27-80-00, P. Block 301).

(e)Make sure the area is clean and clear of tools and miscellaneous items of equipment.

11. Locating Leaks - Wing, Center and Trim Tanks - Air/Helium Positive Pressure Method

R

A. Equipment and Materials

ITEM	DESIGNATION
A.	Access Platform 5 m (16.5 ft)
B.	Warning Notices - DO NOT ENTER TEST AREA
C. DET-W-40052	Air/Helium Generator fitted with a manometer
D. DET-MP-8000	Helium Detector Kit
E.	Clean Air Supply with Pressure Limiter (to deliver moisture free air at maximum pressure of 6.9 bar (100 psi))
F.	1.5 psi Blow off Manometer
G.	Blanking Plate - NACA vent
H.	Helium Bottles and Pressure Adapter
J.	Oxygen Level Meter
K.	Soft Non-Black Wax Crayon or Adhesive Tape to Mark the Leak Area
L.	Soft-Hair Brush
M. Material No. 05-004	Special Materials (Ref. 20-31-00)

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ITEM	DESIGNATION
Referenced Procedures	
- 24-41-00, P. Block 301	AC External Power Control
- 28-11-00, P. Block 801	Fuel Tanks

ITEM	DESIGNATION
- 28-11-21, P. Block 401	Water Drain Valves
- 28-11-22, P. Block 401	Manhole Covers (Wings)
- 28-11-29, P. Block 401	Manhole Cover Center Tank
- 28-11-32, P. Block 401	Water Drain Valves Trim Tank
- 28-11-33, P. Block 401	Manhole Covers Trim Tank
- 28-12-21, P. Block 401	NACA Intake and Vent Protector
- 28-25-00, P. Block 301	Refuel/Defuel System
- 28-25-00, P. Block 501	Refuel/Defuel System
- 28-25-12, P. Block 401	Refuel/Defuel Valve
- SRM 51-76-20	Repair of Integral Tank Sealing

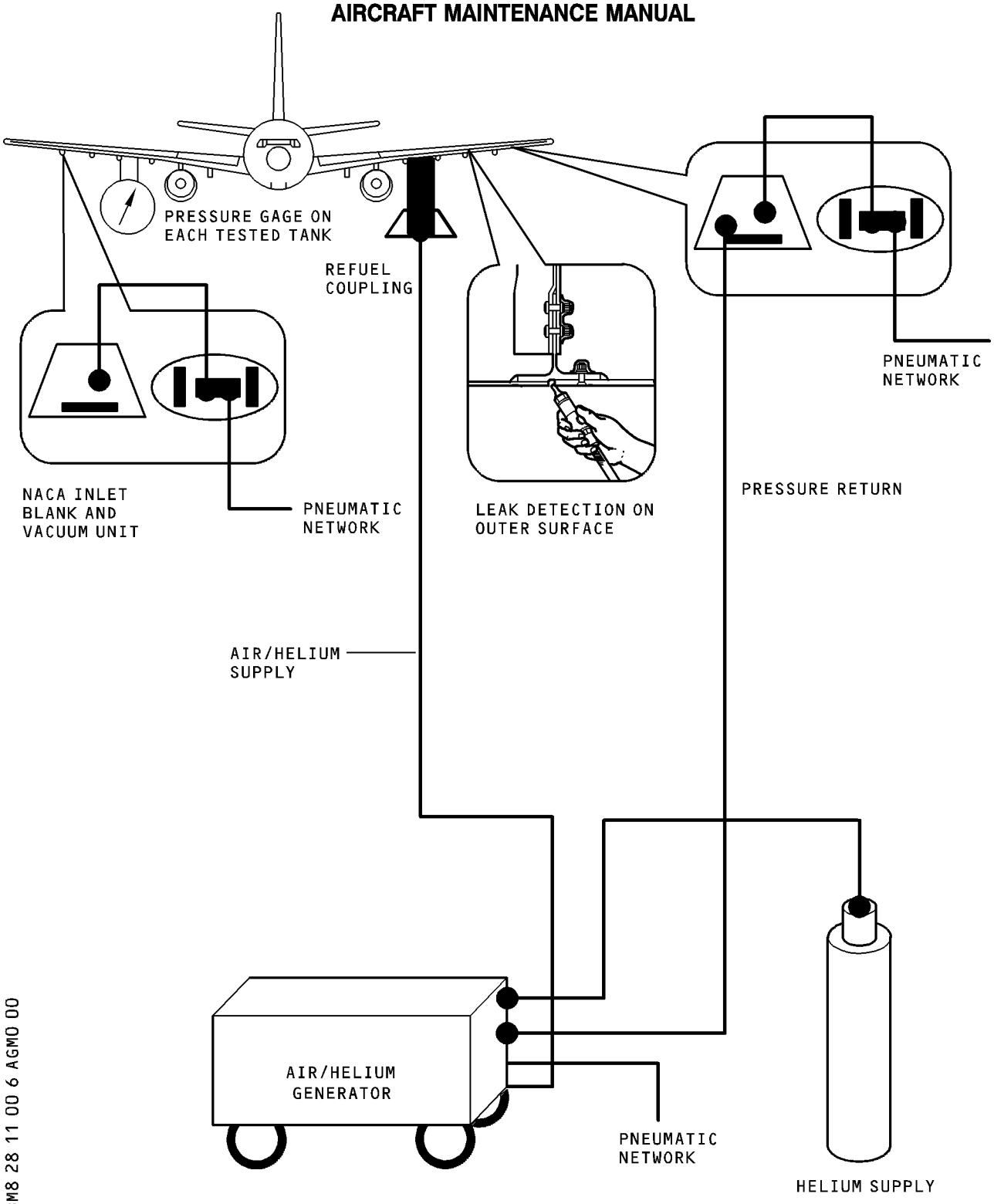
B. Procedure
(Ref. Fig. 607)

CAUTION : MAKE SURE THAT THE TEST EQUIPMENT HAS A SAFETY SYSTEM TO ABSORB ANY OVERPRESSURE THAT CAN CAUSE DAMAGE TO THE AIRCRAFT. DO A CALIBRATION CHECK OF THE SAFETY SYSTEM ON THE TEST EQUIPMENT BEFORE YOU TEST THE COMPONENT ON THE AIRCRAFT.

(1)Job Set-Up
(a)Defuel the aircraft (Ref. 28-25-00, P. Block 301).
(b)Drain all the fuel from the fuel tanks (Ref. 28-25-00, P. Block 301).
(c)Install pressure gauges to the water drain valves (Ref. 28-11-21, P. Block 401).
(d)Make sure that all the wing tank and the center-tank manhole covers are correctly installed (Ref. 28-11-22 and 28-11-29, P. Block 401).
(e)Make sure that all the trim tank manhole covers are correctly installed (Ref. 28-11-33, P. Block 401).
(f)Make sure that the Overpressure Protector (burst) discs are intact by examining the painted cross on the discs in the LH and RH inner tanks, the surge tanks and the trim tank.
(g)Make sure that the refuel/defuel door 144DR is closed.
(h)Energize the aircraft electrical network (Ref. 24-41-00, P. Block 301).
(j)In the flight compartment on panel 430VU:
- make sure that each ISOL VALVES P/BSW OFF legend is on and that the flowbar is off (inner and outer tanks isolation-valves closed).
- make sure that the X FEED P/BSW flowbar is crossline (crossfeed valve closed).
(k)In the flight compartment on panel 20VU:
- close the Eng LP fuel valves 1 and 2 by pulling out both fire handles.
(l)Put the warning notices in position, a distance of 10 m (33 ft) from the tanks that you will test.

(2)Air Test of the LH Inner Tank, LH Outer Tank and the Center Tank

NOTE : The purpose of the air test is to detect any large leaks which may be caused by missing panels. This test must be done before you do



Air/Helium Positive Pressure - General Layout
Figure 607

the Air/Helium test.

R
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R (a)Open the refuel/defuel door 144DR.
R (b)On the panel 110VU, make sure that the:
- CTR TK, L INNER TK and L OUTER TK REFUEL-DEFUEL-VALVES switches are in the OPEN position
- R INNER TK and R OUTER TK REFUEL-DEFUEL-VALVES switches are in the SHUT position
R - TRIM TK REFUEL-DEFUEL-VALVES switch is in the SHUT position.
R - TRANSF. VALVE switch is in the CLOSED and guarded position
R (c)Close the refuel/defuel door 144DR.
R (d)Not applicable.
(e)De-energize the aircraft electrical network (Ref. 24-41-00, P. Block 301).
(f)Remove the NACA vent panel 560AB.
(g)Install the blanking plate - NACA vent and the vacuum supply unit to the LH wing and connect the air supply line from the air/helium generator to the vacuum supply unit.

NOTE : If the air supply pressure from the air/helium generator is below the required 6 bar (87 psi) the vacuum created by the vacuum supply unit may not be sufficient to keep the blanking plate in position. The fuel tank pressure should also be limited to approximately 0.04 bar (0.7 psi) to avoid disconnection of the blanking plate. The helium concentration in the tank will then be lower than the target but still sufficient for the purpose of the test.

(h)Connect the air supply line from the air/helium generator to the RH refuel/defuel connection

WARNING : DO NOT EXCEED MAXIMUM PRESSURE 0.10 BAR (1.5 PSI). OVERPRESSURE CAN CAUSE INJURY TO PERSONS AND SEVERE DAMAGE TO THE AIRCRAFT.

(j)On the air/helium generator slowly open the master control to give a pressure of 0.07 bar (1 psi).
(k)Pressurize and keep the air supply pressure at 0.07 bar (1 psi) for 10 minutes.
(l)On the test rig monitor the manometer, to measure the pressure in the fuel tank.
(m)If the tank pressure does not become stable at 0.07 bar (1 psi), try to keep the air pressure supplied to help you find the leak.
1 Use a soft-hair brush to apply the leak detector fluid (Material No. 05-004) to:
- the external surface of the tank(s)
- the components installed through the external surface of the tank.
2 Bubbles in the leak detector fluid show the location(s) of any leak(s).
3 Use a soft non-black wax crayon or adhesive tape to mark the exact

location of the leak(s).

NOTE : Air leaking through the fuel system valves may disturb the leak detection procedure.

(n)On the air/helium generator close the air supply and release any air pressure that remains in the fuel tank. Do not exceed a vent rate of 0.07 bar (1 psi) per minute.
(p)Repair the leak(s) (Ref. 28-11-00, P. Block 801 or SRM 51-76-20), as applicable.
(q)Make sure that the manhole cover(s) that were removed to repair the leaks, are installed (Ref. 28-11-22 or 28-11-29, P. Block 401) and that the tank(s) is/are prepared for the test to continue.

R (3)Air/Helium Test of the LH Inner Tank, LH Outer Tank and the Center Tank

(a)Connect the air/helium generator to the RH refuel/defuel coupling.

WARNING : DO NOT EXCEED MAXIMUM PRESSURE 0.10 BAR (1.5PSI). OVERPRESSURE CAN CAUSE INJURY TO PERSONS AND SEVERE DAMAGE TO THE AIRCRAFT.

(b)Open the helium generator valve and pressurize the fuel tanks.
Control the pressurization of the fuel tanks to the required pressure of 0.07 bar (1 psi) as indicated on the manometer.
The tank pressure must not exceed 0.10 bar (1.5 psi) at any time.
(c)Let the tank pressure stabilize at 0.07 bar (1 psi).
(d)Carry out a leak test using the helium detector on the suspected leak areas (Ref SIL 57-091).
- use a soft non-black wax crayon or adhesive tape to mark the exact location of the leak(s).

(e)On the air/helium generator close the helium generator valve and release the fuel tank pressure at a rate that must not exceed 0.07 bar (1 psi) per minute.
- purge the tanks with air for 5 minutes before you remove the manhole covers
- check on the manometer that a positive or negative pressure of 0.07 bar (1 psi) is not exceeded during this procedure.

R WARNING : BEFORE YOU ENTER THE FUEL TANK A COMPETENT OPERATOR MUST CHECK WITH AN OXYGEN LEVEL METER THAT THE OXYGEN LEVEL IN THE FUEL TANK HAS RETURNED TO NORMAL.

(f)Repair the leak(s) (Ref. 28-11-00, P. Block 801 or SRM 51-76-20), as applicable.
- make sure that the manhole cover(s) that were removed to repair the leaks, are installed (Ref. 28-11-22 or 28-11-29, P. Block 401) and that the tank(s) is/are prepared for the test to continue.

(g)Repeat the test from (3)(b) to confirm that the leak(s) are rectified.
(h)Stop the ground air/helium generator supply system.
(j)Release the fuel tank pressure ensuring that the rate does not exceed 0.07 bar (1 psi) per minute.

(k)Purge the tanks with air from the air/helium generator for 5 minutes. Check on the manometer that a positive or negative pressure of 0.07 bar (1 psi) is not exceeded during this procedure.

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R (4)Air Test of the RH Inner Tank and the RH Outer Tank

NOTE : The purpose of the air test is to detect any large leaks which may be caused by missing panels. This test must be done before you do the Air/Helium test.

R
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R (a)Energize the aircraft electrical network (Ref. 24-41-00, P. Block 301).
R (b)Open the refuel/defuel door 144DR.
R (c)On the panel 110VU, make sure that the:
- R INNER TK and R OUTER TK REFUEL-DEFUEL-VALVES switches are in the OPEN position
- CTR TK, L INNER TK and L OUTER TK REFUEL-DEFUEL-VALVES switches are in the SHUT position
R - TRIM TK REFUEL-DEFUEL-VALVES switch is in the SHUT position
- TRANSF. VALVE switch is in the CLOSED and guarded position.
R (d)Close the refuel/defuel door 144DR.
R (e)Not applicable.
(f)De-energize the aircraft electrical network (Ref. 24-41-00, P. Block 301).
(g)Remove the NACA vent panel 660AB.
(h)Install the blanking plate - NACA vent and the vacuum supply unit to the RH wing and connect the air supply line from the rig.

NOTE : If the air supply pressure from the air/helium generator is below the required 6 bar (87 psi) the vacuum created by the vacuum supply unit may not be sufficient to keep the blanking plate in position. The fuel tank pressure should also be limited to approximately 0.04 bar (0.7 psi) to avoid disconnection of the blanking plate. The helium concentration in the tank will then be lower than the target but still sufficient for the purpose of the test.

(j)Connect the air supply line from the air/helium generator to the RH refuel/defuel coupling.

WARNING : DO NOT EXCEED MAXIMUM PRESSURE 0.10 BAR (1.5 PSI). OVERPRESSURE CAN CAUSE INJURY TO PERSONS AND SEVERE DAMAGE TO THE AIRCRAFT.

(k)On the air/helium generator slowly open the master control to give a pressure of 0.07 bar (1 psi).
(l)Pressurize the fuel tanks and keep the air supply pressure at 0.07 bar (1 psi) for 10 minutes.
(m)On the test rig monitor the manometer, to measure the pressure in the fuel tank.
(n)If the tank pressure does not become stable at 0.07 bar (1 psi), try to keep the air pressure supplied to help you find the leak.
1 Use a soft-hair brush to apply the leak detector fluid (Material No. 05-004) to:
- the external surface of the tank(s)
- the components installed through the external surface of the tank.
2 Bubbles in the leak detector fluid show the location(s) of any leak(s).
3 Use a soft non-black wax crayon or adhesive tape to mark the exact location of the leak(s).

NOTE : Air leaking through the fuel system valves may disturb the leak detection procedure.

(p)On the air/helium generator close the ground air supply and release any air pressure that remains in the fuel tank. Do not exceed a vent rate of 0.07 bar (1 psi) per minute.
(q)Repair the leak(s) (Ref. 28-11-00, P. Block 801 or SRM 51-76-20), as applicable.
(r)Make sure that the manhole cover(s) that were removed to repair the leaks, are installed (Ref 28-11-22 or 28-11-29, P. Block 401) and that the tank(s) is/are prepared for the test to continue.

R (5)Air/Helium Test of the RH Inner Tank and the RH Outer Tank

(a)Connect the air/helium generator to the RH refuel/defuel coupling.

WARNING : DO NOT EXCEED MAXIMUM PRESSURE 0.10 BAR (1.5 PSI). OVERPRESSURE CAN CAUSE INJURY TO PERSONS AND SEVERE DAMAGE TO THE AIRCRAFT.

(b)Open the helium generator valve and pressurize the fuel tanks. Control the pressurization of the fuel tanks to the required pressure 0.07 bar (1 psi) as indicated on the manometer. The tank pressure must not exceed 0.10 bar (1.5 psi) at any time.
(c)Let the tank pressure stabilize at 0.07 bar (1 psi).
(d)Carry out a leak test using the helium detector on the suspected leak areas (Refer to SIL 57-091):
- use a soft non-black wax crayon or adhesive tape to mark the exact location of the leak(s).
(e)On the air/helium generator close the helium generator valve and release the fuel tank pressure at a rate that must not exceed 0.07 bar (1 psi) per minute.
(f)Purge the tanks with air from the air/helium generator for 5 minutes. Check on the manometer that a positive or negative pressure of 0.07 bar (1 psi) is not exceeded during this procedure.

R WARNING : BEFORE YOU ENTER THE FUEL TANK A COMPETENT OPERATOR MUST CHECK WITH AN OXYGEN LEVEL METER THAT THE OXYGEN LEVEL IN THE FUEL TANK HAS RETURNED TO NORMAL.

(g)Repair the leak(s) (Ref. 28-11-00, P. Block 801 or SRM 51-76-20), as applicable.
- make sure that the manhole cover(s) that were removed to repair the leaks, are installed (Ref. 28-11-22 or 28-11-29, P. Block 401) and that the tank(s) is/are prepared for the test to continue.

(h)Repeat the test from (5)(b) to confirm that the leak(s) are rectified.
(j)Stop the ground air/helium supply system.
(k)Release the fuel tank pressure ensuring that the rate does not exceed 0.07 bar (1 psi) per minute.
(l)Purge the tanks with air from the air/helium generator for 5 minutes. Check on the manometer that a positive or negative pressure of 0.07 bar (1 psi) is not exceeded during this procedure.

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(6)Air Test of the Trim Tank

NOTE : The purpose of the air test is to detect any large leaks which may be caused by missing panels. This test must be done before you do the Air/Helium test.

(a)Energize the aircraft electrical network (Ref. 24-41-00, P. Block 301).
(b)On panel 430VU:
- press (in) the TRIM TK ISOL VALVE P/BSW to open the trim tank isolation valve.

(c)Open the refuel/defuel door 144DR.
(d)On the panel 110VU make sure that the:
- CTR TK and TRIM TK REFUEL-DEFUEL VALVES switches are in the OPEN position
- L INNER TK and L OUTER TK REFUEL-DEFUEL-VALVES switches are in the SHUT position
- R INNER TK and R OUTER TK REFUEL-DEFUEL-VALVES switches are in the SHUT position
- TRANSF. VALVE is in the CLOSED and guarded position.

(e)At the trim tank refuel/defuel valve disconnect the electrical plug (Ref 28-25-12, P. Block 401).
(f)On the panel 110VU:
- put the CTR TK REFUEL-DEFUEL-VALVES switch in the SHUT position.

(g)Close the refuel/defuel door 144DR.

(h)De-energize the aircraft electrical network (Ref. 24-41-00, P. Block 301).

(j)Remove the fuel drain valves and install the pressure gages.
(k)Remove NACA vent panel 343GB.
(l)Install the blanking plate - NACA vent and the vacuum supply unit.

NOTE : If the air supply pressure from the air/helium generator is below the required 6 bar (87 psi) the vacuum created by the vacuum supply unit may not be sufficient to keep the blanking plate in position. The fuel tank pressure should also be limited to approximately 0.04 bar (0.7 psi) to avoid disconnection of the blanking plate. The helium concentration in the tank will then be lower than the target but still sufficient for the purpose of the test.

(m)Connect the ground air supply to the RH refuel/defuel connection.

WARNING : DO NOT EXCEED MAXIMUM PRESSURE 0.10 BAR (1.5 PSI). OVERPRESSURE CAN CAUSE INJURY TO PERSONS AND SEVERE DAMAGE TO THE AIRCRAFT.

(n)On the air/helium generator slowly, open the ground air supply to give a pressure of 0.07 bar (1 psi).
(p)Pressurize and keep the air supply pressure at 0.07 bar (1 psi) for 10 minutes.
(q)On the test rig monitor the manometer, to measure the pressure in the fuel tank.
(r)If the tank pressure does not become stable at 0.07 bar (1 psi), try to keep the air pressure supplied to help you find the leak.
1 Use a soft-hair brush to apply the leak detector fluid (Material No. 05-004) to:
- the external surface of the tank(s)
- the components installed through the external surface of the tank.
2 Bubbles in the leak detector fluid show the location(s) of any leak(s).
3 Use a soft non-black wax crayon or adhesive tape to mark the exact location of the leak(s).
4 On the air/helium generator close the air supply and release any air pressure that remains in the fuel tank. Do not exceed a vent rate of 0.07 bar (1 psi) per minute.
5 Repair the leak(s) (Ref. 28-11-00, P. Block 801 or SRM 51-76-20), as applicable.

NOTE : Air leaking through the fuel system valves may disturb the leak detection procedure.

(s)Make sure that the manhole cover(s) that were removed to repair the leaks, are installed (Ref. 28-11-33, P. Block 401) and that the tank is prepared for the test to continue.

(7)Air/Helium Test of the Trim Tank

(a)Connect the air/helium generator to the RH refuel/defuel coupling.

WARNING : DO NOT EXCEED MAXIMUM PRESSURE 0.10 BAR (1.5 PSI). OVERPRESSURE CAN CAUSE INJURY TO PERSONS AND SEVERE DAMAGE TO THE AIRCRAFT.

(b)Open the helium generator valve and pressurize the trim tank. Control the pressurization of the fuel tanks to the required pressure 0.07 bar (1 psi) as indicated on the manometer, at a rate of 0.35 bar (0.5 psi) per minute. The tank pressure must bar not exceed 0.10 bar (1.5 psi) at any time.
(c)Let the tank pressure stabilize at 0.07 bar (1 psi).
(d)Carry out a leak test using the helium detector on the suspected leak areas (Ref. SIL 57-091).
- use a soft non-black wax crayon or adhesive tape to mark the exact location of the leak(s).
(e)On the air/helium generator close the helium generator valve and release the fuel tank pressure at a rate that must not exceed 0.07 bar (1 psi) per minute:
- purge the tanks with air for 5 minutes before you remove the manhole covers
- check on the manometer that a positive or negative pressure of 0.07 bar (1 psi) is not exceeded during this procedure.

R WARNING : BEFORE YOU ENTER THE FUEL TANK A COMPETENT OPERATOR MUST CHECK WITH AN OXYGEN LEVEL METER THAT THE OXYGEN LEVEL IN THE FUEL TANK HAS RETURNED TO NORMAL.

(f)Repair the leak(s) (Ref. 28-11-00, P. Block 801 or SRM 51-76-20), as applicable.
(g)Make sure that the manhole cover(s) that were removed to repair the leaks, are installed (Ref. 28-11-22 or 28-11-29, P. Block 401) and that the tank is prepared for the test to continue.
(h)Repair the test from (7)(b) to confirm that the leak(s) are rectified.
(j)Purge the tanks with air for 5 minutes. Check on the manometer that a positive or negative pressure of 0.07 bar (1 psi) is not exceeded during this procedure.

R (8)Close-Up

R (a)Remove the blanking plate - NACA vent from the LH and RH wings and the trim tank.
R (b)Install the LH and the RH NACA intakes (Ref. 28-12-21, P. Block 401).
R (c)Install the trim tank NACA intake (Ref. 28-11-33, P. Block 401).
R (d)Remove the pressure gages from the LH and RH wing water drain valve positions and install the water drain valves (Ref. 28-11-21, P. Block 401).
R (e)Remove the pressure gage from the trim tank water drain valve and install the water drain valve (Ref. 28-11-32, P. Block 401).
R (f)At the trim tank refuel/defuel valve reconnect the electrical plug (Ref. 28-25-12, P. Block 401).
R (g)Make sure that the work area is clean and clear of tools and all other items of equipment.
R (h)Remove the access platform.

R (j)Remove the warning notices.

R 12. Locating Leaks - Center Tank - Vacuum and Dye Method

R A. Equipment and Materials

ITEM		DESIGNATION
A.		Access Platform 2 to 7 m (6.5 to 23 ft)
B.		Inspection Lamp - Spark Proof or Inspection Lamp, Ultra-Violet - Spark Proof
C.		Manometer Capable of Measuring Minus 248.9 mb (3.6 psi)
D.		Warning Notices - NO SMOKING
E.	98A28104003000	Vacuum Equipment Capable of Negative Pressure 248.9 mb (3.6 psi)
F.	97A28002199000	Dummy Door
G.	98A28104013000	Blank Assembly for use in the Center Tank Vent-line connector, location STA 1713/RIB28 Surge Tank
H.		Soft Hair Brush
J.		Syringe
K.		Plasticine (or equivalent)
L.		Plastic bag
M.		Tape
N.		Wax Crayon, non - black
P.	Material No. 05-045	Special Materials (Ref. 20-31-00) or
Q.	Material No. 05-046	Special Materials (Ref. 20-31-00)
Referenced Procedures		
- 12-11-28, P. Block 301		Replenishing of Fuel Tanks
- 24-41-00, P. Block 301		AC External Power Control
- 28-00-00, P. Block 401		Fuel - General
- 28-10-00, P. Block 301		Fuel - Storage
- 28-11-00, P. Block 801		Fuel - Tanks
- 28-11-22, P. Block 401		Manhole Cover (Wing)
- 28-11-29, P. Block 401		Manhole Cover (Center Tank)
- 28-12-21, P. Block 401		NACA Intake and Vent Protector
- 28-25-00, P. Block 301		Refuel/Defuel System
- SRM 51-76-20		Repair of Integral Tank Sealing

R B. Procedure

R (1)Job Set-Up

R NOTE : For these procedures, make sure that all the circuit breakers applicable with the fuel system are closed and that the HP shut-off valves, are shut.

R (a)Fully defuel the center tank and the LH outer tank, or transfer the fuel to the inner tanks and the RH outer tank (Ref. 28-25-00, P. Block 301).

R (b)Drain all the fuel from the center tank and the LH outer tank

(Ref. 28-10-00, P. Block 301).
(c)Energize the aircraft electrical network (Ref. 24-41-00, P. Block 301).
(d)In the flight compartment on the overhead panel 430VU:
- make sure that on each ISOL VALVES P/BSW, the OFF legend is on and the flowbar is off (inner and outer tank isolation valves closed). If necessary, release (out) the ISOL VALVES P/BSW(s).
- make sure that the flowbar on the P/BSW of the X FEED valve, is crossline (crossfeed valve closed).

(e)On the panel 429VU:
- make sure that the APU MASTER SW is in the OFF position.

(f)Open the access door 144DR.

NOTE : When the aircraft electrical network is energized, the refuel /defuel panel 110VU, is energized automatically when the access door 144DR, is opened.

(g)On panel 110VU, make sure that:
- all the REFUEL-DEFUEL_VALVES switches are in the NORM and guarded position
- the MODE SELECT/SELECTOR switch is in the OFF and guarded position
- the TRANSF. VALVE switch is in the CLOSED and guarded position

(h)Close the access door 144DR.

NOTE : The refuel/defuel panel 110VU, is now de-energized.

(j)De-energize the aircraft electrical network (Ref. 24-41-00, P. Block 301).
(k)Put the access platform and the warning notices in position.
(l)Remove the NACA intake from the LH wing (Ref. 28-12-21, P. Block 401).
(m)Remove the manhole cover 550PB from the LH wing to get access to the center tank vent pipe at location STA1713/RIB28 (Ref. 28-11-22, P. Block 401).
(n)Remove the bellmouth connector (that passes through RIB 28) from the center tank vent pipe (Ref. 28-00-00, P. Block 401). Install the blank assembly PN 98A28104013000 in the center tank vent pipe.
(p)Remove the LH center tank manhole cover 147AZ (Ref. 28-11-29, P. Block 401) and install the dummy door PN 97A28002199000.
(q)Connect the vacuum equipment PN 98A28104003000 to the dummy door.
(r)Connect the Manometer to the dummy door.

(2)Leak Location Procedure
(a)Mix the dye solution as follows:
1 Fluorescent Dye (Material No. 05-045)
- 28 grms (1 oz) of dye to 3.79 liters (1 US gal.) of fuel.

2 Blue Dye (Material No. 05-046)
- 56 grms (2 ozs) of dye to 379 liters (100 US gals.) of fuel.

CAUTION : THE NEGATIVE PRESSURE IN THE TANK MUST NOT BE MORE THAN 248.9 mb (3.6 psi).

(b)Apply a vacuum of 248.9 mb (3.6 psi) maximum to the center tank.

R Keep the vacuum for one hour.
R (c)With the vacuum in the tank, use a soft-hair brush or syringe to apply
R the dye solution (Material No. 05-045 or 05-046) to the external leak
R point(s). Keep the leak point(s) wet with the dye for a minimum time
R of thirty minutes:
R - on the upper surface, a dam can be shaped from plasticine (or
R equivalent) and filled with the dye solution
R - on the lower surface, a plastic bag (which contains the dye solution)
R can be attached to the structure with tape. Make sure that the dye
R solution is in contact with the skin.
R (d)Slowly let the vacuum in the tank decrease. Disconnect the vacuum
R equipment PN 98A28104003000 and the Manometer from the dummy door.
R (e)Remove the dummy door PN 97A28002199000 from the center tank.
R (f)Prepare the center tank for access (Ref. 28-10-00, P. Block 301).

R WARNING : OBEY THE SAFETY PRECAUTIONS AND PROCEDURES WHEN YOU GO INTO A
R FUEL TANK (REF. 28-10-00, P. BLOCK 301).

R (g)Go into the center tank. Use an approved spark-proof inspection lamp
R and do a check for signs of dye on the inner surfaces of the tank.

R NOTE : Use an approved spark-proof ultraviolet lamp if a fluorescent
R dye has been applied to the tank. The fluorescent dye will
R show bright green or bluish white with the ultraviolet light.

R (h)If the dye has not gone into the tank, install the dummy door
R PN 97A28002199000 and connect the vacuum equipment PN98A28104003000
R and the Manometer. Do the steps (2)(b) thru (g) again, for a longer
R period of time.
R (j)Use a non-black wax crayon to make a mark at the location of the leak.
R Remove all signs of the dye.
R (k)Do an approved temporary repair as necessary (Ref. 28-11-00,
R P. Block 801) or refer to the SRM (Ref. SRM 51-76-20) to do a
R permanent repair.

R (3)Close-Up
R (a)Do the procedure for when you go away from a fuel tank (Ref. 28-10-00,
R P. Block 301).
R (b)Install the LH center tank manhole cover 147AZ (Ref. 28-11-29,
R P. Block 401).
R (c)In the LH outer tank:
R 1 Remove the blank adaptor PN 98A28104013000 from the center tank vent
R pipe.
R 2 Install the bellmouth connector through the RIB 28 and onto the center
R tank vent pipe (Ref. 28-00-00, P. Block 401).

R NOTE : There is no requirement to do the test of the vent system
R pipeline referred to in topic 28-00-00, P. Block 401.

R 3 Install the manhole cover 550PB on the LH wing lower surface
R (Ref. 28-11-22, P. Block 401).

R 4 Temporarily install the NACA intake (Ref. 28-12-21, P. Block 401).
R 5 Energize the aircraft electrical network (Ref. 24-41-00, P. Block 301).
R 6 Transfer fuel into the LH outer tank or refuel the LH outer tank until the tank is full (Ref. 28-25-00 or 12-11-28, P. Block 301).
R 7 De-energize the aircraft electrical network (Ref. 24-41-00, P. Block 301).
R 8 Remove the NACA intake that you temporarily installed (Ref. 28-12-21, P. Block 401) and do a visual inspection of the bellmouth connector/RIB28 interface. No fuel leaks are permitted.
R 9 Install the NACA intake (Ref. 28-12-21, P. Block 401).
R (d)Remove the warning notices and access equipment from the aircraft.

TANKS - CLEANING/PAINTING

1. Cleaning of the Fuel Tanks

A. Reason for the Job
(1)Self Explanatory.

B. Equipment and Materials

ITEM	DESIGNATION
A.	Access Platform 2 - 6 m (6 to 20 ft.)
B.	Inspection Lamp Spark-Proof
C.	Safety Barriers
D.	Warning Notices
Referenced Procedures	
- 28-00-00, P. Block 301	Fuel - General
- 28-10-00, P. Block 301	Storage- Servicing
- 28-11-22, P. Block 401	Manhole Cover (Wing)
- 28-11-29, P. Block 401	Manhole Cover - Center Tank
- 28-11-33, P. Block 401	Manhole Cover - Trim Tank
- 55-00-00, P. Block 301	Stabilizers - Standard Warning and Procedures

C. Procedure
(1)Job Set-Up

WARNING : YOU MUST OBEY ALL SAFETY PROCEDURES WHEN YOU DO WORK IN OR NEAR A FUEL TANK.
IF YOU DO NOT OBEY THE SAFETY PROCEDURES, THERE IS A RISK OF:
- DEATH OR INJURY TO PERSONS
- DAMAGE TO THE AIRCRAFT OR TO OTHER EQUIPMENT.

(a)You must obey the fuel safety procedures when you do work in or near a fuel tank (Ref. 28-00-00 and 28-10-00, P. Block 301).
(b)Make the trimmable horizontal stabilizer (THS) and the vertical stabilizer safe (Ref. 55-00-00, P. Block 301).
(c)Put warning notices in the flight compartment to tell persons not to operate:
- the flap/slat system
- the fuel system
- the THS.
(d)Put the safety barriers in position around the aircraft.
(e)Remove the applicable fuel tank manhole covers:
- for the wing tanks (Ref. 28-11-22, P. Block 401)
- for the center tank (Ref. 28-11-29, P. Block 401)
- for the trim tank (Ref. 28-11-33, P. Block 401).
(f)Purge the applicable fuel tank(s) (Ref. 28-10-00, P. Block 301).
(g)Put the access platform in position as necessary.

(2)Cleaning

WARNING : DO NOT GET AIRCRAFT FUEL:
- IN YOUR MOUTH
- IN YOUR EYES
- ON YOUR CLOTHES
- ON YOUR SKIN FOR A LONG TIME.

AIRCRAFT FUEL IS POISONOUS AND CAN GO THROUGH YOUR SKIN INTO YOUR BODY.

FLUSH FUEL AWAY WITH CLEAN WATER AND IF NECESSARY, GET MEDICAL HELP.

(a)Get access to the applicable fuel tank(s) (Ref. 28-00-00 and 28-10-00, P. Blocks 301).

(b)Examine the fuel tank(s) for contamination and debris. It is very important to look in the areas that follow:
- the lowest point of each tank
- below each fuel quantity probe
- at the wing ribs, each side of the stringer cut-outs
- outboard of each clack valve
- on the strainer mesh of each fuel pump.

(c)If you find contamination and debris, use the most suitable method to remove it.

D. Close-Up

(1)Make sure the inside of the fuel tank(s) is/are clean.

(2)Make sure that there are no unwanted objects and materials, tools or other equipment in the tank(s).

(3)Do the procedure for leaving a fuel tank (Ref. 28-10-00, P. Block 301).

(4)Install all the manhole covers you removed:
- for the wing tanks (Ref. 28-11-22, P. Block 401)
- for the center tank (Ref. 28-11-29, P. Block 401)
- for the trim tank (Ref. 28-11-33, P. Block 401).

(5)Put the THS and the vertical stabilizer in the normal operating condition (Ref. 55-00-00, P. Block 301).

(6)Remove the warning notices.

(7)Remove the access platform.

(8)Remove the safety barriers.

(9)Remove all the fixtures, tools, test and support equipment used during this procedure.

TANKS - APPROVED REPAIRS

WARNING : LANDING GEAR - MAKE SURE THAT THE GROUND SAFETIES AND CHOCKS ARE IN POSITION.

FLIGHT CONTROLS - MAKE SURE THAT THE GROUND SAFETIES AND NOTICES ARE IN POSITION.

OBEY THE SAFETY PRECAUTIONS IN 28-00-00, P. BLOCK 301 AND 28-10-00, P. BLOCK 301.

R MAKE SURE THAT THE FIRE FIGHTING EQUIPMENT IS AVAILABLE AND ADEQUATE.

MAKE SURE THAT YOU ISOLATE THE ELECTRICAL CIRCUITS UPON WHICH WORK IS IN PROGRESS.

USE SOLVANTS/CLEANING AGENTS, SEALANTS AND OTHER SPECIAL MATERIALS, ONLY WITH A GOOD SUPPLY OF AIR THROUGH THE WORK AREA. THESE MATERIALS ARE POISONOUS, FLAMMABLE AND SKIN IRRITANTS, YOU MUST:
- OBEY THE MANUFACTURERS INSTRUCTIONS
- PUT ON PROTECTIVE CLOTHING
- NOT GET THEM IN YOUR MOUTH
- NOT SMOKE
- NOT BREATHE THE GAS
- GET MEDICAL HELP IF YOUR SKIN OR EYES BECOME IRRITATED.

1. Reasons for the Job

A. Temporary External Repair

B. Temporary Internal Local Repair

C. Fillet Repair

2. Temporary External Repair

NOTE : Refer to the Standard Information Leaflet (SIL) 57-065 for detailed information on fuel tank repairs.

A. Reason for the Job
(1)Application of sealant to exterior of tank.

B. Equipment and Materials

ITEM	DESIGNATION
A.	Lint-free Cloth
B.	Mixing Palette
C.	Non-Metallic Scraper
D.	Plastic Spatula

ITEM	DESIGNATION
E. Material No. 05-080	Special Materials (Ref. 20-31-00)
F. Material No. 09-001	Sealants (Ref. 20-31-00)
G. Material No. 09-009	Sealants (Ref. 20-31-00)
H. Material No. 11-026	Cleaning Agents (Ref. 20-31-00)
J. Material No. C10-010	Scotch Brite Pads (Ref. 70-00-00)
Referenced Procedures	
- 12-11-28, P. Block 301	Replenishment of Fuel Tanks
- 28-00-00, P. Block 301	Fuel - General
- 28-10-00, P. Block 301	Storage
- 28-11-00, P. Block 601	Tanks Inspection Check
- 28-25-00, P. Block 301	Refuel/Defuel System
- 51-76-20, P. Block 201	SRM Repair of Integral Tank Sealing

C. Procedure with Sealant (Material No 09-009)
(1)Job Set-Up

CAUTION : DO NOT TIGHTEN THE FASTENER(S) TO REPAIR THE LEAK. THIS WILL MOVE THE SEALANT BELOW THE FASTENER(S) AND CAN MAKE THE LEAK WORSE.

NOTE : Use the sealant (Material No. 09-009) for temporary external repairs to the seams and around the fastener(s).

NOTE : Before you clean the repair area, use Scotch Brite Pads (Material No. C10-010) to lightly abrade the surface to make sure of the correct bond of the sealant.

(a)Use a clean lint-free cloth and cleaning agents (Material No. 11-026) to remove all signs of fuel, hydraulic fluid, grease and jointing compound from the repair area.

(2)Application
(a)Apply the Sealant (Material No. 09-009) to the leak.
(b)On very smooth surfaces push the sealant into the leak source, with a flat tool, until the leak is stopped. Do not score the skin surface.

NOTE : If the sealant will not bond to the surface, defuel the tank to below the leak level (Ref. 28-25-00, P. Block 301).

(c)Push a second layer of sealant into position to give more protection.

D. Procedure to use a Click Patch Kit (Material No. 05-080).
(1)Job Set-Up.

CAUTION : DO NOT TIGHTEN THE FASTENER(S) TO REPAIR THE LEAK. THIS WILL MOVE THE SEALANT BELOW THE FASTENER(S) AND CAN MAKE THE LEAK WORSE.

NOTE : Only use the click patch kit (Material No. 05-080) to seal the external fastener(s) on a flat wing only.

(a)Defuel the tank sufficiently to stop the fuel flow at the fastener that leaks (Ref. 28-25-00, P. Block 301).
(b)Inspect the areas around the fastener that leaks for cracks.

CAUTION : THE CLICK PATCHES ARE TO BE APPLIED TO THE PAINTED SURFACE FINISH. DO NOT REMOVE THE FINISH TO EXPOSE ANY BARE METAL.

(c)Lightly abrade the paint around the fastener that leaks and the click-patch sealing face with Scotch Brite Pads (Material No. C10-010).
(d)Use a clean lint-free cloth and cleaning agent (Material No. 11-026) to remove all signs of fuel, hydraulic fluid, grease and jointing compound from the click patch and the area around the fastener that leaks.
(e)Put all the contents of the two bags (sealant and accelerator) (Material No. 09-001) onto a mixing palette. Mix the light and dark compounds together until you get an even color.
(f)Apply a small amount of mixed sealant (Material No. 09-001) to the center of the click patch. Remove the outer protective tape. Keep the mixing spatula with the leftover sealant mix to measure the curing time.
(g)Put the click patch over the center of the fastener that leaks and push the outer edges firmly onto the wing surface.
(h)Push the click patch center to activate the click mechanism. This will force the click patch and sealant onto the repair area.
(j)Allow to cure. Examine the left over sealant mix to make sure that the sealant is fully cured.
(k)Hold the click patch cover by the edge and carefully remove it. Make sure that the click patch stays firmly attached to the wing surface. Trim away any excess sealant.
(l)Fully refuel the tank (Ref. 12-11-28, P. Block 301) and do a leak test (Ref. 28-11-00, P. Block 601).
(m)If the click patch does not stop the leak, continue as follows:
1 Use a non-metallic scraper to carefully lift the edge of the click patch away from the wing surface. Hold the edge of the click patch and carefully remove from the wing surface.
R (n)Use a non-metallic scraper and lint-free cloth moistened with cleaning
R agent (Material No. 11-026) to carefully remove all signs of sealant
R from the wing surface.
(p)Do a permanent fuel leak repair (Ref. SRM 51-76-20, P. Block 201).
(q)Repair the surface finish as required.

3. Temporary Internal Local Repair

A. Carry out the procedure in the Structure Repair Manual (Ref. SRM 51-76-20, P. Block 201).

4. Fillet Repair

A. Carry out the procedure in the Structure Repair Manual (Ref. SRM 51-76-20, P. Block 201).

R # TRIM TANK - DEACTIVATION/REACTIVATION

R **WARNING** : LANDING GEAR - MAKE SURE THAT THE GROUND SAFETIES AND CHOCKS ARE IN POSITION.

R FLIGHT CONTROLS - MAKE SURE THAT THE GROUND SAFETIES AND NOTICES ARE IN POSITION.

R OBEY THE SAFETY PRECAUTIONS IN 28-00-00, P. BLOCK 301 AND 28-10-00, P. BLOCK 301.

R MAKE SURE THAT THE FIRE FIGHTING EQUIPMENT IS AVAILABLE AND ADEQUATE.

R MAKE SURE THAT YOU ISOLATE THE ELECTRICAL CIRCUITS UPON WHICH WORK IS
R IN PROGRESS.

1. Deactivation of the Trim Tank

A. Reason for the Job

(1)To isolate the trim tank when it is not in use.

B. Equipment and Materials

ITEM	DESIGNATION
A.	Access Platform 2 m (6.5 ft)
B.	Blanking Caps
C.	Warning Placards
Referenced Procedures	
- 12-11-28, P. Block 301	Replenishing of Fuel Tanks
- 12-32-28, P. Block 301	Fuel
- 28-00-00, P. Block 301	Fuel - General
- 28-10-00, P. Block 301	Storage
- 28-22-00, P. Block 501	Tank Isolation System
- 28-25-00, P. Block 301	Refuel/Defuel System
- 32-12-11, P. Block 301	Door - Main Gear Main
- 28-25-00, P. Block 1	TSM - Fault Symptoms

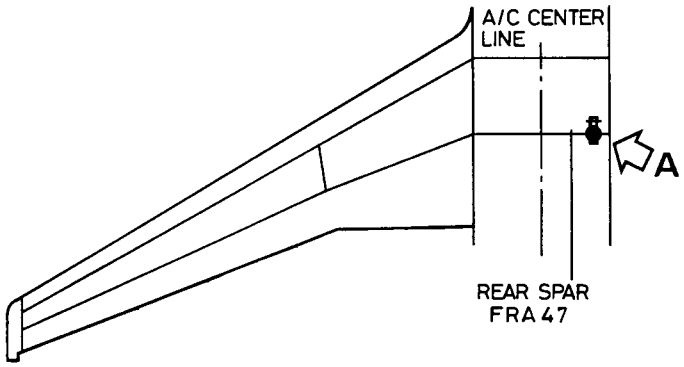
C. Procedure

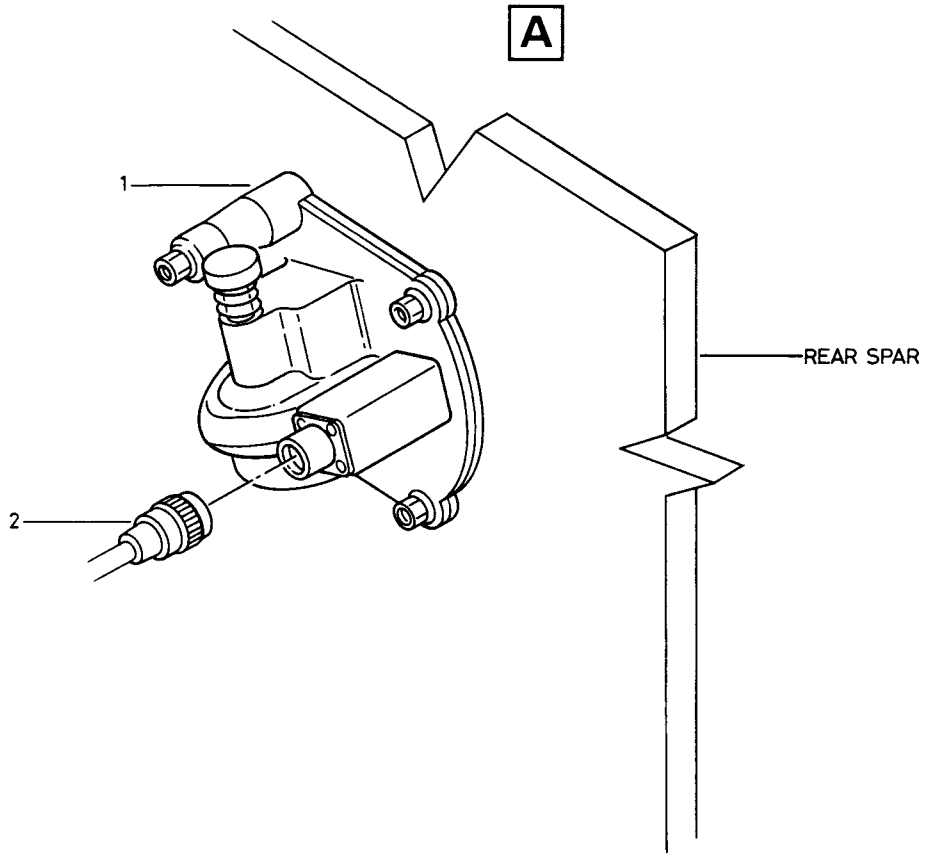
(Ref. Fig. 901)

R
R (1)Defuel the trim tank and drain the residual fuel (Ref. 28-25-00,
R P. Block 301).
R

(2)On the panel 430VU, release (out) the TRIM TK PUMP 1 and 2 pushbutton switches (P/BSW) and the AUTO MODE P/BSW.

(3)Put the warning placards in position to tell persons not to operate:
- the TRIM TK PUMP 1 and 2 P/BSW
- the AUTO MODE P/BSW.





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Deactivation of the Trim Tank Refuel/Defuel Valve
Figure 901

R

(4)On panel 430VU, make sure that the TRIM TK ISOL VALVE P/BSW is in the AUTO position.
(5)Open the refuel/defuel panel access door 144DR.
(6)On the panel 110VU, make sure that the TRIM TK REFUEL-DEFUEL VALVES switch is in the NORM position and the guard is in position.
(7)Open the LH (RH) MLG bay door (Ref. 32-12-11, P. Block 301).
(8)Put the access platform in position.
(9)Get access to the trim tank refuel/defuel valve.
(10)Disconnect the electrical connector (2) from the trim-tank refuel/defuel valve (1).
(11)Put blanking caps on the electrical connector (2) and the trim-tank refuel/defuel valve (1).
(12)Safety the electrical connector (2) away from the trim-tank refuel/defuel valve (1).

D. Close-Up
(1)On the panel 110VU, put a warning placard in position on the applicable switch to tell persons not to refuel the trim tank.
(2)Close the access door 144DR.
(3)Remove the access platform.
(4)Close the LH (RH) MLG door (Ref. 32-12-11, P. Block 301).
(5)Write an entry in the A/C log book.

2. Reactivation of the Trim tank

A. Make the trim tank fully operational as follows:
(1)Trouble shoot to identify the cause of the trim-tank refuel/defuel valve malfunction (Ref. TSM. 28-25-00).
(2)Replace the trim-tank refuel/defuel valve if necessary (Ref. 28-25-00, P. Block 401).
(3)Open the LH (RH) MLG bay door (Ref. 32-12-11, P. Block 301).
(4)Put the access platform in position.
(5)Get access to the trim-tank refuel/defuel valve.
(6)Remove the blanking caps from the electrical connector (2) and the trim-tank refuel/defuel valve (1).
(7)Connect the electrical connector (2) to the trim-tank refuel/defuel valve (1).
(8)Remove the access platform.
(9)Close the LH (RH) MLG door (Ref. 32-12-11, P. Block 301).
(10)On panel 430VU, remove the warning placards from the applicable switches.
(11)Open the access door 144DR.
(12)On panel 110VU, remove the warning placard from the applicable switch, put the switch in NORM position and guarded.
(13)Close the access door 144DR.
(14)Make an entry in the A/C log book.

B. Do an operational test of the trim-tank isolation valve (Ref. 28-22-00, P.Block 501).

WARNING : THIS PROCEDURE USES A FUEL SYSTEM ITEM THAT IS IN A CATEGORY KNOWN AS A CRITICAL DESIGN CONFIGURATION CONTROL LIMITATION (CDCCL). CDCCL IDENTIFIES AN ITEM THAT CAN BE THE SOURCE OF A POSSIBLE FUEL TANK IGNITION. YOU MUST KEEP ALL CDCCL ITEMS IN THE APPROVED CONFIGURATION. DAMAGE, WEAR OR CHANGES TO A CDCCL ITEM CAN CAUSE A POSSIBLE FUEL TANK EXPLOSION.

FLIGHT CONTROLS - MAKE SURE THAT THE GROUND SAFETIES AND NOTICES ARE IN POSITION.

LANDING GEAR - MAKE SURE THAT THE GROUND SAFETIES AND CHOCKS ARE IN POSITION.

OBEY THE SAFETY PRECAUTIONS IN 28-00-00, P. BLOCK 301 AND 28-10-00, P. BLOCK 301.

MAKE SURE THAT THE FIRE FIGHTING EQUIPMENT IS AVAILABLE AND ADEQUATE.

MAKE SURE THAT YOU ISOLATE THE ELECTRICAL CIRCUITS UPON WHICH WORK IS IN PROGRESS.

1. Reasons for the Job

A. Removal of Primary Poppet Valve Assembly (Ref. Para. 2)

B. Removal of Drain Valve Complete (Ref. Para. 3 thru 5)

2. Water Drain Valves - Primary Poppet Valve Assembly

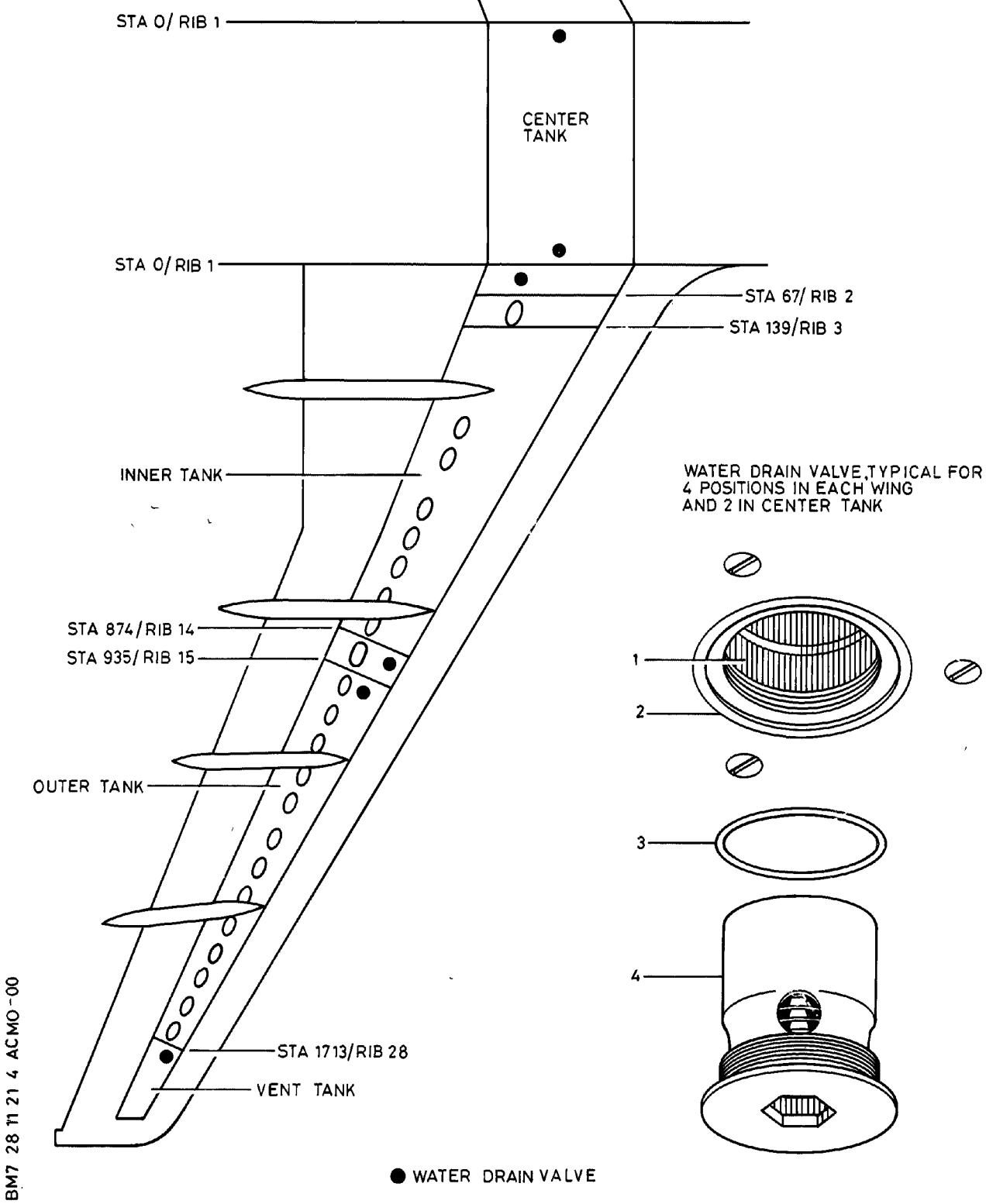
A. Equipment and Materials

ITEM	DESIGNATION
A.	O-ring
B.	Torque Wrench set at: 66.36 lbf.in (0.75 m.daN)
C.	Container 0.25 US GAL (one liter)
R D. 98A28104000000	Purging Tool - Water Drain
E. Material No. 11-026	Cleaning Agents (Ref. 20-31-00)
Referenced Procedures	
- 28-00-00, P. Block 301	Fuel - General
- 28-10-00, P. Block 301	Storage

B. Procedure
(Ref. Fig. 401)

**ON A/C 001-100,

(1)Job Set-Up



Outer Valves - Installation
Figure 401

(a)Place fuel container under relevant water drain valve.
(b)Test (To find out if outer valve only, or complete water drain valve, needs replacing).
1 Depress water drain valve (2) sufficiently to lift outer valve (4), but not inner valve (1). If leakage rate does not increase or exceed one liter per minute (0.26 US gal/min.) then outer valve can can be removed. Proceed from step 1.B.(2).
2 If leakage rate does exceed one liter per minute (0.26 US gal/min.), do not remove outer valve (4), but proceed with the removal procedure for complete valve as appropriate, and use new valve on installation.

**ON A/C 101-200,

(1)Job Set-Up
(a)Place fuel container under relevant water drain valve.
(b)Test (To find out if outer valve only, or complete water drain valve, needs replacing).
1 Depress water drain valve (2) sufficiently to lift outer valve (4), but not inner valve (1). If leakage rate does not increase or exceed 0.26 US gal/min. (one liter per minute) then outer valve can be removed. Proceed from step 1.B.(2).
2 If leakage rate does exceed 0.26 US gal/min. (one liter per minute), do not remove outer valve (4), but proceed with the removal procedure for complete valve as appropriate, and use new valve on installation.

**ON A/C ALL

(2)Removal
(a)Unscrew and remove outer valve (4) from water drain valve (2) using a 7/16 in (11.11 mm) male hexagonal wrench.
(b)Discard O-ring (3).

(3)Preparation for Installation
(a)Use a clean lint-free cloth moistened with cleaning agent (Material No. 11-026) to clean the threads of the outer valve (4) and the mating threads in the drain valve (2).

(4)Installation
(a)Hold container under drain valve (2) and push up inner valve (1). Allow fuel outflow to flush inner valve (1) free of foreign material.
(b)Install new O-ring (3) on outer valve (4).
(c)Insert outer valve (4) into water drain valve (2) and TORQUE to 66.36 lbf.in (0.75 m.daN)

(5)Test
(a)Check water drain valve (2) for leakage.
(b)Push up inner valve (1) until fuel flows and release valve.
(c)Check there is no leakage from outer valve (4).
R (d)If the valve does leak, use the purging tool to push (in) and

R release (out) the center of the valve three or four times.
R No leaks are permitted.
R (e)If leakage still occurs, replace outer drain valve (4)
R ref. Para. 1.B.(2) thru 1.B.(4).

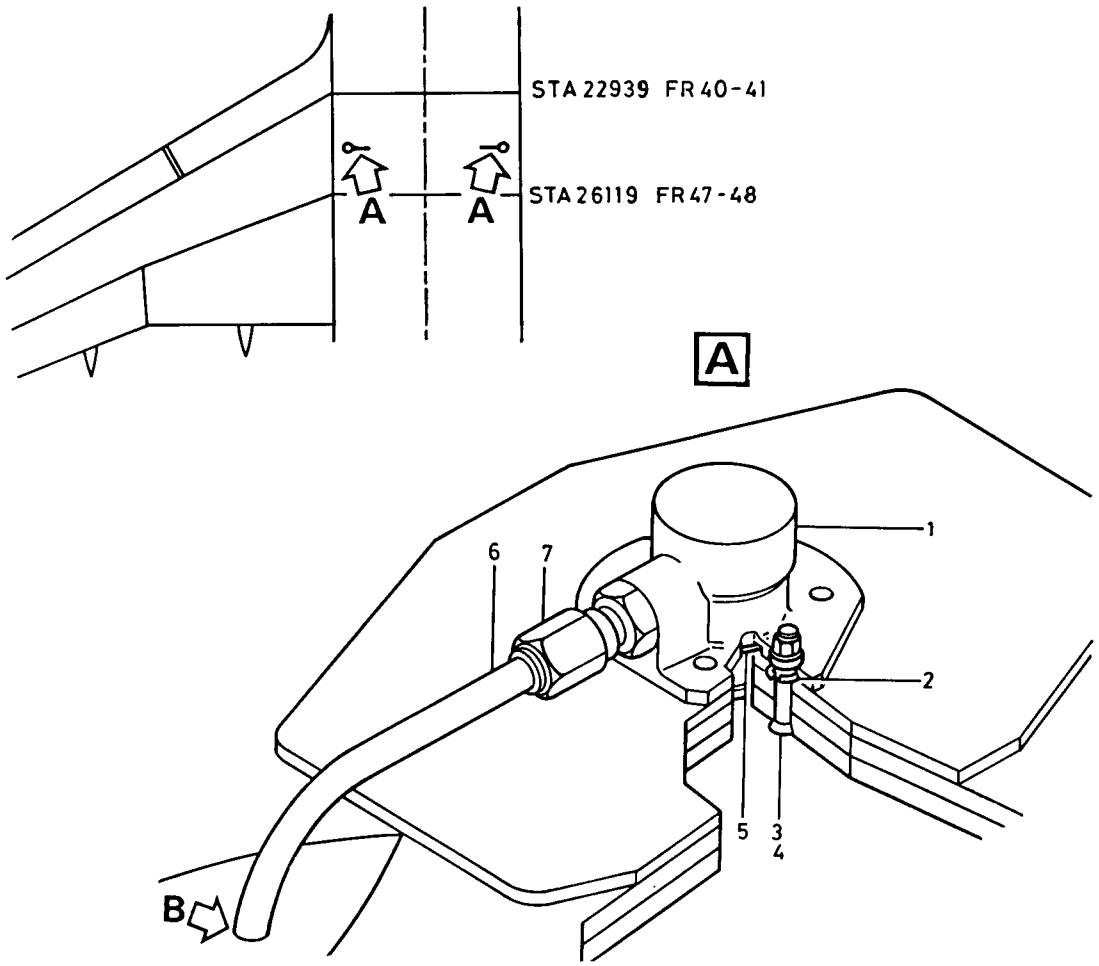
(6)Close-Up
(a)Remove fuel container.

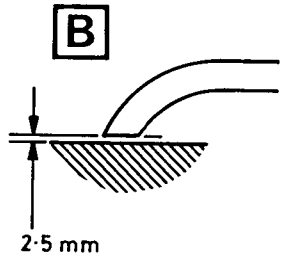
3. Water Drain Valves - Center Tank

A. Equipment and Materials

ITEM	DESIGNATION
A.	O-ring Seal (Valve)
B.	O-ring Seals (Bolts)
R C. 98A28104000000	Purging Tool - Water Drain
Referenced Procedures	
- 28-00-00, P. Block 301	Fuel - General
- 28-10-00, P. Block 301	Storage
- 28-11-29, P. Block 401	Manhole Covers (Center Tank)

B. Procedure
(1)Job Set-Up
(a)Remove manhole cover (Ref. 28-11-29, P. Block 401).
(2)Removal
(Ref. Fig. 402)
(a)Unscrew nut (7) securing water drain pipe (6) to water drain valve (1).
(b)Remove nuts (3) and bolts (4) securing drain valve (1) and withdraw valve from locating hole in lower skin.
(c)Discard O-ring seals (2, 5).
(3)Preparation of Replacement Component
(a)Check mating faces of drain valve (1) and tank are clean and undamaged.
(4)Installation
(a)Insert drain valve attachment bolts (4) into holes in lower skin and position new O-ring seal (2) over each bolt.
(b)Install new O-ring seal (5) to water drain valve (1).
(c)Position water drain valve (1) over bolts (4) in lower skin and secure with drain valve retaining nuts (3).
(d)Attach water drain pipe (6) to drain valve (1) and secure with pipe retaining nut (7).
(5)Tests
(a)Check water drain valve (1) for leakage.
R (b)If the valve does leak, use the purging tool to push (in) and
R release (out) the center of the valve three or four times.
R No leaks are permitted.
R (c)Install manhole covers (Ref. 28-11-29, P. Block 401).
R (d)Examine for leakage of fuel at the manhole covers.





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Water Drain Valve Center Tank - Installation
Figure 402

(6)Close-Up
(a)Make sure that the work area is clean and clear of tools and all other items of equipment.
(b)Remove all ground handling and maintenance equipment and all access equipment.

4. Water Drain Valve - Inner Tanks

A. Equipment and Materials

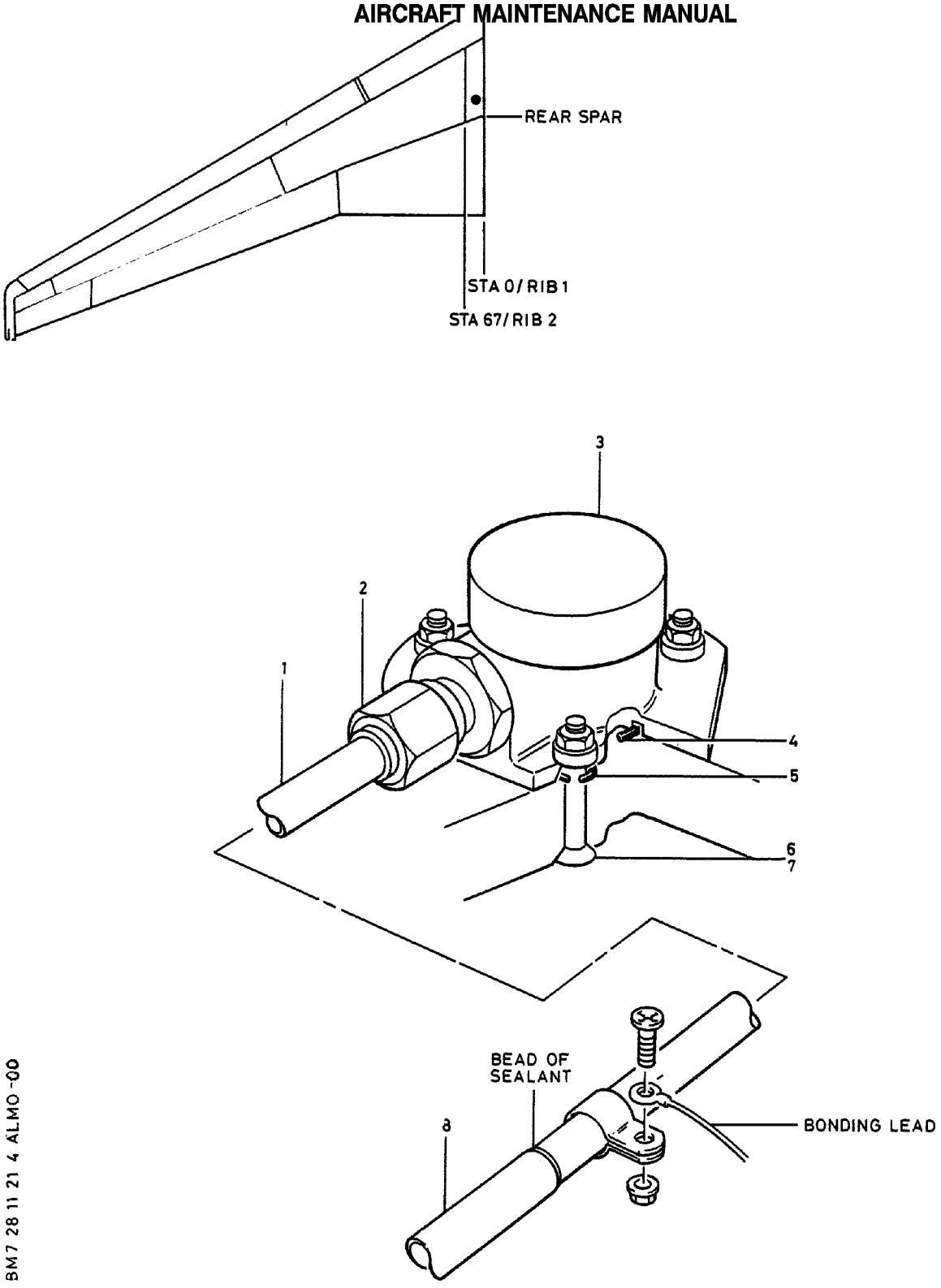
	ITEM	DESIGNATION
	A.	O-ring Seal (Valve)
	B.	O-ring Seals (Bolts)
R	C. 98A28104000000	Purging Tool - Water Drain
R	D. Material No. 09-001	Sealants (Ref. 20-31-00)
	Referenced Procedures	
	- 20-28-11, P. Block 1	Electrical Bonding
	- 28-00-00, P. Block 301	Fuel- General
	- 28-10-00, P. Block 301	Storage
	- 28-11-22, P. Block 401	Manhole Covers

B. Procedure
(1)Job Set-Up
(a)Remove manhole covers 542(642)CB, 541(641)AB or 543(643)AB (Ref.
(2)Removal

(Ref. Fig. 403)

R

(a)Unscrew nut (2) securing water drain pipe (1) to water drain valve (3). Carefully ease pipe clear of valve taking care not to break the seal on the flexible sleeve (8).
(b)Remove nuts (6) and bolts (7) securing drain valve (3) and withdraw valve from locating hole in lower skin.
(c)Discard seals (4, 5).
(3)Preparation of Replacement Component
(a)Check mating faces of drain valve (3) and tank are clean and undamaged.
(4)Installation
(a)Insert drain valve attachment bolts (7) into holes in lower skin and position new O-ring seal (5) over each bolt.
(b)Install new O-ring seal (4) to water drain valve (3).
(c)Position water drain valve (3) over bolts (7) and secure with drain valve retaining nuts (6).
(d)Attach water drain pipe (1) to drain valve (3) and secure with pipe retaining nut (2).
(e)Apply either Material No.16-006, Material No.09-007 or Material No. 09-014 to water drain valve and drain pipe retaining nuts (2, 5).



Water Drain Valve Inner Tank - Installation
Figure 403

(5)Tests
(a)Check water drain valve (3) for leakage.
R (b)If the valve does leak, use the purging tool to push (in) and
R release (out) the center of the valve three or four times.
R No leaks are permitted.
R (c)Install manhole covers (Ref. 28-11-29, P. Block 401).
R (d)Examine for leakage of fuel at the manhole covers.

(6)Close-Up

(a)Make sure that the work area is clean and clear of tools and all other items of equipment.
(b)Remove all ground handling and maintenance equipment, standard and special tools, all access equipment and other items.

5. Water Drain Valves - Outer Tank and Vent Tank

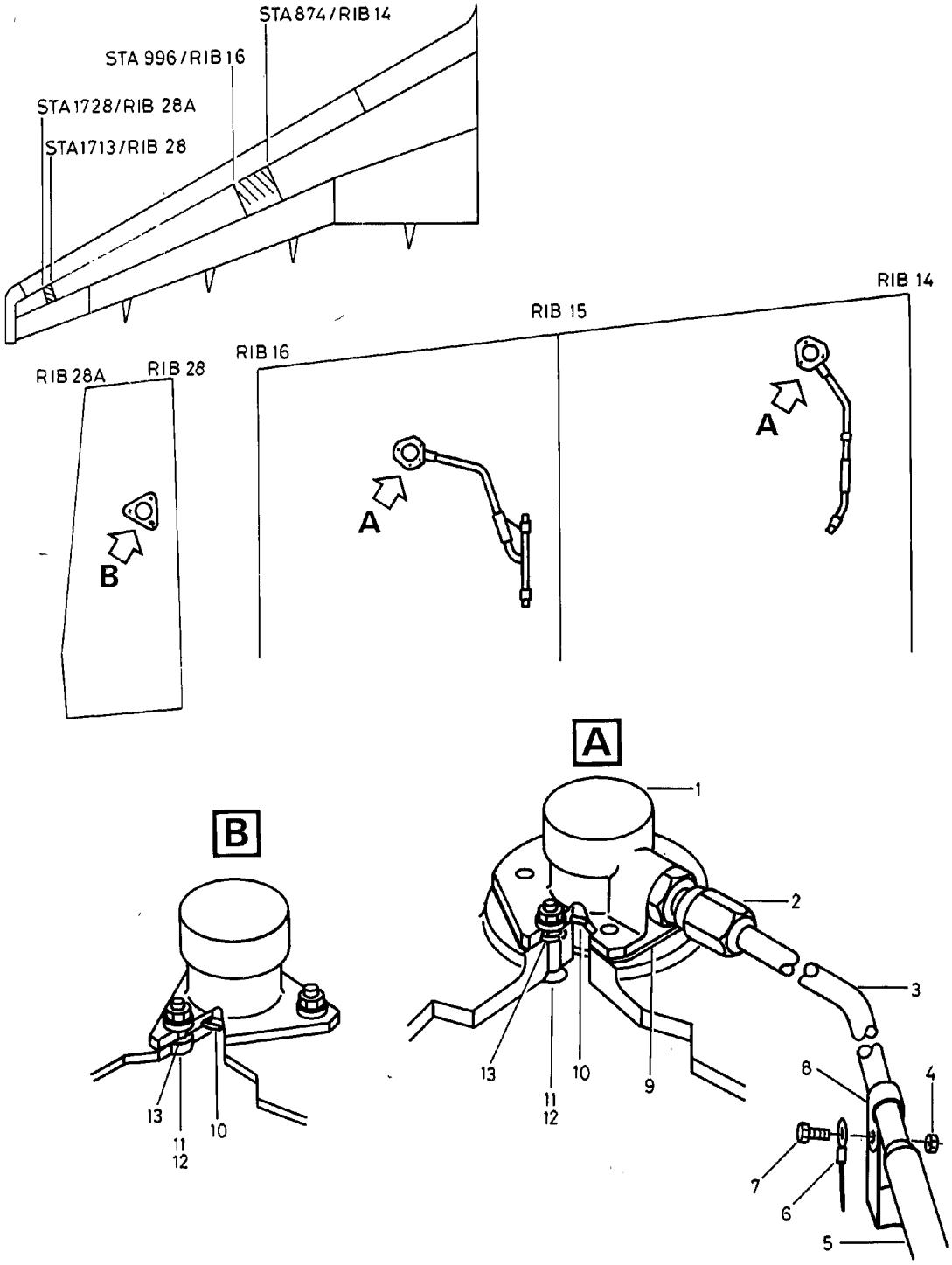
A. Equipment and Materials

ITEM	DESIGNATION
A.	O-ring Seal (Valve)
B.	O-ring Seals (Bolts)
R C. 98A28104000000	Purging Tool - Water Drain
R D. Material No. 09-001	Sealants (Ref. 20-31-00)
Referenced Procedures	
- 20-28-11, P. Block 1	Electrical Bonding
- 28-00-00, P. Block 301	Fuel - General
- 28-10-00, P. Block 301	Storage
- 28-11-22, P. Block 401	Manhole Cover
- 28-12-21, P. Block 401	NACA Intake

B. Procedure
(1)Job Set-Up
(a)Valves in outer tank - remove manhole cover (Ref. 28-11-22, P. Block 401).
(b)Valves in vent tank - remove NACA intake (Ref. 28-12-21, P.Block 401).
(2)Removal
(Ref. Fig. 404)

R

(a)Valves in outer tank only:
1Unscrew water drain pipe retaining nut (2) at water drain valve (1).
2Remove nut (4) and bolt (7) securing pipe retaining clip (8) and bonding strip (6) at the end nearest drain valve (1).
3Carefully ease water drain pipe (3) away from drain valve (1).
(b)Remove nuts (11) and bolts (12) securing drain valve (1) and withdraw valve from locating hole in lower skin. Discard O-ring seals (10, 13).



Water Drain Valves - Outboard and Vent Tanks
Figure 404

NOTE: Outboard valve in outer tank only - hold packing piece (9) in position on lower skin when removing valve to avoid damaging sealant.

(3)Preparation of Replacement Component
(a)Outer tank only - check packing piece is bonded to tank and fillet is intact.

NOTE: If packing piece is not bonded or fillet is damaged, apply Sealants (Material No.09-001).

(b)Check all mating faces are clean and undamaged.
(4)Installation
(a)Insert drain valve attachment bolts (12) into holes in lower skin and position a new O-ring seal (13) over each bolt.
(b)Install new O-ring seal (10) to the water drain valve.
(c)Position water drain valve (1) over bolts (12) in lower skin and secure with drain valve retaining nuts (11).
(d)Attach water drain pipe (3) to drain valve (1) and secure with pipe retaining nut (2).
(e)Tighten nuts (4) and bolts (7) securing bonding lead (6) and pipe retaining clip (8) (Ref. 20-28-11, P. Block 1).
(f)Apply either Material No.16-006, Material No.09-007 or Material No.09-014 to drain valve and water drain pipe retaining nuts (2, 11).
(5)Tests
(a)Check water drain valve for leakage.
R (b)If the valve does leak, use the purging tool to push (in) and
R release (out) the center of the valve three or four times.
R No leaks are permitted.
R (c)Install manhole cover/NACA intake (Ref. 28-11-22, P. Block 401/
R 28-12-21, P. Block 401).
R (d)Examine for leakage of fuel at the manhole cover/NACA intake.
(6)Close-Up
(a)Make sure that the work area is clean and clear of tools and all other items of equipment.
(b)Remove all ground handling and maintenance equipment, standard and special tools, all access equipment and other items.

MANHOLE COVERS (WINGS) - REMOVAL/INSTALLATION

R WARNING : THIS PROCEDURE USES A FUEL SYSTEM ITEM THAT IS IN A CATEGORY KNOWN AS
R A CRITICAL DESIGN CONFIGURATION CONTROL LIMITATION (CDCCL).
R CDCCL IDENTIFIES AN ITEM THAT CAN BE THE SOURCE OF A POSSIBLE FUEL
R TANK IGNITION. YOU MUST KEEP ALL CDCCL ITEMS IN THE APPROVED
R CONFIGURATION. DAMAGE, WEAR OR CHANGES TO A CDCCL ITEM CAN CAUSE A
R POSSIBLE FUEL TANK EXPLOSION.

R LANDING GEAR - MAKE SURE THAT THE GROUND SAFETIES AND CHOCKS ARE IN POSITION.

FLIGHT CONTROLS - MAKE SURE THAT THE GROUND SAFETIES AND NOTICES ARE IN POSITION.

OBEY THE SAFETY PRECAUTIONS IN 28-00-00, P. BLOCK 301 AND 28-10-00, P. BLOCK 301.

R MAKE SURE THAT THE FIRE FIGHTING EQUIPMENT IS AVAILABLE AND ADEQUATE.

MAKE SURE THAT YOU ISOLATE THE ELECTRICAL CIRCUITS UPON WHICH WORK IS IN PROGRESS.

1. Equipment and Materials

ITEM	DESIGNATION
A.	Access Platform 5.5 m (18 ft)
B.	Circuit breaker safety clips and Tags
C.	Torq-set Driver No.4 and 5
D.	Torque Wrenches set at: 25 to 30 1bf.in (0.28 to 0.34 m.daN) 60 to 70 1bf.in (0.68 to 0.79 m.daN) 90 to 100 1bf.in (1.02 to 1.13 m.daN) 180 to 200 1bf.in (2.03 to 2.26 m.daN)
E. Material No. 04-004	Common Greases (Ref. 20-31-00)
F. Material No. 04-012	Common Greases (Ref. 20-31-00)
G. Material No. 04-013	Common Greases (Ref. 20-31-00)
H. Material No. 04-034	Common Greases (Ref. 20-31-00)
J. Material No. 09-007	Sealants (Ref. 20-31-00)
K. Material No. 11-002	Cleaning Agents (Ref. 20-31-00)
L. 98A57304002000	Manhole Bolt Extraction Tool or alternative
M. 98A53003500000	Fastener Removal Tool
N. 98A57304009000	Protective Seal - Wing Manholes
P. 98A57304010000	Protective Seal - Wing Manholes
Q. 98A57304011000	Protective Seal - Wing Manholes
R. 98A57304000000	Protective Ring Wing Manholes Ribs 2-12
S. 98A57304000001	Protective Ring Wing Manholes Ribs 12-17
T. 98A57304000002	Protective Ring Wing Manholes Ribs 17-22
Referenced Procedures - 12-11-28, P. Block 301	Replenishing of Fuel Tanks

ITEM	DESIGNATION
- 20-28-11, P. Block 1	Electrical Bonding
- 27-50-21, P. Block 401	Flap Track Fairing
- 28-00-00, P. Block 301	Fuel - General
- 28-00-00, P. Block 601	Fuel - General
- 28-10-00, P. Block 301	Storage
- 28-11-22, P. Block 601	Manhole Covers (Wings)
- 28-25-00, P. Block 301	Refuel/Defuel System
- 28-42-00, P. Block 501	Quantity Indicating
- 28-43-21, P. Block 401	Magnetic Level Indicator
- 57-20-35, P. Block 401	Fillets and Fairings

2. Procedure

A. Job Set-Up
(1)Transfer the fuel from the tank or defuel the tank (Ref. 28-25-00, P. Block 301), as applicable.

CAUTION : MAKE SURE THAT THE ACCESS DOOR (144DR) TO THE EXTERNAL REFUEL/DEFUEL PANEL (110VU) IS CLOSED BEFORE YOU:
- DISCONNECT THE ELECTRICAL GROUND POWER SUPPLY
- ISOLATE THE AIRCRAFT BATTERIES.
THE CENTER TANK RELIEF VALVE CAN REMAIN IN THE OPEN POSITION AND LET FUEL ENTER THE INNER FUEL TANK.

(2)Open, safety and tag the circuit breakers that follow:

PANEL	SERVICE	IDENT.	LOCATION
22VU	FUEL/L OUTR TK/PUMP2/L TK/CTL	61QA	201/J15
22VU	FUEL/R OUTR TK/PUMP2/R TK/CTL	68QA	201/J18
132VU	FUEL/CTR TK/L/PUMP/CTL	63QA	322/N58
132VU	FUEL/CTR TK/R/PUMP/CTL	64QA	323/M59
132VU	FUEL/L INR TK/PUMP1/CTL	69QA	322/N60
132VU	FUEL/L INR TK/PUMP2/CTL	59QA	323/M61
132VU	FUEL/R INR TK/PUMP1/CTL	60QA	322/N62
132VU	FUEL/R INR TK/PUMP2/CTL	70QA	323/M63
132VU	FUEL/L OUTR TK/PUMP1/CTL	67QA	322/N56
132VU	FUEL/R OUTR TK/PUMP1/CTL	62QA	323/M57
132VU	FUEL/X FEED VALVE/MOTOR 1	2QE	324/L60
132VU	FUEL/X FEED VALVE/MOTOR 2	1QE	324/L61
132VU	FUEL/FUELLING/CTL&REFUEL VALVE	1QU	321/P56
132VU	FUEL/FUELLING/XFR VALVE	2QU	321/P55

(3)Drain the residual fuel from the tank water drains (Ref. 28-25-00, P. Block 301).
(4)Put the access platform in position.
(5)Remove the flap track fairing, if necessary:
(a)No. 3 and/or 4 (Ref. 57-20-35, P. Block 401).

NOTE : The fixed section of the flap track fairing No. 3 prevents easy access to the manhole covers between STA737/RIB 12 and STA874/RIB 14. The fixed section of the flap track fairing No. 4 prevents easy access to the manhole covers between STA1057/RIB 17 and STA1182/RIB 19.

(b)No. 5 (Ref. 27-50-21, P. Block 401).

NOTE : The flap track fairing No. 5 prevents easy access to the manhole covers between STA1372/RIB 22 and STA1495/RIB 24.

B. Removal
(Ref. Fig. 401)
(Ref. Fig. 402)

CAUTION : WHEN YOU USE THE MANHOLE BOLT EXTRACTION TOOL (OR ALTERNATIVE) TO REMOVE THE RETAINING BOLTS, HEAVY PRESSURE MUST BE RELEASED AS SOON AS THE FASTENER STARTS TO TURN. THIS IS TO AVOID DAMAGE TO THE ANCHOR NUT OR THREAD INSERT ON THE MANHOLE COVER OR WING SKIN AS APPLICABLE.

(1)For Manhole Covers 4-7
(a)Remove retaining bolts using the appropriate Torq-set driver. If the bolts prove difficult to remove, use the manhole bolt extraction tool 98A57304002000 or the fastener removal tool 98A53003500000. Air driven break loose tools can be used if the bolts are seized.

NOTE : Remove retaining bolts so that each bolt removed is diametrically opposite to the one before.

(b)Remove manhole cover.
(c)Install relevant protective seal to manhole.

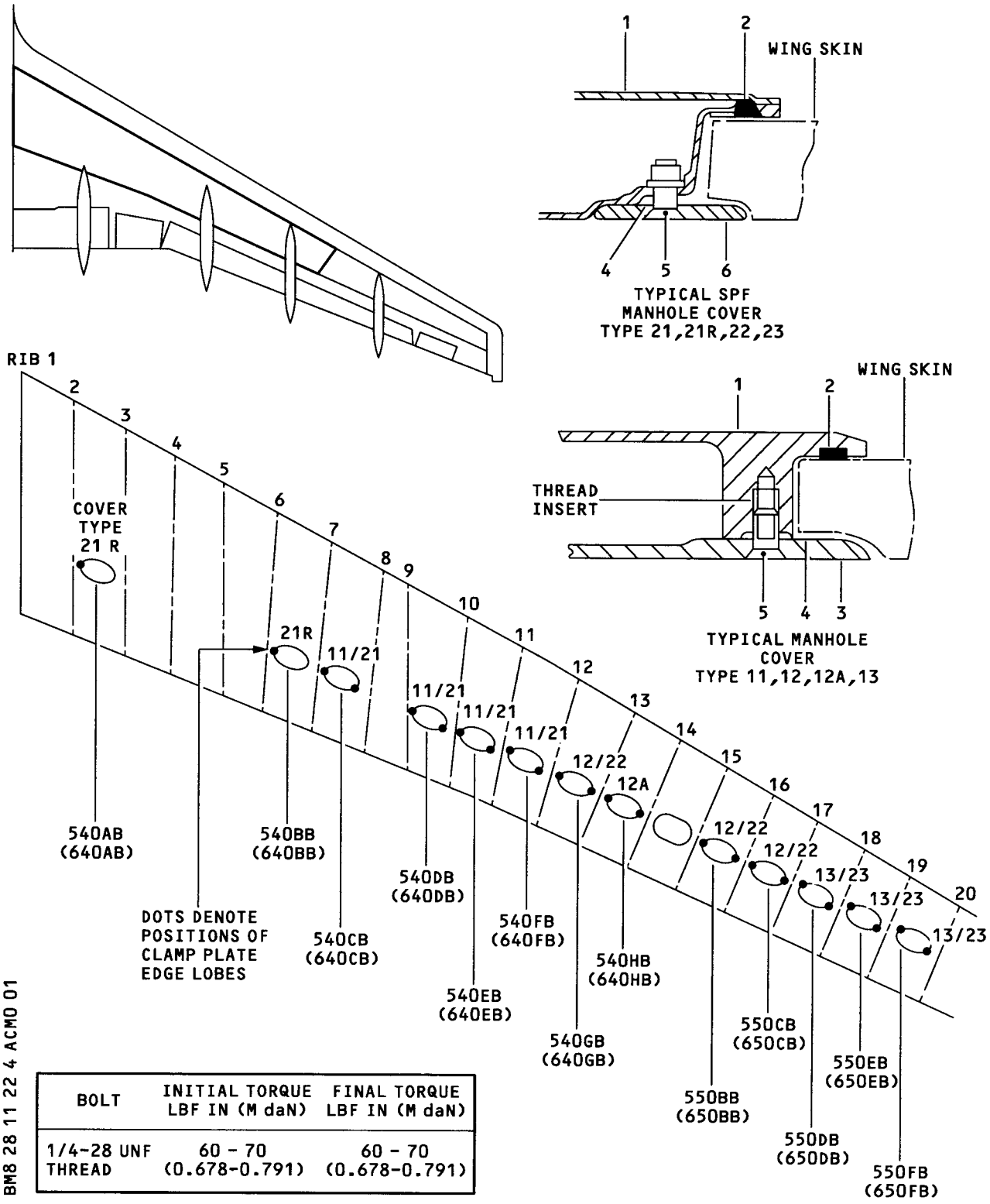
NOTE : Label each cover to ensure that it is returned to its original postion. Manhole covers type 6A have a magnetic level indicator. Take care not to damage the indicator and make sure that it is protected after removal.

WARNING : DO NOT ENTER A TANK UNTIL IT HAS BEEN PURGED AND/OR CORRECT SAFETY EQUIPMENT IS IN USE.

(d)Purge tank, as necessary (Ref. 28-10-00, P. Block 301).
(e)Check sealing ring for correct condition; if necessary, discard. If ring is discarded, remove all traces of sealant and contamination from manhole cover and flange.

CAUTION: MANHOLE COVERS TYPE 21R AND THE RELATED PROTECTIVE RINGS MUST BE USED BETWEEN RIBS 2 AND 7.

(1)For Manhole Covers 11-23

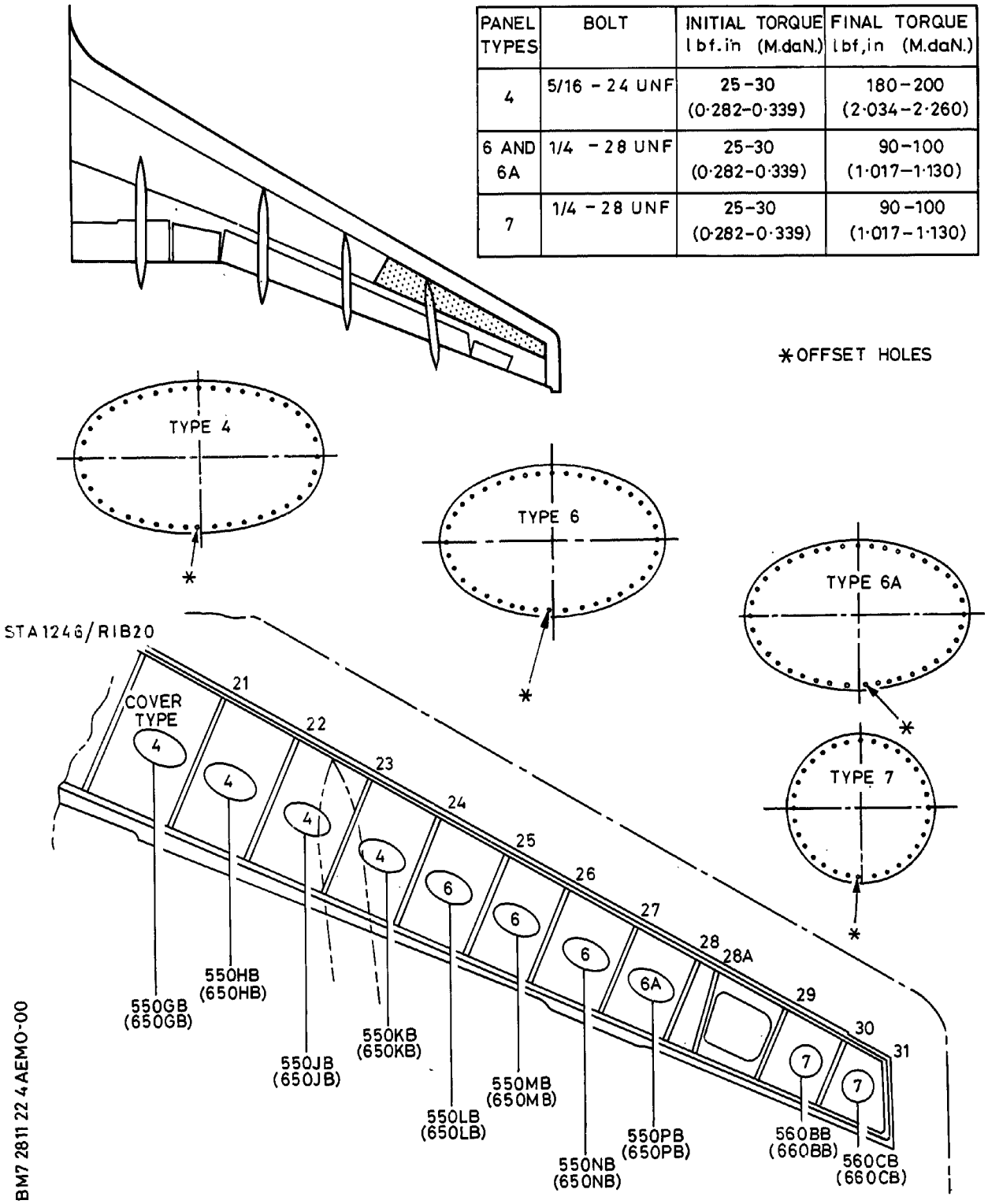


BOLT	INITIAL TORQUE LBF IN (M daN)	FINAL TORQUE LBF IN (M daN)
1/4-28 UNF THREAD	60 - 70 (0.678-0.791)	60 - 70 (0.678-0.791)

BM8 28 11 22 4 ACM0 01

Manhole Cover Type 11 thru 23 - Installation
Figure 401

PANEL TYPES	BOLT	INITIAL TORQUE lbf.in (M.daN.)	FINAL TORQUE lbf,in (M.daN.)
4	5/16 - 24 UNF	25-30 (0·282-0·339)	180-200 (2·034-2·260)
6 AND 6A	1/4 - 28 UNF	25-30 (0·282-0·339)	90-100 (1·017-1·130)
7	1/4 - 28 UNF	25-30 (0·282-0·339)	90-100 (1·017-1·130)



Manhole Cover Type 4 thru 7 -Installation
Figure 402

NOTE : Superplastic formed/diffusion bonded (SPF) Manhole covers types 21, 22 and 23 may be installed instead of types 11, 12 and 13 respectively.

(a)Remove retaining bolts (5) in a diametrically opposite sequence using appropriate Torq-set driver. If the retaining bolts prove difficult to remove, use the manhole bolt extraction tool 98A57304002000 or the fastener removal tool 98A53003500000. Air driven break loose tools can be used if the bolts are seized.
(b)Remove clamp plate (3), or clamp ring (6) for SPF panels, and knitted gasket (4) then withdraw manhole cover (1) from the tank.

NOTE : Manhole covers type 12A have a pressure relief disc. Take care not to damage the relief disc and make sure that the manhole cover is protected after removal. Maintain the identity of each manhole cover and any associated equipment.

(c)Install relevant protective ring to manhole.

WARNING : DO NOT ENTER A TANK UNTIL IT HAS BEEN PURGED AND/OR CORRECT SAFETY EQUIPMENT IS IN USE.

(d)Purge tank, as necessary (Ref. 28-10-00, P. Block 301).
(e)Examine the sealing ring (2) for damage, we recommend that the sealing ring (2) is replaced each time that the manhole cover (1) is installed. If you do not replace the sealing ring (2), make sure that the used sealing ring (2) is:
- assembled correctly
- bonded into the manhole cover (1)
- not twisted or damaged.

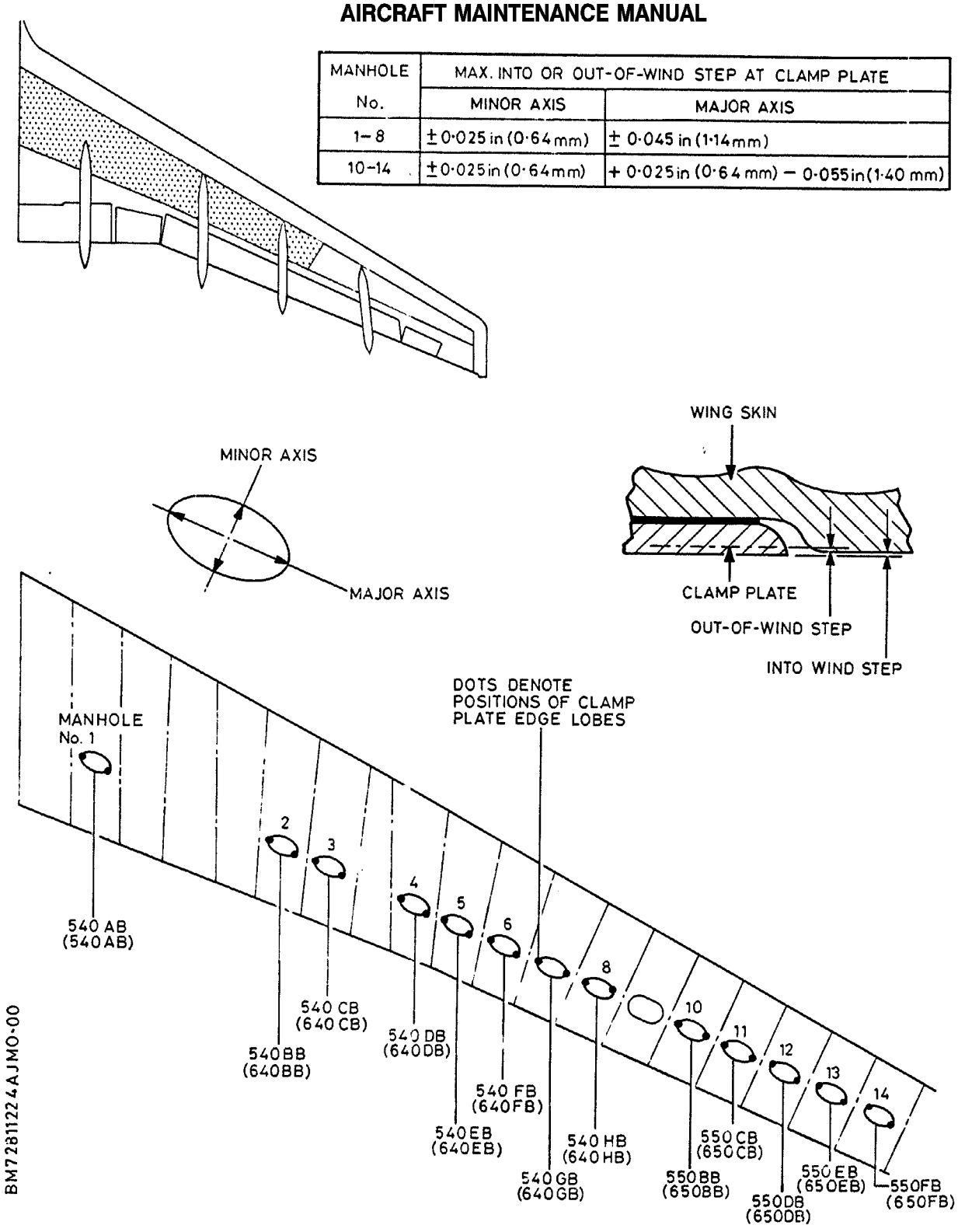
(f)Inspect manhole, manhole cover (1), thread inserts and clamp plate (3) for covers type 11, 12, 12A and 13 or anchor nuts and clamp ring (6) for SPF covers type 21, 21R, 22, 23, knitted gasket (4) and bolts (5) for serviceability (Ref. 28-11-22, P. Block 601).
(g)Inspect the SPF manhole covers type 21, 22 and 23 for fluid ingress (Ref. 28-11-22, P. Block 601).

NOTE : If the manhole cover (1) is unserviceable remove any relevant items of equipment in accordance with the appropriate maintenance practices.

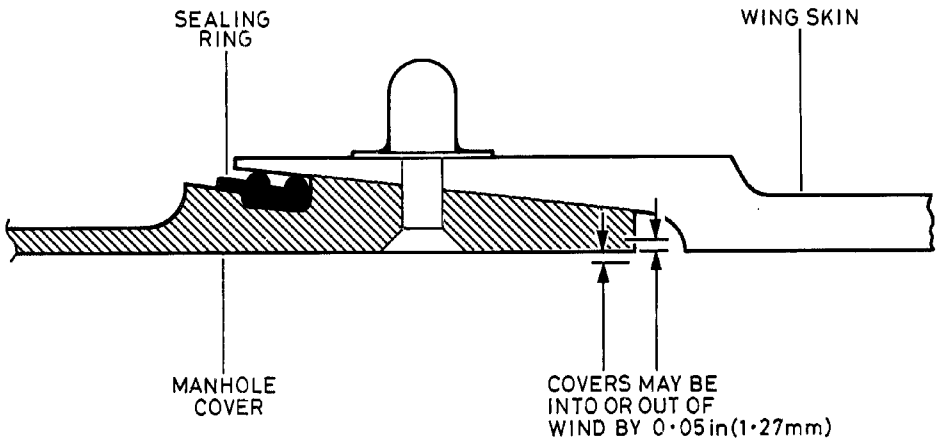
C. Preparation of Replacement Component
(1)If a replacement component is to be installed, install any relevant items of equipment in accordance with the appropriate maintenance practices.

D. Installation.
(Ref. Fig. 403)
(Ref. Fig. 404)
(1)Do the measurement of the fuel-probe insulation and capacitance with the Gull test set (Ref. 28-42-00, P. Block 501).

MANHOLE No.	MAX. INTO OR OUT-OF-WIND STEP AT CLAMP PLATE	
	MINOR AXIS	MAJOR AXIS
1–8	± 0·025 in (0·64 mm)	± 0·045 in (1·14 mm)
10–14	± 0·025 in (0·64 mm)	+ 0·025 in (0·64 mm) – 0·055 in (1·40 mm)



Into and Out-Of-Wind Tolerance
Manhole Covers Type 11 thru 23
Figure 403



BM7 28 11 22 4 ALMO-00

Into and Out-Of-Wind Tolerances
Manhole Covers Type 4 thru 7
Figure 404

NOTE : This procedure is only necessary if you have entered a tank. You may have caused accidental damage to the FQIC equipment. This procedure will show if the equipment continues to be serviceable.

WARNING : THIS INSTRUCTION IS APPLICABLE TO A CRITICAL DESIGN CONFIGURATION CONTROL LIMITATION (CDCCL) ITEM. CAREFULLY OBEY ALL GIVEN INSTRUCTIONS WHEN YOU DO THIS STEP. IF YOU DO NOT OBEY THESE INSTRUCTIONS, A DANGEROUS CONDITION CAN OCCUR THAT CAN CAUSE A POSSIBLE FUEL TANK EXPLOSION.

(2)Do the procedures to inspect all the bonding straps on the fuel pipes (Ref. 28-00-00, P. Block 601).

R (3)Make sure that the inside of the tank is clean.

R (4)Make sure that the there are no unwanted objects and materials, tools or other equipment in the wing.

R (5)If a replacement sealing ring (2) is to be installed, make a clean lint-free cloth moist with cleaning agent (Material No. 11-002). Use this to remove all signs of grease from the sealing-ring groove of the manhole cover.

R (6)Apply a thin layer of sealant (Material No.09-007) to the sealing ring groove in the manhole cover. Install the new sealing ring (2) with the sealant wet. Let the sealant dry for fifteen minutes.

NOTE : Take care when you install a sealing ring (2), do not move it around the groove with the finger tips as this can stretch the seal and cause leaks.

R (7)For Manhole Covers type 4 - 7.

(a)Remove the protective ring from the manhole.

(b)Apply a layer of grease (Material No. 04-004 or 04-034) along the full length of the retaining bolts (5).

R (c)Use a clean lint-free cloth made moist with cleaning agent Material No. 11-002) to clean the interfaces of the manhole and the manhole cover (1).

(d)Find the position of the offset bolt hole and align the manhole cover (1) with the manhole.

NOTE : Do not slide the manhole cover (1) around as this can damage the seal.

(e)Install and torque tighten the retaining bolts (5) in a symmetrical diagonal sequence to the initial torque value. Then, in the same sequence, tighten to the final torque load as shown on the figure.

(f)Do a check of the into and out-of-wind tolerances (Ref. Fig. 404).

WARNING : THIS INSTRUCTION IS APPLICABLE TO A CRITICAL DESIGN CONFIGURATION CONTROL LIMITATION (CDCCL) ITEM. CAREFULLY OBEY ALL GIVEN INSTRUCTIONS WHEN YOU DO THIS STEP. IF YOU DO NOT OBEY THESE INSTRUCTIONS, A DANGEROUS CONDITION CAN OCCUR THAT CAN CAUSE A POSSIBLE FUEL TANK EXPLOSION.

(g)Do the electrical bonding check between the manhole cover (1) and the nearest ground point (Ref. 20-28-11, P. Block 1).
(h)Remove the safety clips and tags and close the circuit breakers 63QA, 64QA, 69QA, 59QA, 60QA, 70QA, 67QA, 61QA, 62QA, 68QA, 2QE, 1QE, 1QU and 2QU.

R (8)For Manhole Covers Type 11-23.
(a)Apply a layer of grease (Material No. 04-004 or 04-034) along the full lengh of the retaining bolts (5).
R (b)Use a clean lint-free cloth made moist with cleaning agent (Material No.11-002) to clean the interfaces of:
- the manhole
- the manhole cover (1)
- the clamp plate (3)
- the clamp ring (6) for SPF panels
- the knitted gasket (4).

(c)Before you install the knitted gasket (4), examine for torn holes and too much fraying at the edges.
(d)If the knitted gasket (4) that was removed is to be installed:
1 Thoroughly soak the knitted gasket (4) with grease (Material No. 04-013). Do not get grease in the bolt holes.
2 Put the clamp plate (3) or the clamp ring (6) for the SPF panels, over the knitted gasket (4). Make sure that the bolt holes align and the countersinks face upwards.
3 Put the clamp plate (3) or the clamp ring (6) for the SPF panels, tightly into contact with the knitted gasket (4).
(e)If a replacement knitted gasket (4) is to be installed:
1 Put the gasket carrier-tray on a flat surface, package side up.
2 Remove the paper cover from the gasket carrier tray.
3 Put the clamp plate (3) or the clamp ring (6) for the SPF panels, over the knitted gasket (4). Make sure that the bolt holes align and the countersinks face upwards.
4 Push the clamp plate (3) or the clamp ring (6) for the SPF panels, tightly into contact with the knitted gasket (4).
5 Remove the clamp plate (3) or the clamp ring (6) for the SPF panels, and the knitted gasket (4) and release the strip from the gasket carrier tray as a unit. Put the strip on a flat surface with the gasket side upwards.
6 Remove the release strip from the knitted gasket (4).
(f)Remove the protective ring from the manhole.
(g)Apply a thin layer of grease (Material No. 04-012) to the mating surface of the sealing ring (2). If necessary remove any excess grease.

CAUTION : DO NOT SLIDE THE MANHOLE COVER, THIS CAN DAMAGE THE SEAL.

(h)Align the manhole cover (1) in the opening in the wing skin.
(j)Put the clamp plate (3) or the clamp ring (6) for the SPF panels, in position, complete with the knitted gasket (4). Align with the bolt holes in the manhole cover (1).

NOTE : Each clamp plate (3) or clamp ring (6) for the SPF panels, has

one pair of edge lobes which agree with the related rebates at the correct manhole surround. Each clamp plate (3), also has one sequence of interference spigots, on its inside face, which will allow assembly of the retaining bolt (5), only when the correct access panel agrees with the clamp plate.

CAUTION : TOO MUCH GREASE IN THE BOLT HOLES CAN CAUSE HYDRAULIC PRESSURE AND DAMAGE TO THE MANHOLE COVER.

(k)Make sure that there is not too much grease in the bolt holes of the manhole cover.
(l)Install and engage the threads of all the bolts (5). Lightly tighten each bolt (5) to make sure that the manhole cover cannot tilt and damage the sealing ring when the bolts are fully torque tightened. Then tighten the bolts (5) in a symmetrical diagonal sequence, to the initial torque and then to the final torque (Ref. Fig. 401).
(m)Do a check of the into and out-of-wind tolerances (Ref. Fig. 403).

WARNING : THIS INSTRUCTION IS APPLICABLE TO A CRITICAL DESIGN CONFIGURATION CONTROL LIMITATION (CDCCL) ITEM. CAREFULLY OBEY ALL GIVEN INSTRUCTIONS WHEN YOU DO THIS STEP. IF YOU DO NOT OBEY THESE INSTRUCTIONS, A DANGEROUS CONDITION CAN OCCUR THAT CAN CAUSE A POSSIBLE FUEL TANK EXPLOSION.

(n)Do a bonding check between the clamp plate (3) and the wing skin (Ref. 20-28-11, P. Block 1).
(p)Remove safety clips and tags and close circuit breakers: 63QA, 64QA, 69QA, 59QA, 60QA, 70QA, 67QA, 61QA, 62QA, 68QA, 2QE, 1QE, 1QU, 2QU.

E. Test
(1)Transfer fuel to tank or refuel tank (Ref. 28-25-00 or 12-11-28, P. Block 301) as appropriate until manhole cover is submerged.
(2)Inspect manhole cover for leaks.

F. Close-Up
(1)Install the related flap track fairing:
- No. 3 and /or 4 (Ref. 57-20-35, P. Block 401)
- No. 5 (Ref. 27-50-21, P. Block 401)
(2)Make sure that the working area is clean and clear of all tools and other items of equipment.
(3)Remove the access platform.
(4)Remove all ground handling and maintenance equipment, standard and special tools, all access equipment and other items.

MANHOLE COVERS - INSPECTION/CHECK

WARNING : LANDING GEAR - MAKE CERTAIN GROUND SAFETIES AND CHOCKS ARE IN POSITION.

FLIGHT CONTROLS - MAKE CERTAIN GROUND SAFETIES AND NOTICES ARE IN POSITION.

OBSERVE THE SAFETY PRECAUTIONS IN 28-00-00, P. BLOCK 301.

MAKE CERTAIN THAT FIRE FIGHTING EQUIPMENT IS AVAILABLE AND ADEQUATE.

MAKE SURE THAT YOU ISOLATE THE ELECTRICAL CIRCUITS UPON WHICH WORK IS IN PROGRESS.

1. Reason for the Job

A. Inspection of manhole cover, clamp plate, knitted gasket, securing bolts and manhole surround.

2. Equipment and Materials

ITEM	DESIGNATION
A.	Access Platform 5.5 m (18 ft)
B.	Inspection Torch
C.	Inspection Mirror
Referenced Procedures	
- 28-00-00, P. Block 301	Safety Precautions
- 28-11-00, P. Block 801	Tanks - Approved Repairs
- 28-11-22, P. Block 401	Manhole Covers Types 4,6,6A,7
- 51-20-12, P. Block 701	Skins and Plating
- 51-75-10, P. Block 801	Repair of Paint Coatings

3. Procedure

A. Job Set-Up
(1)Position access platform.
(2)Remove manhole cover (Ref.28-11-22, P. Block 401).

NOTE : Manhole cover seal renewal procedures are given in 28-11-22, P. Block 401.

CAUTION : MANHOLE COVERS TYPE 21R AND THE RELEVANT PROTECTIVE RING MUST BE USED BETWEEN RIBS 2 AND 7.

NOTE : Superplastic formed/diffusion bonded (SPF) Manhole covers types 21, 22 and 23 may be installed instead of types 11, 12 and 13 respectively.

B. Inspection
(1)Manhole covers types 4, 6, 6A and 7
(a)Inspect cover for cleanliness, damage and signs of leakage. Bolt hole scoring deeper than 0.015 in (0.38 mm) is unacceptable.
(b)Check for correct condition of protective treatment including anti-fretting paint on cover exterior where it makes contact with flap track fairing (Ref. 51-75-10, P. Block 801 for paint repairs).
(c)Check that sealant along edges of stringer and over the four nuts is in correct condition (Ref.28-11-00, P. Block 801 for sealant renewal).
(2)Manhole cover securing bolts
(a)Inspect for deterioration of cadmium coating; flaking, peeling or cracking is unacceptable.
(b)Inspect bolt threads and drive head; damage is unacceptable.
(3)Manhole surround
(a)Check that cover bearing surface protective treatment is clean and undamaged (Ref.51-75-10, P. Block 801 for paint repairs).
(b)Inspect bolt holes for scoring. Superficial axial scoring is acceptable. Radial or spiral scoring is acceptable only up to a maximum depth 0.004 in (0.10 mm) over not more than 20 per cent of the surface area.
(c)Check security and condition of anchor nuts.
(d)Check sealant over nuts is undamaged. (Ref.28-11-00, P. Block 801 for sealant repairs),
(4)Manhole covers types 11 thru 23
(a)Check that cover is clean, undamaged and free from corrosion. Check for correct condition of paint work (Ref.51-75-10, P. Block 801).
(b)For types 11, 12 12A and 13, check that thread inserts are secure and unbroken. For SPF types 21, 21R, 22, 23 check that anchor nuts are secure and unbroken.
(5)Clamp plate, for types 11, 12, 12A and 13. (Clamp ring for SPF types 21, 21R, 22 and 23).
(a)Check that two interference spigots are secure and undamaged (Clamp plate types 11, 12, 12A and 13).
(b)Check that plate/ring is clean, undamaged and free from corrosion.
(c)Inspect condition of protective treatment on clamp plate/clamp ring (Ref. 51-75-10, P. Block 801).
(d)Inspect condition of anti-fretting paint on exterior of clamp plates/ clamp rings 540(640) GB and HB where they make contact with the track fairing (Ref. 57-20-12, P. Block 701).
(6)Knitted gaskets, check for correct condition. Renew if damaged.
(7)Manhole surround, check that surround is clean and protective treatment is undamaged (Ref.51-75-10, P. Block 801).
(8)Clamp plate/ring securing bolts.
(a)Inspect for deterioration of cadmium coating; flaking, peeling or cracking is unacceptable.
R (b)Inspect the bolt threads and the drive head for correct condition.
R Any damage is unacceptable.
R (9)SPF manhole covers type 21, 22 and 23
R (a)Look for signs of fluid leakage:
R - at the panel side plug

R - at the panel rivnuts.
R If fluid ingress is suspected, you must do the procedure that follows:
R 1 Put the panel in a transparent plastic bag.
R 2 Stand the panel vertically to drain. Leave the panel to drain until:
R - fluid leakage is seen, or
R - for the maximum time available.
R 3 Remove the panel from the transparent plastic bag.
R 4 Clean the panel with cleaning agent (Material No. 11-026).
R 5 Apply sealant (Material No. 09-002):
R - as an overcoat on the rivet heads at all rivnut positions
R - as a fillet seal around the plugs.
R 6 When the sealant is tack-free, install the panel (Ref. 28-11-42,
R P. Block 401).

C. Close-Up
(1)Install manhole cover (Ref.28-11-22, P. Block 401).
(2)Remove access platform.

MANHOLE COVER - BOOSTER PUMP
REMOVAL/INSTALLATION

R WARNING : THIS PROCEDURE USES A FUEL SYSTEM ITEM THAT IS IN A CATEGORY KNOWN AS
R A CRITICAL DESIGN CONFIGURATION CONTROL LIMITATION (CDCCL).
R CDCCL IDENTIFIES AN ITEM THAT CAN BE THE SOURCE OF A POSSIBLE FUEL
R TANK IGNITION. YOU MUST KEEP ALL CDCCL ITEMS IN THE APPROVED
R CONFIGURATION. DAMAGE, WEAR OR CHANGES TO A CDCCL ITEM CAN CAUSE A
R POSSIBLE FUEL TANK EXPLOSION.

R LANDING GEAR - MAKE SURE THAT THE GROUND SAFETIES AND CHOCKS ARE IN
POSITION.

R FLIGHT CONTROLS - MAKE SURE THAT THE GROUND SAFETIES AND NOTICES ARE
R IN POSITION.

R OBEY THE SAFETY PRECAUTIONS IN 28-00-00, P. BLOCK 301, AND 28-10-00,
R P. BLOCK 301.

R MAKE SURE THAT THE FIRE FIGHTING EQUIPMENT IS AVAILABLE AND ADEQUATE.

R MAKE SURE THAT YOU ISOLATE THE ELECTRICAL CIRCUITS UPON WHICH WORK IS
R IN PROGRESS.

1. Equipment and Materials

ITEM	DESIGNATION
A.	Access Platform 8.3 to 13 ft (2.5 to 4 m)
B. 98A57304002001	Manhole Bolt Extraction Tool
C. 98A57304008000	Protective Ring
D.	Lint-free Cloth
E.	Torq-set Driver No.4
F.	Torque Wrench set at: 60-70 lbf.in (0.68 - 0.78 m.daN)
G.	Seal O-ring
H.	Blanks
I.	Circuit Breaker Safety Clips and Tags
J. Material No. 01-001	Fuels (Ref. 20-31-00)
K. Material No. 04-004	Common Greases (Ref. 20-31-00)
L. Material No. 04-013	Common Greases (Ref. 20-31-00)
M. Material No. 09-002	Sealants (Ref. 20-31-00)
N. Material No. 09-007	Sealants (Ref. 20-31-00)
P. Material No. 11-002	Cleaning Agents (Ref. 20-31-00)
Q. Material No. 11-004	Cleaning Agents (Ref. 20-31-00)
R. Material No. 16-006	Structure Paints (Ref. 20-31-00)
Referenced Procedures	
- 12-11-28, P. Block 301	Replenishing of Fuel Tanks
- 20-28-11, P. Block 1	Electrical Bonding
- 28-00-00, P. Block 301	Fuel - General
- 28-00-00, P. Block 601	Fuel - General
- 28-10-00, P. Block 301	Storage

ITEM	DESIGNATION
- 28-21-19, P. Block 501	Booster Pump- Outer Tank
- 28-25-00, P. Block 301	Refuel/Defuel System
- 28-42-00, P. Block 501	Quantity Indicating
- 57-20-41, P. Block 401	Access Panels/Doors

2. Procedure
(Ref. Fig. 401)
(Ref. Fig. 402)

A. Job Set-Up
(1)Transfer fuel from tank or defuel tank (Ref. 28-25-00, P. Block 301) as appropriate.
(2)Open, safety and tag the following circuit breakers:

- For outboard pumps right wing

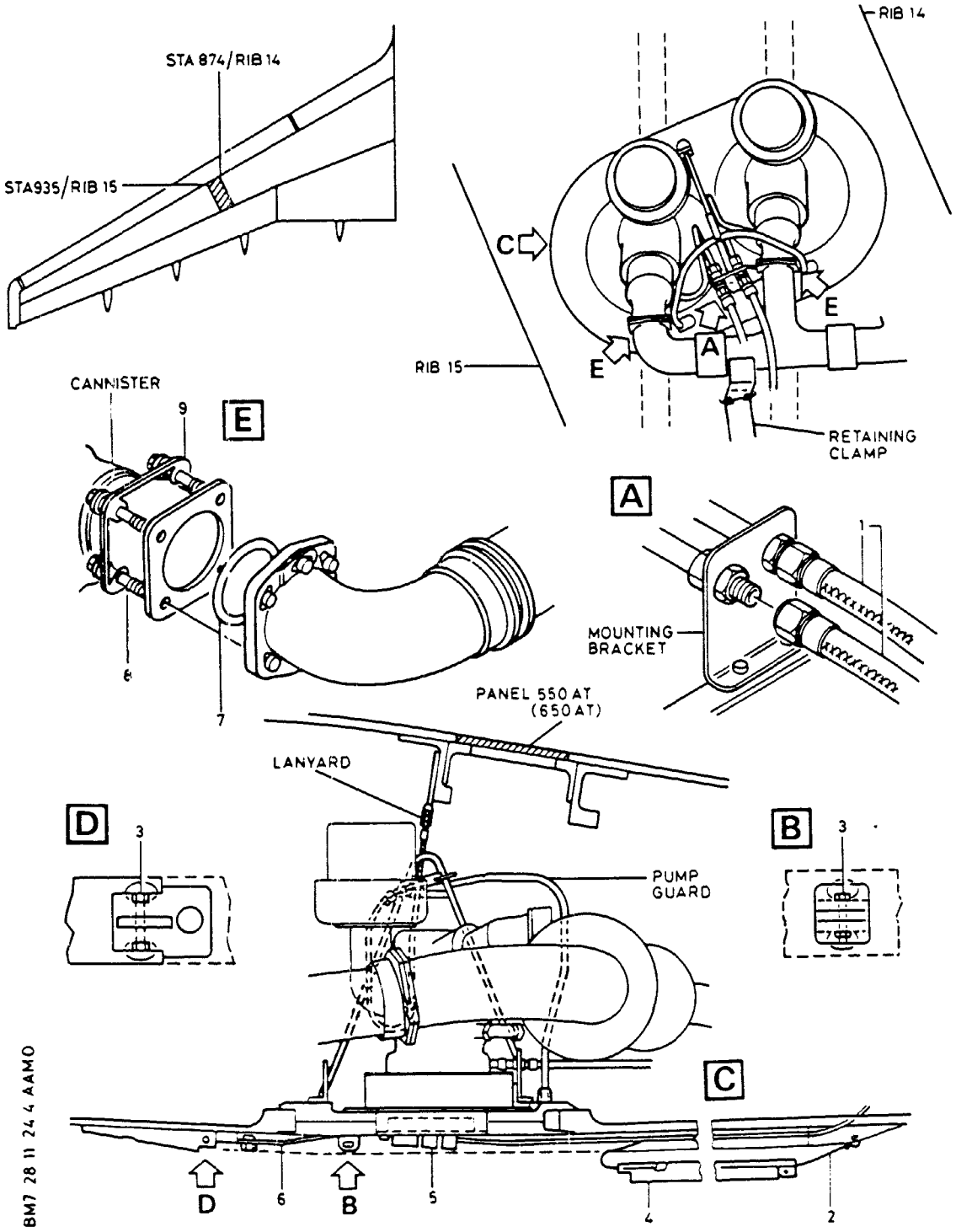
PANEL	SERVICE	IDENT.	LOCATION
22VU	FUEL/L OUTR TK/PUMP 2/L TK/CTL	61QA	201/J15
132VU	FUEL/CTR TK/L/PUMP/CTL	63QA	322/N58
132VU	FUEL/L INR TK/PUMP 1/CTL	69QA	322/N60
132VU	FUEL/L INR TK/PUMP 2/CTL	59QA	323/M61
132VU	FUEL/L OUTR TK/PUMP 1/CTL	67QA	322/N56
132VU	FUEL/X FEED VALVE/MOTOR 1	2QE	324/L60
132VU	FUEL/X FEED VALVE/MOTOR 2	1QE	324/L61
132VU	FUEL/FUELLING/CTL/REFUEL VALVE	1QU	321/P56
132VU	FUEL/FUELLING/XFR VALVE	2QU	321/P55

- For outboard pumps - right wing

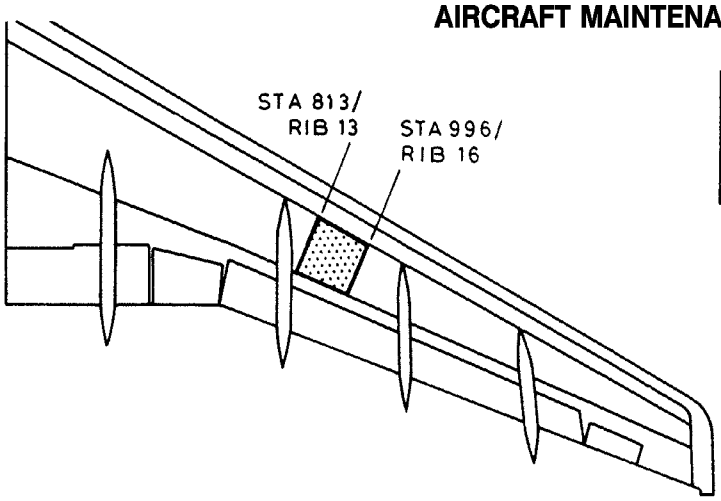
PANEL	SERVICE	IDENT.	LOCATION
22VU	FUEL/R OUTR TK/PUMP 2/R TK/CTL	68QA	201/J18
132VU	FUEL/CTR TK/R/PUMP/CTL	64QA	323/M59
132VU	FUEL/R INR TK/PUMP 1/CTL	60QA	322/N62
132VU	FUEL/R INR TK/PUMP 2/CTL	70QA	323/M63
132VU	FUEL/R OUTR TK/PUMP 1 /CTL	62QA	323/M57
132VU	FUEL/X FEED VALVE/MOTOR 1	2QE	324/L60
132VU	FUEL/X FEED VALVE/MOTOR 2	1QE	324/L61
132VU	FUEL/FUELLING/CTL/REFUEL VALVE	1QU	321/P56
132VU	FUEL/FUELLING/XFR VALVE	2QU	321/P55

(3)Drain residual fuel from tank via water drains (Ref. 28-25-00, P. Block 301)
(4)Position access platform

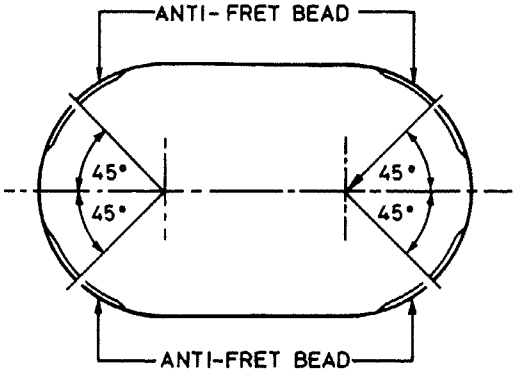
B. Removal
(1)Open access panel 550 (650) AT, (Ref. 57-20-41, P. Block 401).

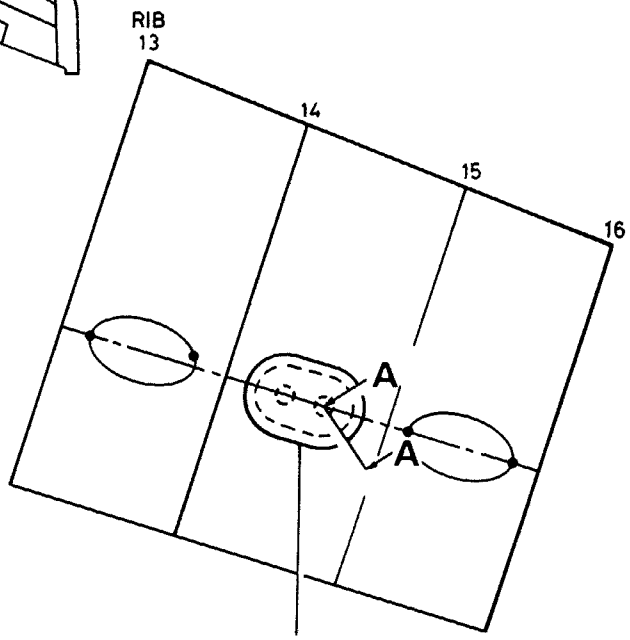


Manhole Cover - Installation
Figure 401

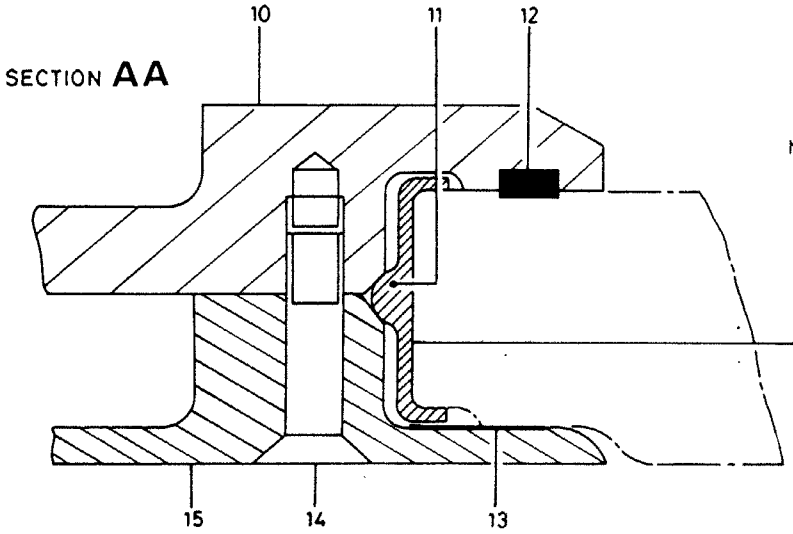


BOLT	INITIAL TORQUE LB F. IN (M.daN)	FINAL TORQUE LB F. IN (M.daN.)
1/4-28UNF THREAD	60-70 (0·678-0·781)	60-70 (0·678-0·781)





550AB
(650AB)
MANHOLE No. 9



PROTECTIVE RING
AFFIX TO SKIN EDGE AROUND MANHOLE. ADHESIVE TOTAL THICKNESS NOT TO EXCEED 0·025in (0·635mm). ADHESIVE APPLIED TO SKIN AND PROTECTIVE RING ON THIS SURFACE ONLY.

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Manhole Cover - Installation
Figure 402

(2)Remove bolts (8) complete with bolt retainers (9), securing fuel feed pipes to booster pump canisters. Separate canisters from pipe flanges and place pipes into retaining clamp. Discard O-ring seals (7) and cap open line ends.
(3)Disconnect pressure switch flexible feed pipes (1) and cap open line ends and unions.
(4)Remove bolts (3) securing fairings (4), covering booster pump electrical supply cables. Disengage fairings and secure rearwards with lanyards (2).
(5)Disconnect bonding strip (6) from wing skin attachment point.
(6)Disconnect electrical connectors (5) from both pumps. Cap pump receptacles and connectors.

(7)CAUTION : WHEN USING MANHOLE BOLT EXTRACTION TOOL TO REMOVE BOLTS, HEAVY PRESSURE MUST BE RELEASED AS SOON AS THE FASTENER STARTS TO TURN. THIS IS TO AVOID DAMAGE TO THE MANHOLE COVER THREAD INSERTS

Remove manhole cover retaining bolts (14), in a diametrically opposite sequence, using the appropriate torq-set driver. If necessary use manhole bolt extraction tool PN98A57304002001. Remove clamp plate (15) and knitted gasket (13),

(8)CAUTION : TAKE CARE THAT CANISTERS AND ASSOCIATED EQUIPMENT ARE NOT DAMAGED DURING REMOVAL OF MANHOLE COVER.

CAUTION : THIS STEP REQUIRES TWO OPERATORS.

Remove the manhole cover (weight 32 lb (14.5 kg)):
(a)Grasp the booster pump guard; accessible through panel 550 (650) AT.
(b)Lift the manhole cover complete with booster pumps, into the tank.
(c)Tilt the manhole cover and pass it down through the manhole.
(d)Support the manhole cover from below and unclip the lanyard from the guard.
(e)Install protective ring PN98A57304008000 to manhole.
(9)Suitably protect removed equipment.

(10)WARNING : DO NOT ENTER A TANK UNTIL IT HAS BEEN PURGED AND/OR CORRECT SAFETY EQUIPMENT IS IN USE.

Purge tank, as necessary, (Ref.28-10-00, P. Block 301).
(11)Check sealing ring (12) for correct condition; if necessary, discard. If ring is discarded, remove all traces of sealant and contamination from manhole cover and flange.
(12)Inspect manhole, manhole cover (10) and thread inserts, clamp plates (15), protective ring (11) and retaining bolts (14).
(13)If manhole cover is to be renewed, remove any items of equipment in accordance with the appropriate maintenance practices.

C. Preparation of Replacement Component

(1)Clean part retained from removed component, check for correct condition and install on replacement component in accordance with the appropriate maintenance practices.

D. Installation

(Ref. Fig. 403)

(1)Do the measurement of the fuel-probe insulation and capacitance with the Gull test set (Ref. 28-42-00, P. Block 501).

NOTE : This procedure is only necessary if you have entered a tank. You may have caused accidental damage to the FQIC equipment. This procedure will show if the equipment continues to be serviceable.

R WARNING : THIS INSTRUCTION IS APPLICABLE TO A CRITICAL DESIGN CONFIGURATION
R CONTROL LIMITATION (CDCCL) ITEM. CAREFULLY OBEY ALL GIVEN
R INSTRUCTIONS WHEN YOU DO THIS STEP. IF YOU DO NOT OBEY THESE
R INSTRUCTIONS, A DANGEROUS CONDITION CAN OCCUR THAT CAN CAUSE A
R POSSIBLE FUEL TANK EXPLOSION.

(2)Do the procedures to inspect the bonding straps on the fuel pipes and the components (Ref. 28-00-00, P. Block 601). Inspect all the areas of the tank(s) you can access before you install the manhole cover(s).

(3)Make sure that the inside of the tank is clean and clear of tools and miscellaneous items of equipment.

(4)If a replacement protective ring (11) is to be installed, clean the skin edge around the manhole with cleaning agent (Material No. 11-004).

(5)Apply sealant (Material No. 09-002) to the protective ring (11) and attach the protective ring (11) to the manhole.

(6)If a replacement sealing ring (12) is to be installed, remove all signs of grease from the sealing-ring groove of the manhole cover with a soft lint-free cloth moistened with cleaning agent (Material No. 11-002).

CAUTION : TAKE CARE WHEN YOU INSTALL A SEAL; DO NOT MOVE IT AROUND THE GROOVE WITH THE FINGER TIPS AS THIS CAN STRETCH THE SEAL AND CAUSE LEAKS.

(7)Apply the sealant (Material No. 09-007) to the sealing ring (12) groove in the manhole cover and install a new sealing ring (12) with the sealant wet. Let the sealant dry for fifteen minutes.

(8)Remove the protective ring PN 98A57304008000.

(9)Clean the interfaces of the manhole, the manhole cover (10), the clamp plate (15) and the knitted gasket (13) with a lint-free cloth and cleaning agent (Material No. 11-002).

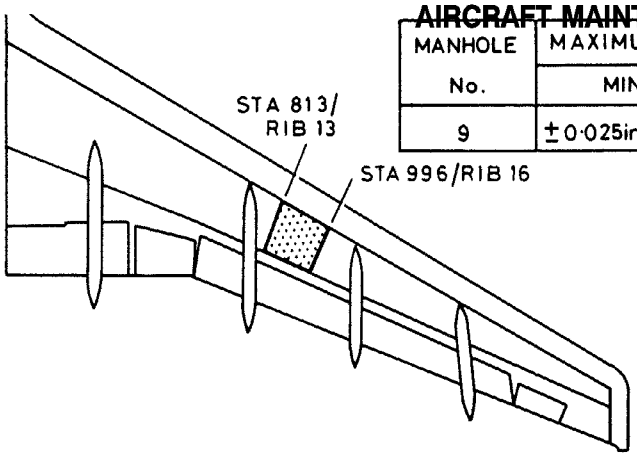
(10)Soak the knitted gasket (13) with grease (Material No. 04-013). Do not get grease in the bolt holes. Attach the knitted gasket (13) to the clamp plate (15).

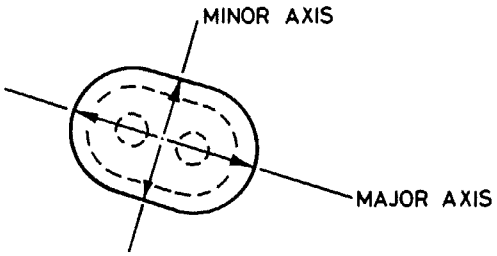
(11)For a new knitted gasket (13):

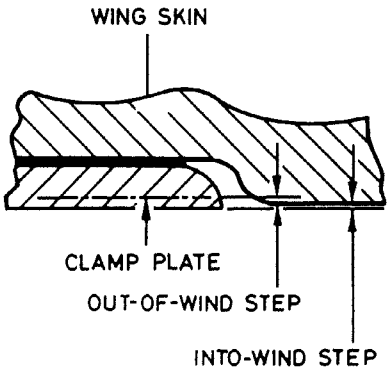
(a)Put the gasket carrier tray on a flat surface, package side up.

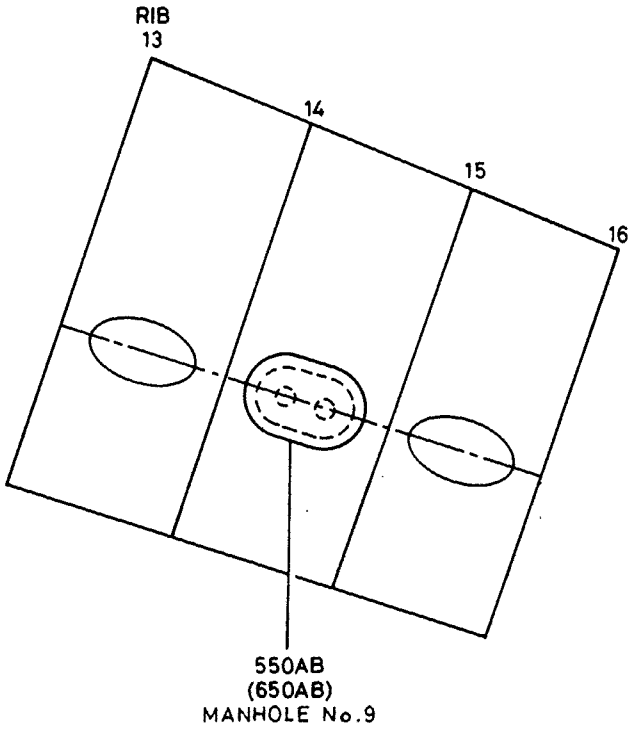
(b)Remove the paper cover from the carrier tray and put the clamp plate

MANHOLE No.	MAXIMUM INTO OR OUT-OF-WIND STEP AT CLAMP PLATE	
	MINOR AXIS	MAJOR AXIS
9	±0·025in (0·64 mm)	± 0·045in (1·14mm)









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Into and Out-of-Wind Limits
Figure 403

(15) over the knitted gasket (13), so that the bolt holes align.
(c)Push the clamp plate (15) tightly into contact with the knitted gasket (13). Then remove the clamp plate (15) and the release strip from the carrier tray as one unit. Remove the release strip from the knitted gasket (13).
(12)Apply a layer of grease (Material No. 04-004) along the full length of the retaining bolts (14).

CAUTION : THIS STEP REQUIRES TWO PERSONNEL.

(13)Install the manhole cover:
(a)Hold the manhole cover below the wing.
(b)Attach the lanyard to the guard.
(c)Get access through panel 550(650) AT and hold the guard on the manhole cover.

CAUTION : DO NOT SLIDE THE MANHOLE COVER, THIS CAN DAMAGE THE SEAL.

(d)Lift and tilt the manhole cover into position from above and below the wing.
(14)Put the clamp plate (15), complete with the knitted gasket (13), in position to align with the bolt holes in the manhole cover (10).
(15)Make sure that the bolt holes in the manhole cover (10) are clear of too much grease.
(16)Install and engage the threads of all the retaining bolts (14). Gradually tighten the bolts (14) in a diagonally opposite sequence (Ref. Fig. 402).
(17)Do a check of the into and out-of-wind limits (Ref. Fig. 403).
(18)Remove the caps from the pump receptacles and the connectors. Connect the electrical connectors (5) to the two pumps.

R WARNING : THIS INSTRUCTION IS APPLICABLE TO A CRITICAL DESIGN CONFIGURATION
R CONTROL LIMITATION (CDCCL) ITEM. CAREFULLY OBEY ALL GIVEN
R INSTRUCTIONS WHEN YOU DO THIS STEP. IF YOU DO NOT OBEY THESE
R INSTRUCTIONS, A DANGEROUS CONDITION CAN OCCUR THAT CAN CAUSE A
R POSSIBLE FUEL TANK EXPLOSION.

(19)Attach the bonding strap (6) for the manhole cover to the attachment point on the wing skin (Ref. 20-28-11, P. Block 1).
(20)Disconnect the lanyards (2) and attach the fairings (4), which cover the electrical supply cables of the booster pump, with the bolts (3).
(21)Connect the flexible feed-pipes (1) of the pressure switch to the unions attached to the mounting bracket on the manhole cover.
(22)Lubricate the O-ring seals (7) with fuel (Material No. 01-001). Uncap the open line ends and put the O-ring seals (7) in position on the outlet pipes of the booster pump. Install the bolt retainers (9), complete with the bolts (8) onto the canister elbow.
(23)Paint the bolt heads and tails with structure paint (Material No. 16-006).

R WARNING : THIS INSTRUCTION IS APPLICABLE TO A CRITICAL DESIGN CONFIGURATION
R CONTROL LIMITATION (CDCCL) ITEM. CAREFULLY OBEY ALL GIVEN
R INSTRUCTIONS WHEN YOU DO THIS STEP. IF YOU DO NOT OBEY THESE
R INSTRUCTIONS, A DANGEROUS CONDITION CAN OCCUR THAT CAN CAUSE A
R POSSIBLE FUEL TANK EXPLOSION.

(24)Do a bonding check between the clamp plate (15) and the wing skin (Ref. 20-28-11, P. Block 1).
(25)Close the access panel 550 (650) AT, (Ref. 57-20-41, P. Block 401).
(26)Remove the safety clips and tags and close the circuit breakers that follow:
- for the outboard pumps - left wing 61QA, 63QA, 69QA, 59QA, 67QA, 2QE, 1QE, 1QU and 2QU
- for the outboard pumps - right wing 68QA, 64QA, 60QA, 70QA, 62QA, 2QE, 1QE, 1QU and 2QU.

E. Test
(1)Transfer the fuel to the tank (Ref. 28-25-00, P. Block 301) or refuel the tank (Ref. 12-11-28, P. Block 301), as applicable, until the manhole cover is covered with fuel.
(2)Examine the manhole cover for external leaks.
(3)Do the Operational Test of the booster pump (Ref. 28-21-19, P. Block 501).

F. Close-Up
(1)Refuel, defuel or transfer the fuel to get the required fuel load (Ref. 12-11-28 or 28-25-00, P. Block 301).
(2)Make sure that the work area is clean and clear of tools and miscellaneous items of equipment.
(3)Remove the access platform.
(4)Remove all ground support and maintenance equipment, standard and special tools, all access equipment and miscellaneous items.

MANHOLE COVER, OUTBOARD PUMPS
- INSPECTION/CHECK

WARNING : LANDING GEAR - MAKE CERTAIN GROUND SAFETIES AND CHOCKS ARE IN POSITION.

FLIGHT CONTROLS - MAKE CERTAIN GROUND SAFETIES AND NOTICES ARE IN POSITION.

OBSERVE THE SAFETY PRECAUTIONS IN 28-00-00, P. BLOCK 301.

MAKE CERTAIN THAT FIRE FIGHTING EQUIPMENT IS AVAILABLE AND ADEQUATE.

BEFORE POWER IS SUPPLIED TO THE AIRCRAFT MAKE CERTAIN THAT ELECTRICAL CIRCUITS UPON WHICH WORK IS IN PROGRESS ARE ISOLATED.

1. Reason for the Job

A. Inspection of manhole cover, clamp plate, knitted gasket, protective ring, securing bolts and manhole surround.

2. Equipment and Materials

ITEM	DESIGNATION
Referenced Procedures	
- 28-00-00, P. Block 301	Safety Precautions
- 28-11-24, P. Block 401	Manhole Cover, Outboard Pumps
- 52-12-00, P. Block 801	Paint Coatings

C. Job Close-Up
(1)Install manhole cover (Ref.28-11-24, P. Block 401).

3. Procedure

A. Job Set-Up
(1)Position access platform.
(2)Remove manhole cover (Ref.28-11-24, P. Block 401).

B. Inspection
(1)Manhole cover.
(a)Check that cover is clean, undamaged and free from corrosion (Ref. 51-12-00, P. Block 801 for paint repairs).
(b)Check that thread inserts are secure and unbroken.
(2)Clamp plate.
(a)Check that plate is clean, undamaged and free from corrosion (Ref. 51-12-00, P. Block 801 for paint repairs).
(3)Knitted gasket:- Check for correct condition and renew if damaged.
(4)Protective ring:- check that ring is not torn or damaged and that it is firmly adhered to the manhole flange.
(5)Manhole surround:- check that surround is clean and protective treatment is undamaged (Ref.51-12-00, P. Block 801 for paint

repairs).
(6)Manhole cover and clamp securing bolts.
(a)Inspect for deterioration of cadmium coating; flaking, peeling or cracking is unacceptable.
(b)Inspect bolt threads and drive heads; damage is unacceptable.

C. Job Close-Up
(1)Install manhole cover (Ref. 28-11-24, P. Block 401).

FLAP VALVES - RIB 2 - REMOVAL/INSTALLATION

WARNING : LANDING GEAR - MAKE CERTAIN GROUND SAFETIES AND WHEEL CHOCKS ARE IN POSITION

FLIGHT CONTROLS - MAKE CERTAIN THAT GROUND SAFETIES AND NOTICES ARE IN POSITION

MAKE CERTAIN THAT FIRE FIGHTING EQUIPMENT IS AVAILABLE AND ADEQUATE.

BEFORE AND DURING MAINTENANCE OPERATIONS TO BE UNDERTAKEN INSIDE A FUEL TANK, THE PRESCRIBED SAFETY PRECAUTONS MUST BE RIGOROUSLY OBSERVED (REF. 28-00-00, P. BLOCK 301 AND 28-10-00, P. BLOCK 301).

BEFORE POWER IS SUPPLIED TO THE AIRCRAFT MAKE CERTAIN THAT ELECTRICAL CIRCUITS UPON WHICH WORK IS IN PROGRESS ARE ISOLATED.

1. Equipment and Materials

ITEM	DESIGNATION
A.	Access Platform (4.5 m) (15 ft)
B.	Cotter Pins
C. Material No. 09-005	Sealants (Ref. 20-31-00)
D. Material No. 09-017	Sealants (Ref. 20-31-00)
Referenced Procedures	
- 28-00-00, P. Block 301	Fuel - General
- 28-10-00, P. Block 301	Storage
- 28-11-22, P. Block 401	Manhole Covers (Wings)
- 51-76-10, P. Block 801	Repair of Sealing

2. Procedure

A. Job Set-Up

(1)Position access platform.

R (2)Remove the manhole cover 540(640)AB (Ref. 28-11-22, P. Block 401).

R (3)Get access to the flap valves through the cut-out in STA67/RIB 2.

B. Removal

(Ref. Fig. 401)

(1)Flap valve

R (a)Remove one cotter-pin (4) and collar (3).

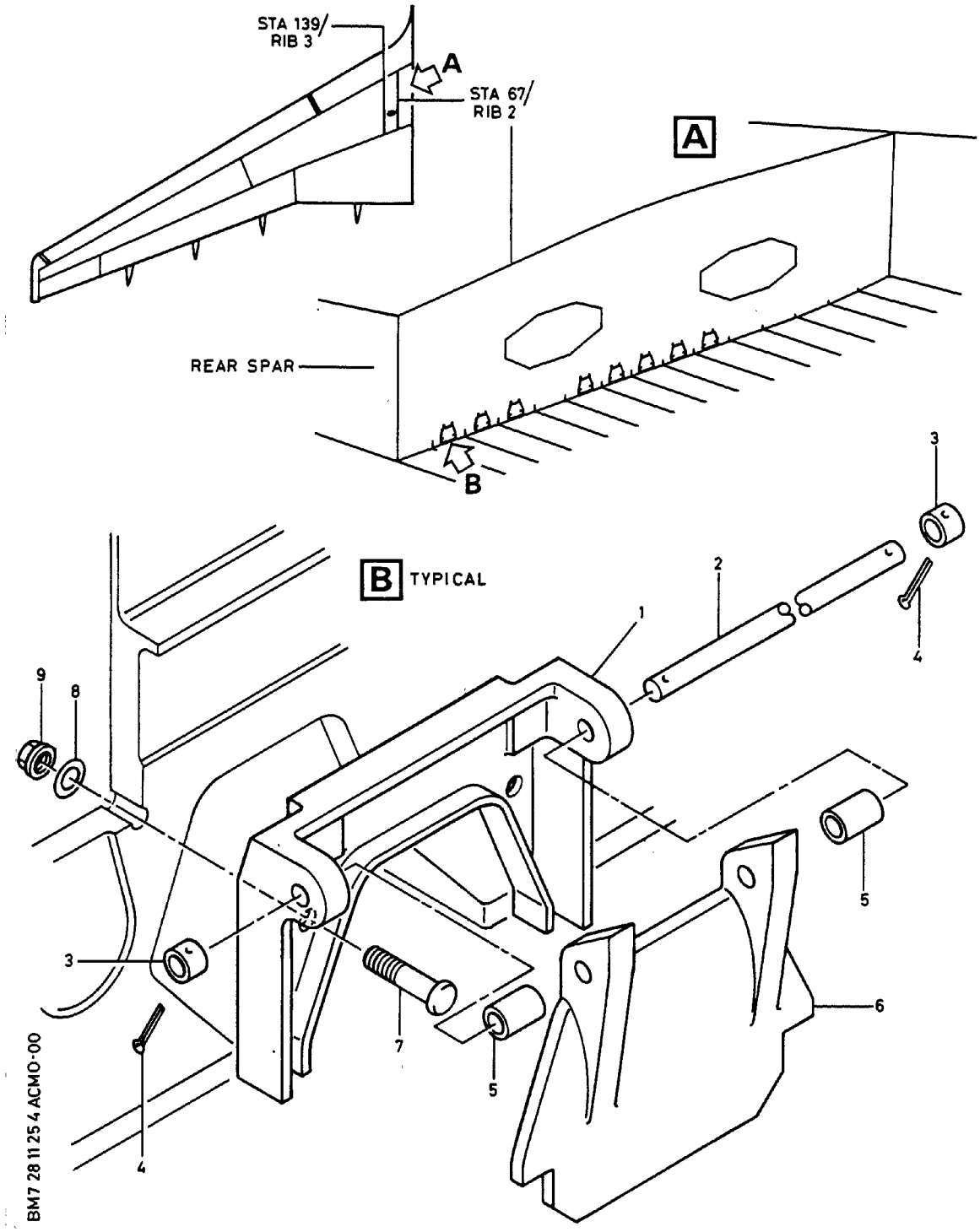
R (b)Remove the spindle (2) and remove the valve (6). Keep the distance tubes (5).

R (c)If necessary, remove the remaining cotter-pin (4) and collar (3) from the spindle (2).

(2)Seating

R (a)Remove the two nuts (9), the washers (8) and the bolts (7), and remove the seating (1).

R (b)Clean and inspect the component interface and the adjacent area.



Flap Valves - Rib 2 - Installation
Figure 401

C. Installation

R NOTE : Replacement seatings and valves can be filed to clear adjacent
R structure and/or structure nuts and bolts. Deburr after you file.

(1)Seating
R (a)Apply sealant (Material No. 09-005) to the interfaying surfaces of the
R rib and the seating (1) (Ref. 51-76-10, P. Block 801), and install the
R seating. Secure with the bolts (7), the washers (8) and the nuts (9).
R (b)Apply sealant (Material No. 09-017) on the nuts and the bolt heads
R (Ref. 51-76-10, P. Block 801).
(2)Flap valve
R (a)Put the valve (6) in position against the seating (1) and insert the
R spindle (2), together with the distance tubes (5).
R (b)Install the collars (3) and insert, but do not bend over the cotter-
R pins (4).

D. Test
R (1)Make sure that the valve (6) is free to pivot on the spindle (2), and
R that the valve drops freely onto the contact face of the valve seat (1).

E. Close-Up
R (1)Safety the cotter-pins (4).
R (2)Make sure that the work area is clean and clear of tools and all other
R items of equipment.
R (3)Install the manhole cover 540(640)AB (Ref. 28-11-22, P. Block 401).
R (4)Remove the access platform.

FLAP VALVE RIB 15 - REMOVAL/INSTALLATION

R **WARNING:** LANDING GEAR - MAKE CERTAIN GROUND SAFETIES AND WHEEL CHOCKS
R ARE IN POSITION.

R FLIGHT CONTROLS - MAKE CERTAIN THAT GROUND SAFETIES AND NOTICES
R ARE IN POSITION.

MAKE CERTAIN THAT FIRE FIGHTING EQUIPMENT IS AVAILABLE AND ADEQUATE.

R BEFORE AND DURING MAINTENANCE OPERATIONS TO BE UNDERTAKEN INSIDE
R A FUEL TANK, THE PRESCRIBED SAFETY PRECAUTIONS MUST BE RIGOROUSLY
R OBSERVED (REF. 28-00-00, P. BLOCK 301 AND 28-10-00, P. BLOCK 301).

R BEFORE POWER IS SUPPLIED TO THE AIRCRAFT MAKE CERTAIN THAT
R ELECTRICAL CIRCUITS UPON WHICH WORK IS IN PROGRESS ARE ISOLATED.

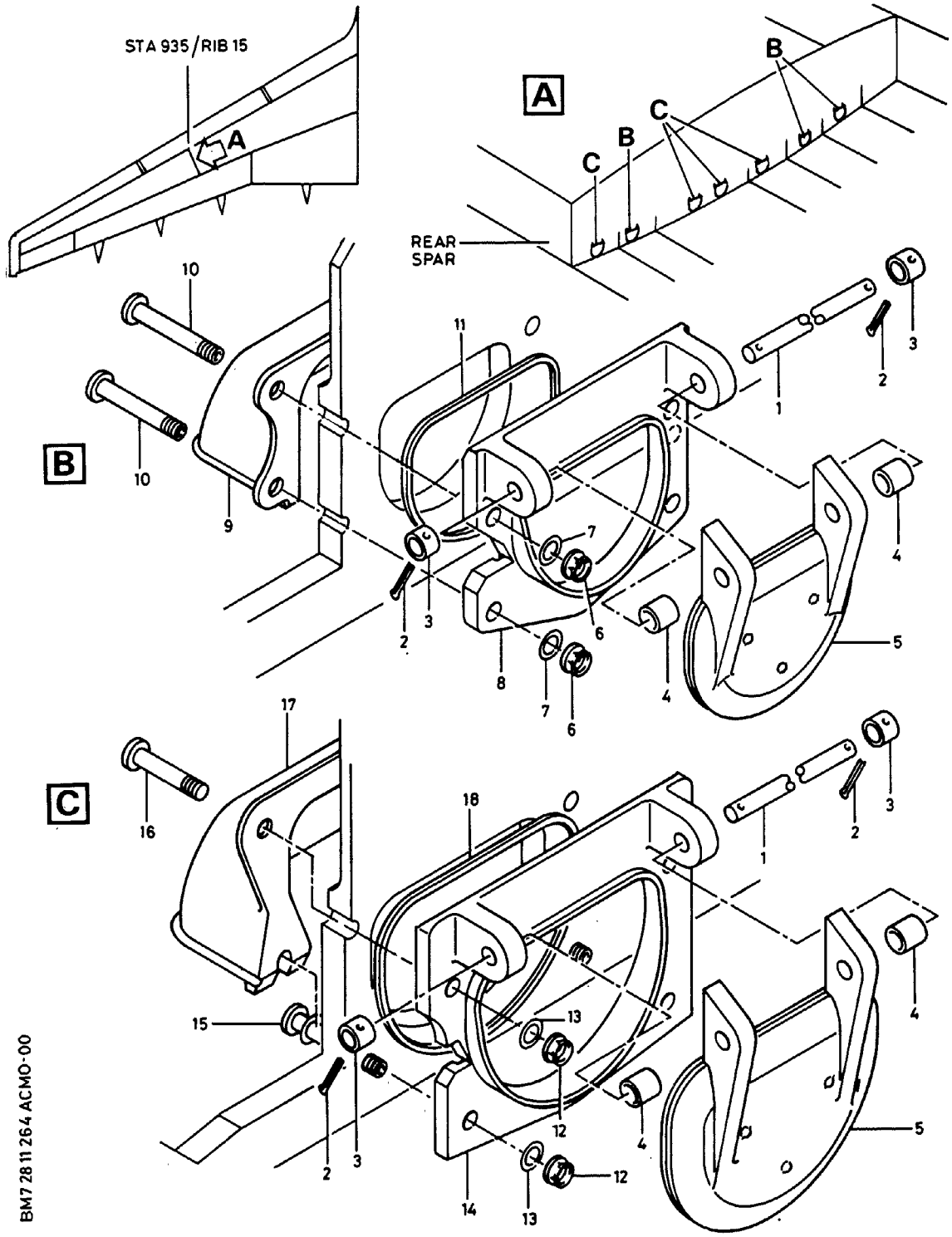
1. Equipment and Materials

ITEM	DESIGNATION
A.	Access Platform (4.5 m) (15 ft)
B.	O-ring Seal
C.	O-ring Seal
D.	Cotter Pins
E. Material No. 09-005	Sealants (Ref. 20-31-00)
F. Material No. 09-017	Sealants (Ref. 20-31-00)
G. Material No. 01-001	Fuels (Ref. 20-31-00)
Referenced Procedures	
- 28-00-00, P. Block 301	Fuel - General
- 28-10-00, P. Block 301	Fuel Storage
- 28-11-22, P. Block 401	Manhole Covers (Wing)
- 28-11-24, P. Block 401	Manhole Cover, Booster Pumps
- 51-76-10, P. Block 801	Repair of Sealing

2. Procedure

A. Job Set-Up
(1)Position access platform.
(2)For flap valves (5) only, remove manhole cover 550(650)AB (Ref. 28-11-24, P. Block 401).
R (3)For hoods (9) and (17) and seatings (8) and (14), remove manhole
R cover 550AB (650AB) Ref. 28-11-24, P. Block 401) and manhole cover
R 550BB (650BB) (Ref. 28-11-22, P. Block 401).

B. Removal
(Ref. Fig. 401)
(1)Flap valves (5):
(a)Remove one cotter pin (2) and collar (3).
(b)Withdraw spindle (1) and remove valve (5). Collect distance tubes



Flap Valves - Rib 15 - Installation
Figure 401

(4).
(c)If necessary, remove remaining cotter pin (2) and collar (3) from spindle (1).
(2)Seating (8) and hood (9):
(a)Remove four nuts (6) washers (7) and bolts (10).
(b)Remove seating (8) and hood (9). Discard O-ring seal (11).
(c)Clean and inspect component interface and adjacent area.
(3)Seating (14) and hood (17):
(a)Remove four nuts (12) and washers (13), and two bolts (16).
(b)Remove seating (14). Discard O-ring seal (18).
(c)Remove hood (17), leaving two bolts (15) in position.
(d)Clean and inspect component interface and adjacent area.

C. Installation
(1)Seating (8) and hood (9):
R (a)Lubricate the new O-ring seal (11) with fuel (Material No. 01-001) and
R put in position on the seating (8).
R (b)Apply sealant (Material No. 09-005) at the interface of the hood (9)
R and Rib 15 (Ref. 51-76-10, P. Block 801).
R (c)Put the seating (8) and the hood (9) in position and install the bolts
R (10), the washers (7) and the nuts (6). Apply sealant (Material
R No. 09-017) to the nuts (6) and the heads of the bolts (10),
R (Ref. 57-76-10, P. Block 801).
(2)Seating (14) and hood (17)
R (a)Apply sealant (Material No. 09-005) at the interface of the hood (17)
R and Rib 15 (Ref. 51-76-10, P. Block 801).
R (b)Make sure that the washers on the two bolts (15) are against the heads
R of the bolts, then install the hood (17). Install the two bolts (16).
R (c)Lubricate the new O-ring seal (18) with fuel (Material No. 01-001) and
R put in position on the seating (14).
R (d)Put the seating (14) in position and install the washers (13) and the
R nuts (12).
R (e)Apply sealant (Material No. 09-017) to the nuts (12) and the heads of
R nuts (12) (Ref. 51-76-10, P. Block 801).
(3)Flap valves (5):
R (a)Put the valve (5) against the seating (8) or (14) and install the
R spindle (1) together with the distance tubes (4).
R (b)Put the collars (3) in position and install, but do not bend over the
R cotter-pin (2).

D. Test
R (1)Make sure that the valve (5) is free to pivot on the spindle (1), and
R that the valve drops freely onto the contact face of the valve seatings
R (8) and/or (14).

E. Close-Up
R (1)Safety the cotter-pins (2).
R (2)Make sure that the work area is clean and clear of tools and all other
R items of equipment.
R (3)Install the manhole covers 550AB(650AB) (Ref. 28-11-22, P. Block 401)

R and 550BB(650BB) (Ref. 28-11-24, P. Block 401).
R (4)Remove the access platform.

OVERWING REFUEL ADAPTOR - REMOVAL/INSTALLATION

WARNING: LANDING GEAR - MAKE SURE THAT THE GROUND SAFETY LOCKS AND THE CHOCKS ARE IN POSITION.

FLIGHT CONTROLS - MAKE SURE THAT THE GROUND SAFETY LOCKS AND THE WARNING NOTICES ARE IN POSITION.

YOU MUST OBEY THE SAFETY PRECAUTIONS IN 28-00-00, P. BLOCK 301.

MAKE SURE THAT YOU HAVE THE CORRECT FIRE FIGHTING EQUIPMENT AVAILABLE.

1. Equipment and Materials

ITEM	DESIGNATION
A.	Access Platform, Adjustable 4 m (13 ft)
B.	Cotter Pins
C. 98A28104029000	Spanner, Overwing Adaptor
D.	Circuit Breaker Safety Clips and Tags
R E. Material No. 09-018	Sealant (Ref. 20-31-00)
Referenced Procedures	
- 28-11-22, P. Block 401	Manhole Covers
- 28-25-00, P. Block 301	Refuel/Defuel

2. Procedure

(Ref. Fig. 401)

A. Job Set-up

(1) Defuel or transfer fuel from the applicable wing tank (Ref. 28-25-00, P. Block 301).

(2) Open, safety and tag the circuit breakers that follow:

PANEL	SERVICE	IDENT.	LOCATION
101VU	FUEL/L INNER TK/PUMP 2/SUPPLY	1QA	ESS/B01
101VU	FUEL/R INNER TK/PUMP 1/SUPPLY	2QA	ESS/A01
101VU	FUEL/L OUTR TK/PUMP 2/SUPPLY	3QA	GEN1/A20
101VU	FUEL/R OUTR TK/PUMP 1/SUPPLY	4QA	GEN1/A14
101VU	FUEL/L OUTR TK/PUMP 1/SUPPLY	5QA	GEN2/A17
101VU	FUEL/R OUTR TK/PUMP 2/SUPPLY	6QA	GEN2/B02
101VU	FUEL/L INNER TK/PUMP 1/SUPPLY	7QA	GEN2/A23
101VU	FUEL/R INNER TK/PUMP 2/SUPPLY	8QA	GEN2/A20
132VU	FUEL/L INNER TK/PUMP 2/CTL	59QA	323/M61
132VU	FUEL/R INNER TK/PUMP 1/CTL	60QA	322/N62
22VU	FUEL/L OUTR TK/PUMP 2/CTL	61QA	201/J15
132VU	FUEL/R OUTR TK/PUMP 1/CTL	62QA	323/M57
132VU	FUEL/L OUTR TK/PUMP 1/CTL	67QA	322/N56
22VU	FUEL/R OUTR TK/PUMP 2/CTL	68QA	201/J18
132VU	FUEL/L INNER TK/PUMP 1/CTL	69QA	322/N60

PANEL	SERVICE	IDENT.	LOCATION
132VU	FUEL/R INNER TK/PUMP 2/CTL	70QA	323/M63

(3)Put the access platform 4 m (13 ft) in position.
(4)Remove the applicable access panel (Ref. 28-11-22, P. Block 401):
FOR 280352,
- remove 540HB

FOR 280356,
- remove 550PB

FOR 280354,
- remove 640HB

FOR 280358,
- remove 650PB.

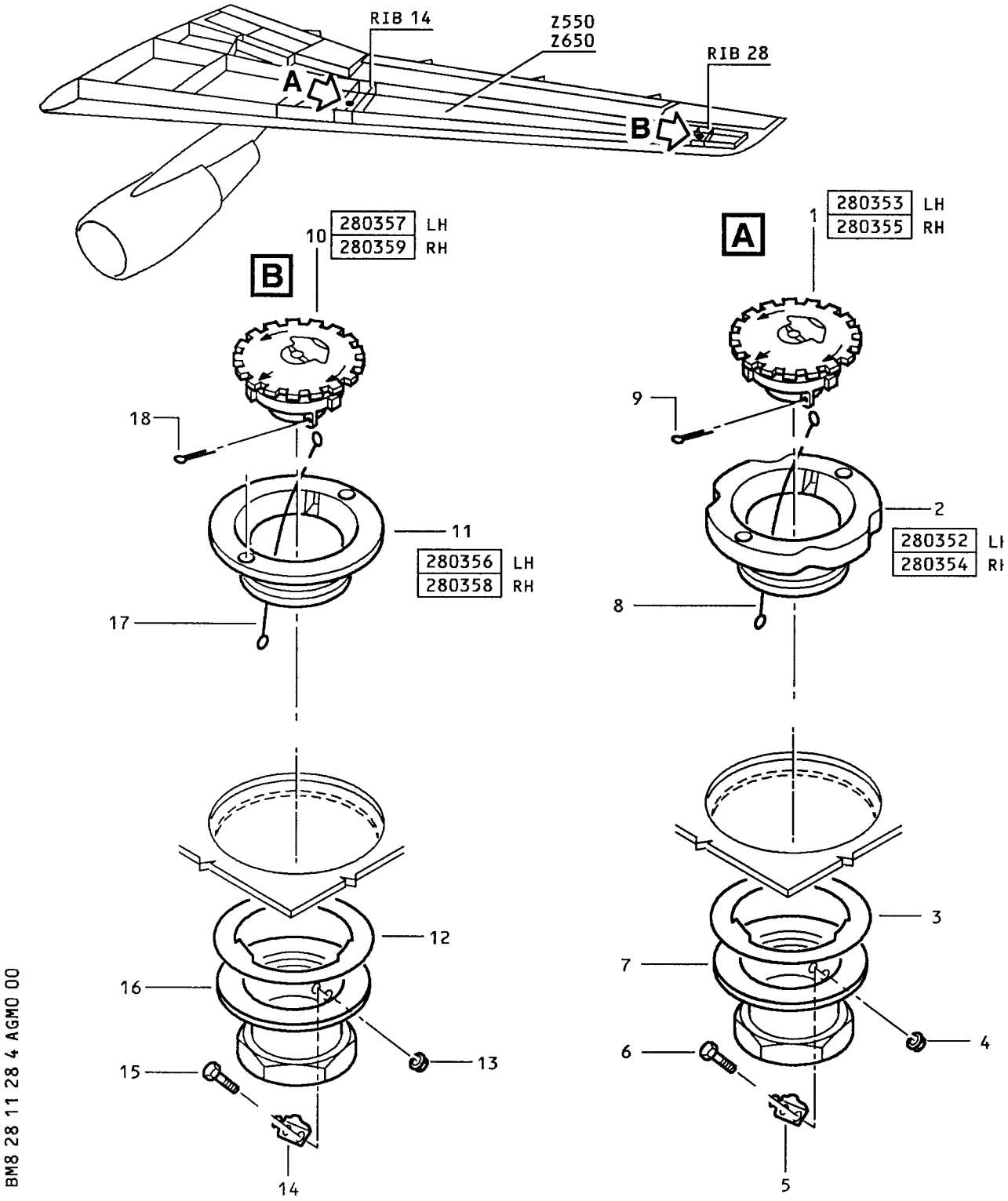
B. Removal
FOR 280353, 280355
(1)Release the refuel cap (1).
(2)Remove and discard the cotter pin (9). Remove the lanyard (8) from the refuel cap (1).
(3)Remove the refuel cap 280353(280355) (1).

FOR 280357, 280359
(4)Release the refuel cap (10).
(5)Remove and discard the cotter pin (18). Remove the lanyard (17) from the refuel cap (10).
(6)Remove the refuel cap 280357(280359) (10).

FOR 280352, 280354
(7)Remove the nut (7) from the adaptor (2) with the SPANNER-OVERWING
R FILLER (PN 98A28104029000).
(8)Remove the lanyard (8) from the lanyard lug (5).
(9)Remove the nuts (4) and the bolts (6). Remove the lanyard lug (5) from the nut (7).
(10)Remove the washer (3) from the adaptor (2).
(11)Remove the overwing refuel adaptor 280352(280354) (2).

FOR 280356, 280358
(12)Remove the nut (16) from the adaptor (11) with the SPANNER-OVERWING
R FILLER (PN 98A28104029000).
(13)Remove the lanyard (17) from the lanyard lug (14).
(14)Remove the nuts (13) and the bolts (15). Remove the lanyard lug (14) from the nut (16).
(15)Remove the washer (12) from the adaptor (11).
(16)Remove the overwing refuel adaptor 280356(280358) (11).

C. Preparation for Installation



Overwing Refuel Coupling - Location and Detail
Figure 401

(1)Make sure that the parts retained from the removed component are clean and in the correct condition.
(2)Clean the component interfaces and/or the adjacent area.
(3)Inspect the component interfaces and/or the adjacent area for damage and corrosion.

D. Installation

FOR 280356, 280358

(1)Put the lanyard lug (14) in position on the nut (16).
(2)Install the bolts (15) and the nuts (13).
(3)Seal the bolts (15) and the nuts (13) with sealant (Material No. 09-018).
R (4)Apply sealant (Material No. 09-018) to:
- the interface of the adaptor (11) and the wing surface
- the threads of the adaptor (11).
(5)Install the adaptor (11).
(6)Make sure that the sealant makes a continuous surface between the adaptor (11) and the two sides of the upper wing surface.
(7)Make sure that the adaptor (11) does not move when you install the nut (16). Install the washer (12) and the nut (16).
(8)Install the SPANNER-OVERWING ADAPTOR (PN 98A28104029000) on the nut (16).
(9)TORQUE the nut (16) to between 500 and 700 lbf in. (5.64 and 7.91 m.daN).
(10)Remove the SPANNER-OVERWING ADAPTOR.
(11)Make sure that the sealant has come through the witness holes in the nut (16).

FOR 280352, 280354

(12)Put the lanyard lug (5) in position on the nut (7).
(13)Install the bolts (6) and the nuts (4).
(14)Seal the bolts (6) and the nuts (4) with sealant (Material No. 09-018).
R (15)Apply sealant (Material No. 09-018) to:
- the interface of the adaptor (2) and the wing surface
- the threads of the adaptor (2).
(16)Install the adaptor (2).
(17)Make sure that the sealant makes a continuous surface between the adaptor (2) and the two sides of the upper wing surface.
(18)Make sure that the adaptor (2) does not move when you install the nut (7). Install the washer (3) and the nut (7).
(19)Install the SPANNER-OVERWING ADAPTOR (PN 98A28104029000) on the nut (7).
(20)TORQUE the nut (7) to between 500 and 700 lbf in. (5.64 and 7.91 m.daN).
(21)Remove the SPANNER-OVERWING ADAPTOR.
(22)Make sure that the sealant has come through the witness holes in the nut (7).

FOR 280357, 280359

(23)Install the lanyard (17) on the lanyard lug (14).
(24)Put the lanyard (17) in position on the refuel cap (10).
(25)Install a new cotter pin (18).

R (26)Install the refuel cap (10) in the adaptor (11). Make sure that the FWD
R arrow on the refuel cap (10) points forward, in the line of flight.

FOR 280353, 280355
R (27)Install the lanyard (8) on the lanyard lug (5).
R (28)Put the lanyard (8) in position on the refuel cap (1).
R (29)Install a new cotter pin (9).
R (30)Install the refuel cap (1) in the adaptor (2). Make sure that the FWD
R arrow on the refuel cap (1) points forward, in the line of flight.

E. Close-up
(1)Make sure that the work area is clean and clear of tools and other items.
(2)Install the applicable access panel (Ref. 28-11-22, P. Block 401):
FOR 280352
- install 540HB

FOR 280356
- install 550PB

FOR 280354
- install 640HB

FOR 280358
- install 650PB.

(3)Remove the safety clips and tags and close the circuit breakers that follow:

PANEL	SERVICE	IDENT.	LOCATION
101VU	FUEL/L INNER TK/PUMP 2/SUPPLY	1QA	ESS/B01
101VU	FUEL/R INNER TK/PUMP 1/SUPPLY	2QA	ESS/A01
101VU	FUEL/L OUTR TK/PUMP 2/SUPPLY	3QA	GEN1/A20
101VU	FUEL/R OUTR TK/PUMP 1/SUPPLY	4QA	GEN1/A14
101VU	FUEL/L OUTR TK/PUMP 1/SUPPLY	5QA	GEN2/A17
101VU	FUEL/R OUTR TK/PUMP 2/SUPPLY	6QA	GEN2/B02
101VU	FUEL/L INNER TK/PUMP 1/SUPPLY	7QA	GEN2/A23
101VU	FUEL/R INNER TK/PUMP 2/SUPPLY	8QA	GEN2/A20
132VU	FUEL/L INNER TK/PUMP 2/CTL	59QA	323/M61
132VU	FUEL/R INNER TK/PUMP 1/CTL	60QA	322/N62
22VU	FUEL/L OUTR TK/PUMP 2/CTL	61QA	201/J15
132VU	FUEL/R OUTR TK/PUMP 1/CTL	62QA	323/M57
132VU	FUEL/L OUTR TK/PUMP 1/CTL	67QA	322/N56
22VU	FUEL/R OUTR TK/PUMP 2/CTL	68QA	201/J18
132VU	FUEL/L INNER TK/PUMP 1/CTL	69QA	322/N60
132VU	FUEL/R INNER TK/PUMP 2/CTL	70QA	323/M63

(4)Remove the access platform.
(5)Remove the ground support and the maintenance equipment, the special and standard tools and all other items.

CENTER TANK MANHOLE COVER (147AZ, 148AZ) - REMOVAL/INSTALLATION

R

R WARNING : BEFORE PROCEEDING WITH MAINTENANCE WORK NEAR LANDING GEAR DOORS, MAKE
R CERTAIN THAT LANDING GEAR SAFETIES INCLUDING WHEEL CHOCKS ARE IN
R POSITION.
R BEFORE UNDERTAKING MAINTENANCE OPERATIONS ON THE FUEL SYSTEM, MAKE
R CERTAIN THAT FIRE FIGHTING EQUIPMENT IS READILY AVAILABLE AND IN
R PROXIMITY TO WORKING AREA.
R OBSERVE THE SAFETY PRECAUTIONS PRESCRIBED IN 28-00-00, P. BLOCK 301.
R BEFORE POWER IS SUPPLIED TO THE AIRCRAFT MAKE CERTAIN THAT ELECTRICAL
R CIRCUITS UPON WHICH WORK IS IN PROGRESS ARE ISOLATED.

**ON A/C 001-100,

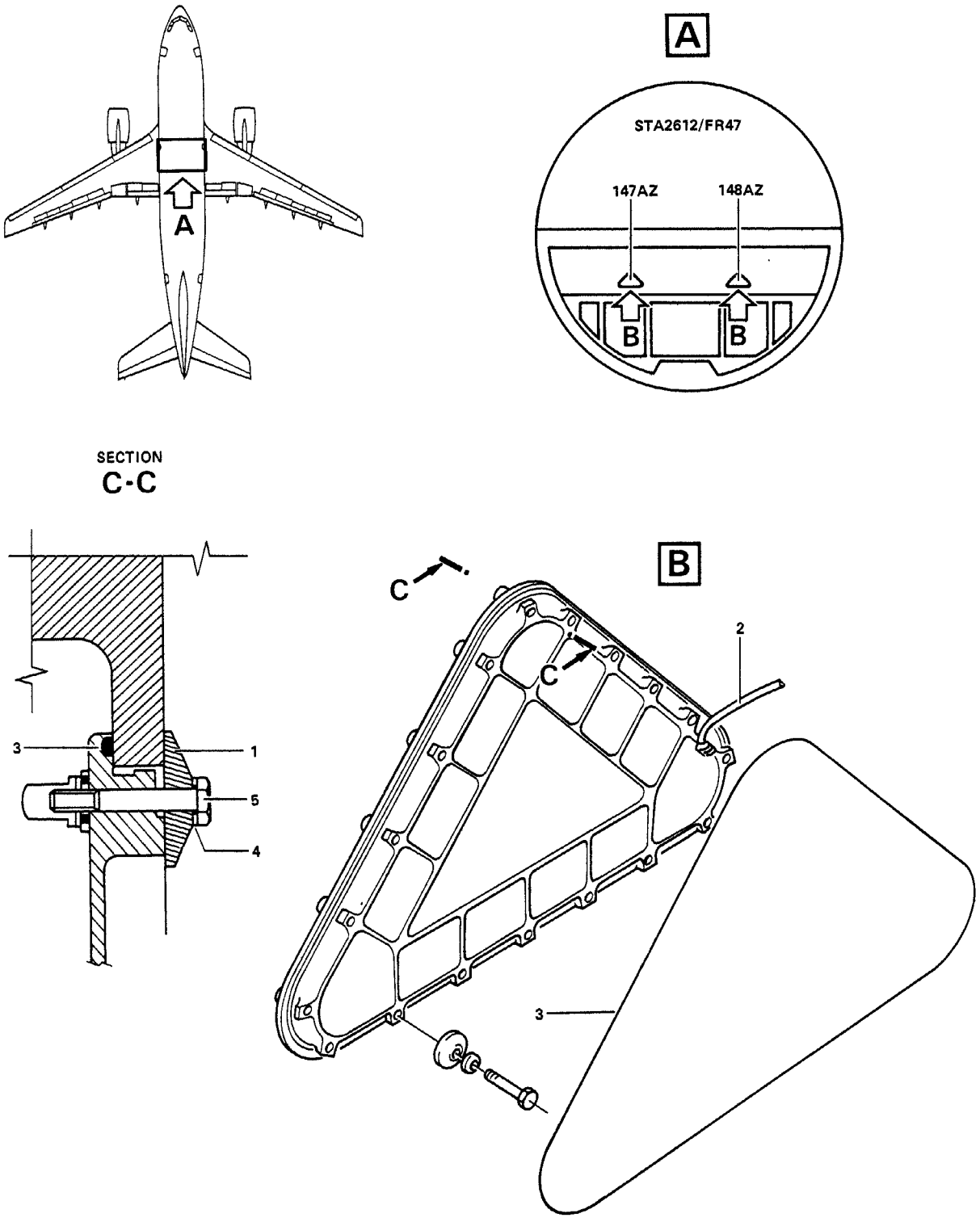
1. Equipment and Materials

ITEM	DESIGNATION
A. Material No. 11-002	Cleaning Agents (Ref. 20-31-00)
R B. Material No. 09-001	Sealants (Ref. 20-31-00)
R C. Material No. 09-002	Sealants (Ref. 20-31-00)
R D.	Access Platform 2.5 m (8 ft 3 in.)
R E. Material No. 04-004	Common Greases (Ref. 20-31-00)
R F.	Seal (1 per Cover)
R G.	Torque Wrench 0 to 1 m.daN (0 to 90 lbf.in.)
Referenced Procedures	
- 12-11-28, P. Block 1	Fuel Tank Replenishing
- 20-28-11, P. Block 1	Electrical Bonding
- 28-00-00, P. Block 601	Fuel - General
- 28-25-00, P. Block 301	Refuel/Defuel System
- 28-42-00, P. Block 501	Quantity Indicating
- 32-12-11, P. Block 301	Main Gear Main Door - (Ground Door(s) Opening)

2. Procedure

(Ref. Fig. 401)

A. Job Set-Up
(1)Make certain center tank is empty ; defuel and completely drain tank if required (Ref. 28-25-00, P. Block 301).
(2)Open, safety and tag the following circuit breakers :



Center Tank Manhole Covers - Location
Figure 401

PANEL	SERVICE	IDENT.	LOCATION
132VU	FUEL/CTR TK/L PUMP/CTL	63QA	322/N58
132VU	FUEL/CTR TK/R PUMP/CTL	64QA	322/M59

(3)On refuel/defuel panel 110VU display a warning notice prohibiting operation of MODE SELECTOR switch.
(4)Open left main gear main door 734 (Ref. 32-12-11, P. Block 301).
(5)Position access platform.

B. Removal
(1)Remove center tank manhole cover bonding strip (2).
(2)Loosen the 18 bolts (5) in diametrically opposed sequence and remove cover ; retain bolts (5), washers (4) and bridge (1).
NOTE : Hold cover during operation to prevent it from falling inside tank.

(3)Remove center tank manhole cover.
NOTE : If it is necessary to remove the two covers, identify their location.

WARNING : - DO NOT ENTER TANK WHICH IS NOT COMPLETELY DRAINED.
- DO NOT ENTER TANK WITHOUT APPROPRIATE SAFETY EQUIPMENT.
(4)Examine seal (3) for damage. If necessary, remove and discard it.

C. Preparation of Replacement Component
(1)Clean seal bearing surfaces on center tank and cover using Material No. 11-002.
(2)Remove grease at seal location on cover using a lint-free cloth dampened with Material No. 11-002.
R (3)Apply a thin film of Material No. 09-001 or Material No. 09-002 to
R seal groove.
(4)Install new seal in groove and allow to dry for 15 minutes.
(5)Smear bolt threads with Material No. 04-004.

D. Tests Before Installation
(1)Do the procedures to inspect all the bonding straps on the fuel pipes (Ref. 28-00-00, P. Block 601).
(2)Do capacitance and insulation resistance functional test (Ref. 28-42-00, P. Block 501).
NOTE : This procedure is only necessary if you have entered a tank. You may have caused accidental damage to the fuel quantity computer.

This procedure will show if the fuel quantity computer continues to be serviceable.

E. Installation

NOTE : Make certain that there are no foreign bodies in tank.

(1)Position center cover and install bolts (5) equipped with washers (4) and bridge (1).
(2)TORQUE bolts in diametrically opposed sequence to between 0.8 and 0.9 m.daN (71 and 80 lbf.in).
(3)Connect bonding strip (2) to cover (Ref. 20-28-11, P. Block 1).

F. Test After Installation

(1)Remove safety clips and tags and close circuit breakers 63QA and 64QA.
(2)Transfer fuel into center tank (Ref. 28-25-00, P. Block 301) or fill tank until manhole covers are completely immersed (Ref. 12-11-28, P. Block 1).
(3)Check for leakage.

G. Close-Up

(1)Make certain that working area is clean and clear of tools and miscellaneous items of equipment.
(2)Remove access platform.
(3)Close left main gear main door (Ref. 32-12-11, P. Block 301).
(4)Remove warning notices.

**ON A/C 101-200,

1. Equipment and Materials

	ITEM	DESIGNATION
	A. Material No. 11-002	Cleaning Agents (Ref. 20-31-00)
R	B. Material No. 09-001	Sealants (Ref. 20-31-00)
R	C. Material No. 09-002	Sealants (Ref. 20-31-00)
R	D.	Access Platform 2.5 m (8 ft 3 in.)
R	E. Material No. 04-004	Common Greases (Ref. 20-31-00)
R	F.	Seal (1 per Cover)
R	G.	Torque Wrench 0 to 1 m. daN (0 to 90 lbf.in.)
	Referenced Procedures	
	- 12-11-28, P. Block 1	Fuel Tank Replenishing
	- 20-28-11, P. Block 1	Electrical Bonding
	- 28-00-00, P. Block 601	Fuel - General
	- 28-25-00, P. Block 301	Refuel/Defuel System
	- 28-28-13, P. Block 401	Additional Center Tank Pump
	- 28-28-14, P. Block 401	Additional Center Tank Pump Mounting
	- 28-28-15, P. Block 401	ACT Pump Pressure Switch
	- 28-28-16, P. Block 401	ACT Transfer Valve
	- 28-28-17, P. Block 401	ACT Transfer Valve Actuator
	- 28-42-00, P. Block 501	Quantity Indicating
	- 32-12-11, P. Block 301	Main Gear Main Door - Ground Door(s) Opening

2. Procedure
(Ref. Fig. 402)
(Ref. Fig. 403)

A. Job Set-Up
(1)Make certain center tank is empty ; defuel and completely drain tank if required (Ref. 28-25-00, P. Block 301).
(2)Open, safety and tag the following circuit breakers :

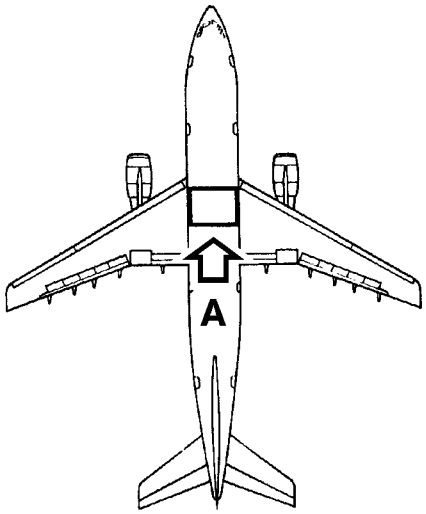
(3)On refuel/defuel panel 110VU, display a warning notice prohibiting operation of MODE SELECTOR switch.
(4)Open left main gear main door 734 (Ref. 32-12-11, P. Block 301).
(5)Position access platform.

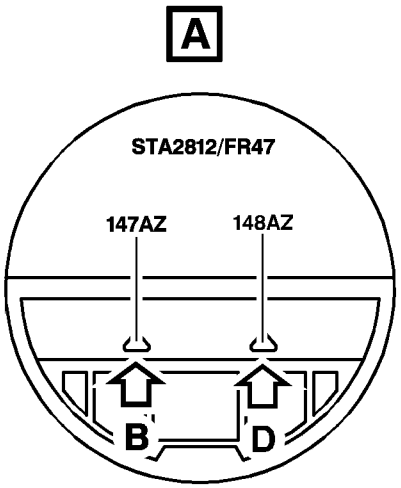
B. Removal
(1)Removal of the center tank manhole cover (147AZ) (Ref. Fig. 402 Sheet 1)
(a)Disconnect bonding strip (6) from cover (1).
(b)Loosen the 18 bolts (5) in diametrically opposed sequence. Remove and retain bolts (5), washers (4) and bridge (2).
NOTE : Hold cover during operation to prevent it from falling inside tank.
(c)Remove cover (1).

(2)Removal of the center tank manhole cover (148AZ) (Ref. Fig. 402 Sheet 2)
(a)Remove additional center tank pump 13QH (Ref. 28-28-13, P. Block 401).
(b)Remove additional center tank pump mounting (280232) (Ref. 28-28-14, P. Block 401).
(c)Remove ACT pump pressure switch 15QH (Ref. 28-28-15, P. Block 401).
(d)Remove ACT transfer valve (280238)(Ref. 28-28-16, P. Block 401).
(e)Remove ACT transfer valve actuator 21QH (Ref. 28-28-17, P. Block 401).
(f)Removal of bonding strips :
1 Remove bolts (10) and remove bonding strips (9), (12), (13) and (14).
2 Retain bolts (10) and washers (11).
(g)Remove and retain bolts (5) and washers (4). Remove channel (7).
(h)Remove and retain bolts (5) and washers (4). Remove spacers (6) and (8).
(j)Loosen bolts (5) in diametrically opposed sequence. Remove and retain bolts (5), washers (4) and bridge (2).
NOTE : Hold cover during operation to prevent it from falling inside tank.
(k)Remove cover (1).

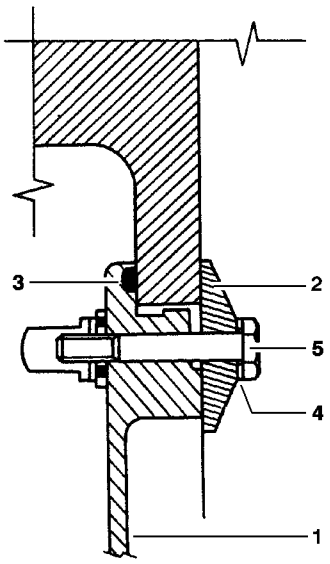
WARNING : - DO NOT ENTER TANK WHICH IS NOT COMPLETELY DRAINED
- DO NOT ENTER TANK WITHOUT APPROPRIATE SAFETY EQUIPMENT.
(l)Examine seal (3) for damage. If necessary, remove and discard it.

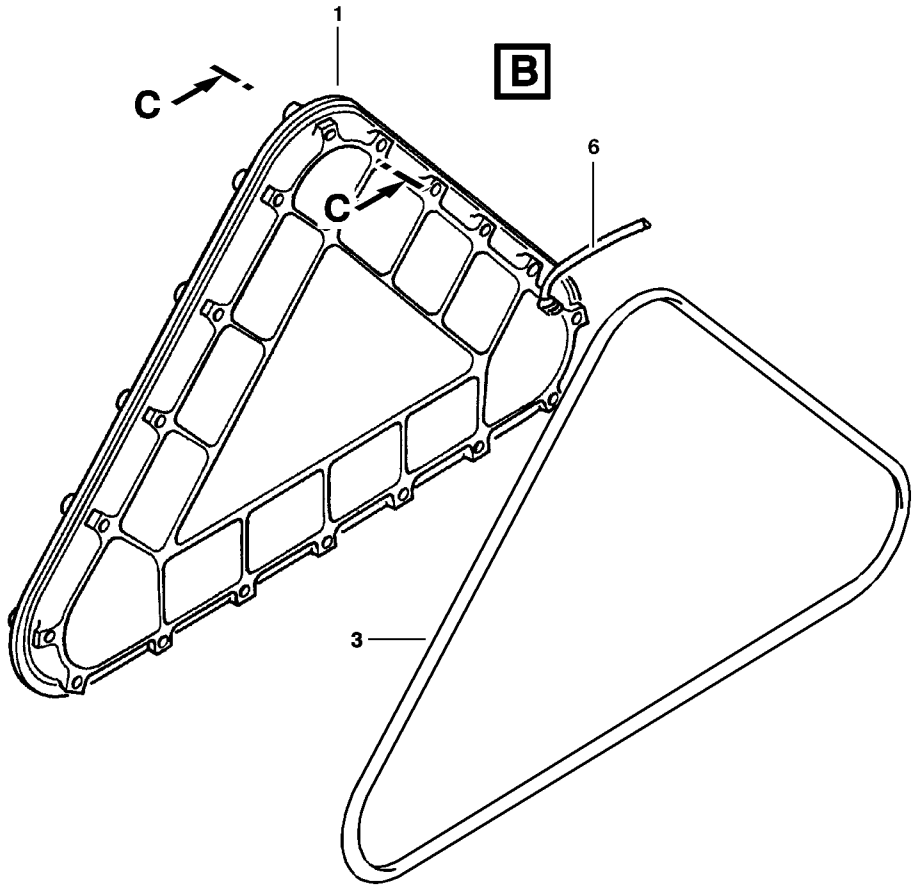
C. Preparation of Replacement Component
(1)Clean seal bearing surfaces on center tank and cover using Cleaning Agent (Material No. 11-002).





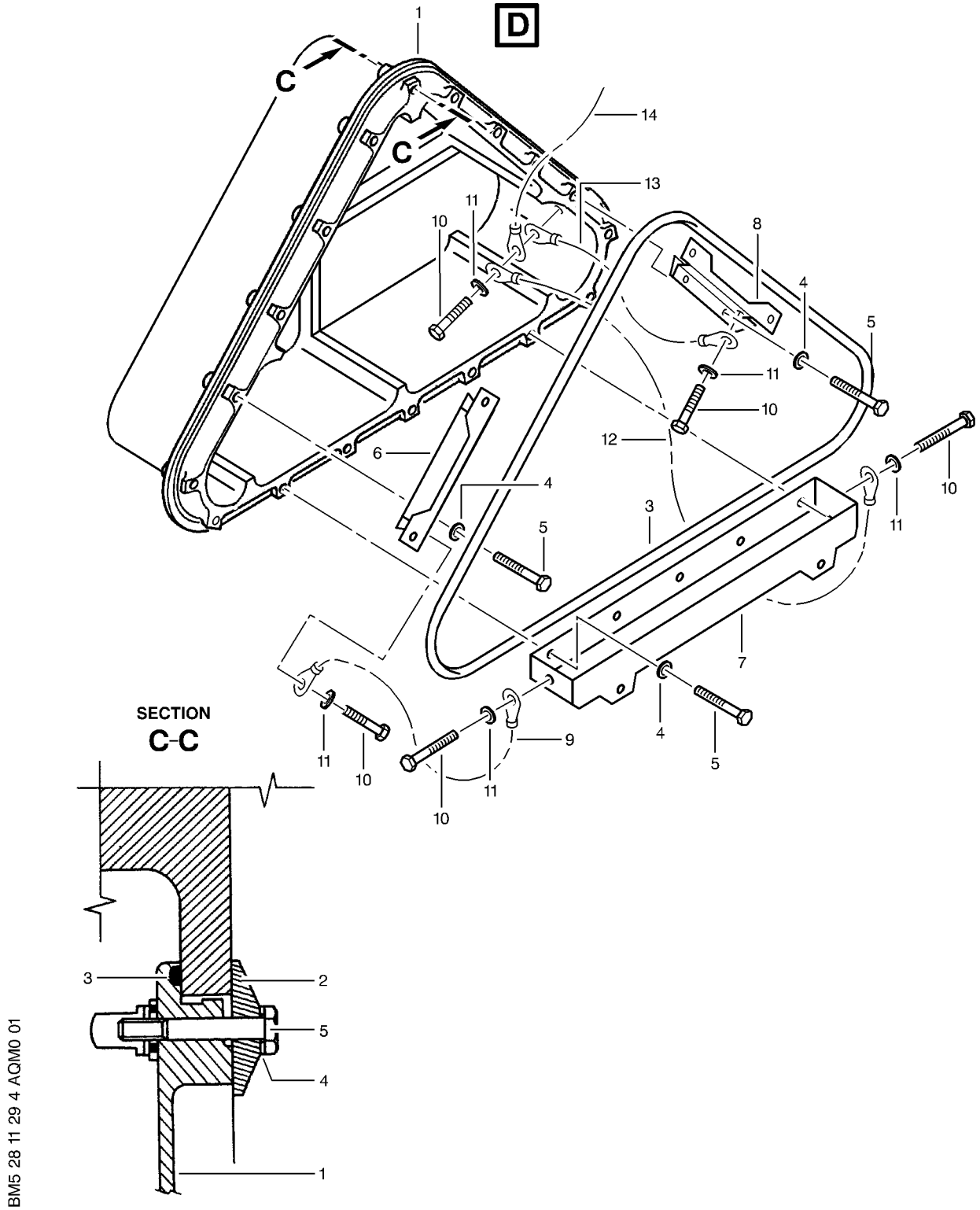
SECTION
C-C





BM5 28 11 29 4 APM0 01

Center Tank Manhole Cover
Figure 402



Center Tank Manhole Cover
Figure 403

R

(2)Remove grease at seal location on cover using a lint-free cloth dampened with Cleaning Agent (Material No. 11-002).
R (3)Apply a thin film of Sealant (Material No. 09-001 or Material No. 09-002)
R to seal groove.
(4)Install new or removed seal (3) in groove and allow to dry for 15 minutes.
(5)Smear bolt threads with Common Grease (Material No. 04-004).

D. Tests Before Installation
(1)Do the procedures to inspect all the bonding straps on the fuel pipes (Ref. 28-00-00, P. Block 601).
(2)Do capacitance and insulation resistance functional test (Ref. 28-42-00, P. Block 501).
NOTE : This procedure is only necessary if you have entered a tank.
You may have caused accidental damage to the fuel quantity computer.
This procedure will show if the fuel quantity computer continues to be serviceable.

E. Installation
(1)Installation of the center tank manhole cover (147AZ)
NOTE : Make certain that there are no foreign bodies in tank.
(a)Position cover (1) and install bolts (5) equipped with washers (4) and bridge (2).
(b)TORQUE bolts in diametrically opposed sequence to between 0.8 and 0.9 m.daN (71 and 80 lbf.in.).
(c)Connect bonding strip (6) to cover (1) (Ref. 20-28-11, P. Block 1).

(2)Installation of the center tank manhole cover (148AZ)
NOTE : Make certain that there are no foreign bodies in tank.
(a)Position cover (1) and install bolts (5) equipped with washers (4) and bridge (2).
(b)TORQUE bolts in diametrically opposed sequence to between 0.8 and 0.9 m.daN (71 and 80 lbf.in.).
(c)Install channel (7) and spacers (6) and (8), install bolts (5) equipped with washers (4).
(e)TORQUE bolts to between 0.8 and 0.9 m.daN (71 and 80 lbf.in.).
(f)Install bonding strips (9), (12), (13) and (14), install bolts (10) equipped with washers (11) and tighten.
(g)Install additional center tank pump 13QH (Ref. 28-28-13, P. Block 401).
(h)Install additional center tank pump mounting (280232) (Ref. 28-28-14, P. Block 401).
(j)Install ACT pump pressure switch 15QH (Ref. 28-28-15, P. Block 401).
(k)Install ACT transfer valve (280238)(Ref. 28-28-16, P. Block 401).
(l)Install ACT transfer valve actuator 21QH (Ref. 28-28-17, P. Block 401).

F. Test After Installation
(1)Remove safety clips and tags and close circuit breakers 63QA and 64QA.
(2)Transfer fuel into center tank (Ref. 28-25-00, P. Block 301) or fill tank until manhole covers are completely immersed (Ref. 12-11-28, P. Block 1).

(3)Check for leakage.

G. Close-Up
(1)Make certain that working area is clean and clear of tools and miscellaneous items of equipment.
(2)Remove access platform.
(3)Close left main gear main door 734 (Ref. 32-12-11, P. Block 301).
(4)Remove warning notices.

R CENTER TANK JET PUMP (280399), (280400), (280401), (280402) - REMOVAL/INSTALLATION

WARNING : BEFORE PROCEEDING WITH MAINTENANCE WORK ON THE FUEL SYSTEM, STRICTLY OBSERVE THE PRESCRIBED SAFETY PRECAUTIONS (REF. 28-00-00, P. BLOCK 301 AND 28-10-00, P. BLOCK 301).
MAKE CERTAIN THAT FIRE FIGHTING EQUIPMENT IS READILY AVAILABLE AND IN PROXIMITY TO THE WORK AREA.
MAKE CERTAIN THAT LANDING GEAR SAFETIES INCLUDING WHEEL CHOCKS ARE IN POSITION.

1. Equipment and Materials

ITEM	DESIGNATION
A.	Access Platform 2.6 m (8 ft. 8 in.)
B. Material No. 16-001	Structure Paints (Ref. 20-31-00)
Referenced Procedures	
- 28-00-00, P. Block 301	Fuel
- 28-10-00, P. Block 301	Storage
- 28-11-29, P. Block 401	Center Tank Manhole Cover
- 28-25-00, P. Block 301	Refuel/Defuel System
- 32-12-11, P. Block 301	Main Gear Main Door - (Ground Door(s) Opening)

2. Procedure

A. Job set-up
(1)Open main gear door (Ref. 32-12-11, P. Block 301).
(2)Position access platform.
(3)Transfer or drain fuel contained in center tank (Ref. 28-25-00, P. Block 301).
(4)Display a warning notice prohibiting operation of pumps.
(5)Open center tank manhole covers (Ref. 28-11-29, P. Block 401).

B. Removal
(Ref. Fig. 401)
(1)Removal of line (3)
(a)Remove attachment clamps (1), (2), (4), (5) and (6). Retain screws (35) and washers (36).
(b)Unscrew union (7) and remove line (3) from center tank.
(2)Removal of line (33)
(a)Remove attachment clamp (34). Retain screw (35) and washer (36).
(b)unscrew union (32).
(3)Removal of line (29)
(a)Remove attachment clamp (28). Retain screw (35) and washer (36).
(b)Unscrew union (30).
(4)Removal of line (25).
(a)Unscrew union (27). Retain tee union (31). Attachment clamps (26), (24) and (23) have been previously removed during removal of line (3).
(b)unscrew union (13)
(5)Removal of line (21)

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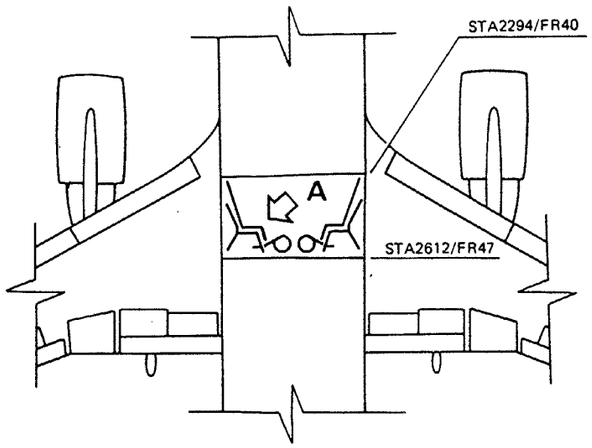

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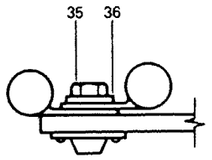

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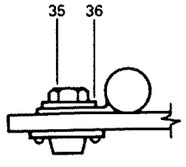

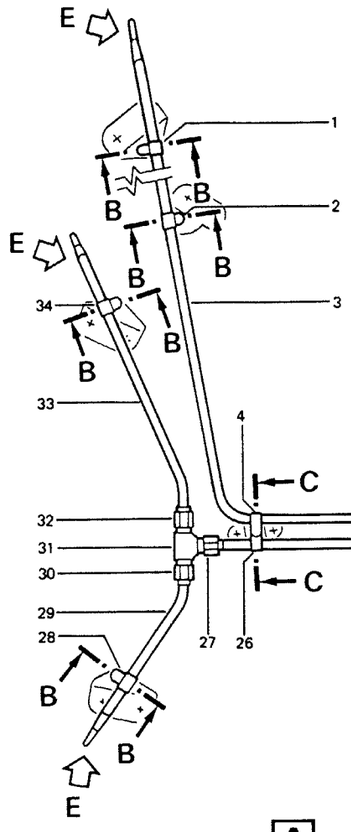

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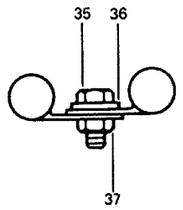
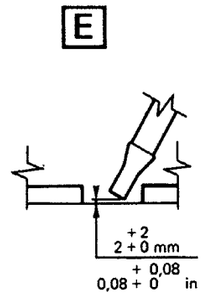




BM5 28 11 31 4 AAMO

Center Tank Jet Pumps
Figure 401

(a)Unscrew unions (20) and (22).
(6)Removal of line (17)
(a)Unscrew unions (15) and (18).
(7)Removal of line (10)
(a)Remove attachment clamp (9). Retain screw (35) and washer (36).
(b)Unscrew union (16).
(c)Unscrew union (11).
(8)Removal of tee union (19)
(a)Loosen nut (37) and remove washer (38). Remove tee union (19) from housing.
(9)Removal of jet pumps (8) and (12)
(a)Remove bolts (14) and nuts (40).
(b)Remove jet pumps (8) and (12) from their housings

C. Preparation of Replacement Component
NOTE : All union seals must be replaced by new seals upon installation
(1)Check removed lines for condition, replace if necessary.
(2)Jet pumps replacement : Depreserve replacement components and visually check that mechanical condition and protective finish are correct.

D. Installation
(1)Installation of jet pumps (8) and (12).
(a)Position jet pumps (8) and (12) in their housing
(b)Install bolts (14) and tighten nuts (40).
(2)Installation of tee union (19)
(a)Position tee union (19) in housing.
(b)Install washer (38), tighten nut (37).
(3)Installation of line (10)
(a)Position line on adapter (39), screw and tighten union (11).
(b)Install line (10) on tee union (19); screw and tighten union (16).
(c)Install attachment clamp (9).
(4)Installation of line (17)
(a)Position line (17). Screw and tighten unions (15) and (18).
(5)Installation of line (21).
(a)Position line (21). Screw and tighten unions (20) and (22).
(6)Installation of line (25)
(a)Position line (25) on jet pump (12). Screw and tighten union (13).
(b)Install line (25) on tee union (31); screw and tighten union (27).
(c)Install attachment clamps (23), (24) and (26) and tighten.
(7)Installation of line (29).
(a)Install line (29) on tee union (31); screw and tighten union (30).
(b)Install attachment clamp (28).
(8)Installation of line (33).
(a)Install line (33) on tee union (31); screw and tighten union (32).
(b)Install attachment clamp (34).
(9)Installation of line (3)
(a)Position line (3) on jet pump (8). Screw and tighten union (7).
(b)Install attachment clamps (1), (2), (4), (5) and (6) in their respective locations.
(10)Apply a coat of material No. 16-001) on all screws of attachment clamps

E. Close-up
(1)Make certain working area is clean and clear of tools and miscellaneous items of equipment.
(2)Close center tank manhole covers (Ref. 28-11-29, P. Block 401).
(3)Remove warning notice prohibiting operation of center tank pumps.
(4)Refuel center tank (Ref. 28-25-00, P. Block 301). Check for leakage at manhole covers.
(5)Remove access platform.
(6)Close main gear door (Ref. 32-12-11, P. Block 301).

TRIM TANK - WATER DRAIN VALVES
REMOVAL/INSTALLATION

WARNING : THIS PROCEDURE USES A FUEL SYSTEM ITEM THAT IS IN A CATEGORY KNOWN AS A CRITICAL DESIGN CONFIGURATION CONTROL LIMITATION (CDCCL). CDCCL IDENTIFIES AN ITEM THAT CAN BE THE SOURCE OF A POSSIBLE FUEL TANK IGNITION. YOU MUST KEEP ALL CDCCL ITEMS IN THE APPROVED CONFIGURATION. DAMAGE, WEAR OR CHANGES TO A CDCCL ITEM CAN CAUSE A POSSIBLE FUEL TANK EXPLOSION.

LANDING GEAR - MAKE SURE THAT THE GROUND SAFETIES AND CHOCKS ARE IN POSITION.

FLIGHT CONTROLS - MAKE SURE THAT THE GROUND SAFETIES AND NOTICES ARE IN POSITION.

MAKE SURE THAT THE FIRE FIGHTING EQUIPMENT IS AVAILABLE AND IS ADEQUATE.

OBEY THE FUEL SAFETY PRECAUTIONS IN 28-00-00, P. BLOCK 301 AND 28-10-00, P. BLOCK 301.

MAKE SURE THAT YOU ISOLATE THE ELECTRICAL CIRCUITS UPON WHICH WORK IS IN PROGRESS.

1. Reason for the Job

A. Removal of the primary poppet valve assembly (Ref. Para 2)

B. Removal of drain valve complete (Ref. Para 3 and 4)

2. Primary Poppet Valve Assembly

A. Equipment and Materials

	ITEM	DESIGNATION
R	A.	Access Platform 6 m (19 ft 8 in.)
	**ON A/C 001-100,	
R	B.	Container, one liter (0.26 US gal)
	**ON A/C 101-200,	
R	B.	Container, 0.26 US gal (one liter)
	**ON A/C ALL	
R	C.	Torque wrench set at:
R		66.36 lbf.in (0.75 m.daN)
R	D. 98A28104000000	Purging Tool - Water Drain

ITEM		DESIGNATION
R	E.	O-ring
R	F.	Clean Lint-Free Cloth
R	G. Material No. 11-026	Cleaning Agent (Ref. 20-31-00)
	Referenced Procedures	
	- 28-00-00, P. Block 301	Fuel General
	- 28-10-00, P. Block 301	Storage

B. Procedure
(Ref. Fig. 401)

(1)Job Set-Up
(a)Position the access platform below the water drain valve.
(b)Place the fuel container below the water drain valve.

(2)Removal
(a)Unscrew and remove poppet valve assembly (4) from water drain valve (2) using a 7/16 in (11.11 mm) hexagonal socket wrench.
(b)Discard O-ring (3).

(3)Preparation for installation
R (a)Use a clean lint-free cloth made moist with cleaning agent
R (Material No. 11-026) to clean the valve threads and the mating
R threads in the drain valve.

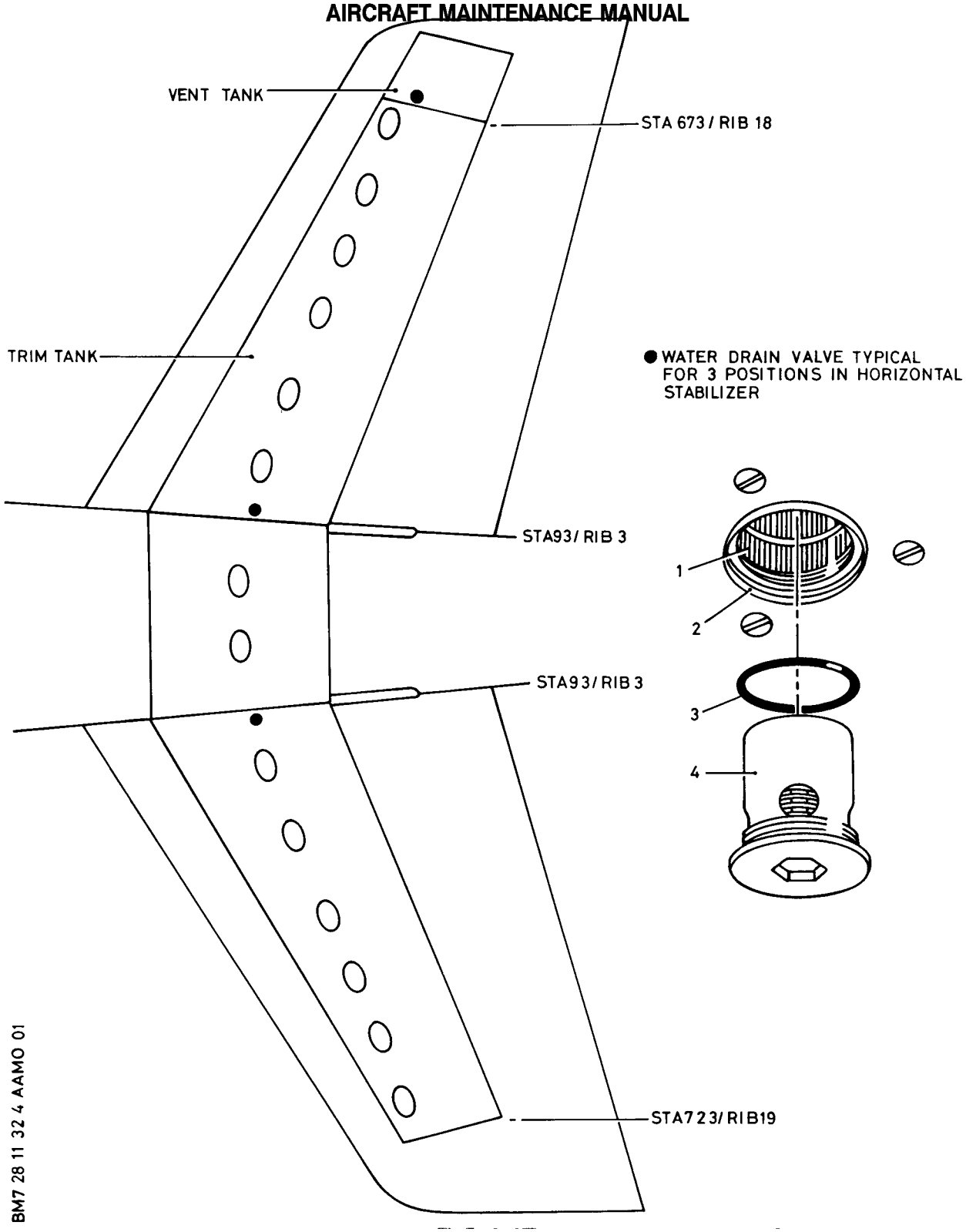
(4)Installation
(a)Hold container under drain valve (2) and push up the secondary valve (1) sufficient to allow the subsequent fuel outflow to flush secondary valve free of foreign material.
(b)Install new O-ring (3) to valve (4).
(c)Insert valve (4) into water drain valve (2) and TORQUE to 66.36 lbf.in (0.75 m.daN).

(5)Test
(a)Check water drain valve (2) for leakage.
(b)Push up primary poppet valve (1) until fuel flows; release valve.
R (c)If the valve does leak, use the purging tool to push (in) and
R release (out) the center of the valve three or four times.
R No leaks are permitted.
R (d)If leakage still occurs, install a new primary poppet valve assembly
R and do the leak test again.

(6)Close-Up
(a)Remove fuel container.
(b)Remove access platform.

3. Water Drain Valves - Trim Tank

A. Equipment and Materials



Poppet Valve Assemblies - Installation
Figure 401

	ITEM	DESIGNATION
R	A.	Access Platform 6 m (19 ft 8 in.)
R	B. 98A28104000000	Purging Tool - Water Drain
R	C.	O-ring seal (Valve)
R	D.	O-ring seals (bolts)
R	E. Material No. 09-007	Sealants (Ref. 20-31-00)
R	F. Material No. 09-014	Sealants (Ref. 20-31-00)
R	G. Material No. 16-006	Structure Paints (Ref. 20-31-00)
	Referenced Procedures	
	- 20-28-11, P. Block 1	Electrical Bonding
	- 28-00-00, P. Block 301	Fuel General
	- 28-10-00, P. Block 301	Storage
	- 28-11-33, P. Block 401	Trim Tank Manhole Covers

B. Procedure

**ON A/C 004-200,

(Ref. Fig. 402)

**ON A/C ALL

Post SB 28-2153 For A/C ALL

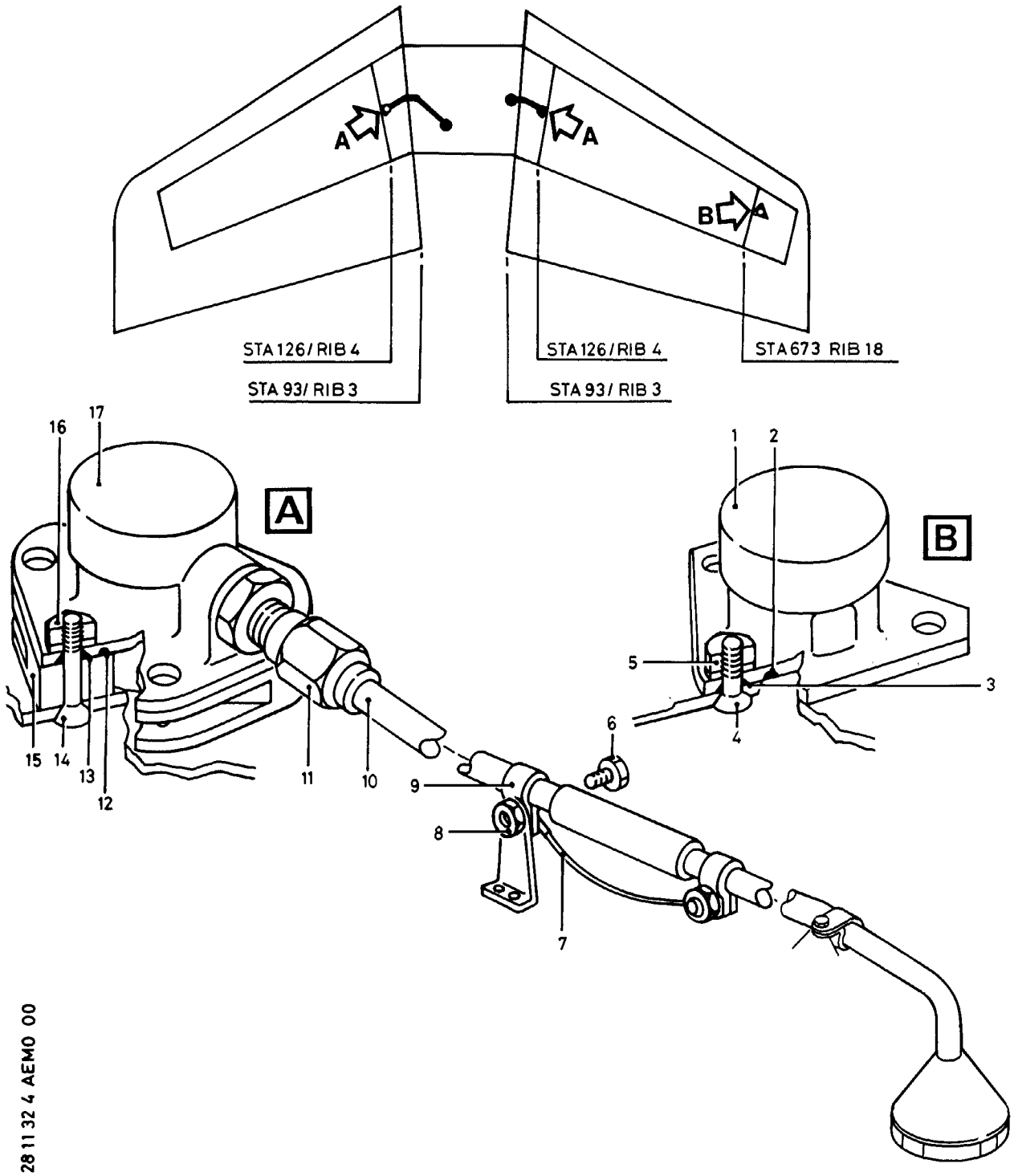
(Ref. Fig. 403)

**ON A/C ALL

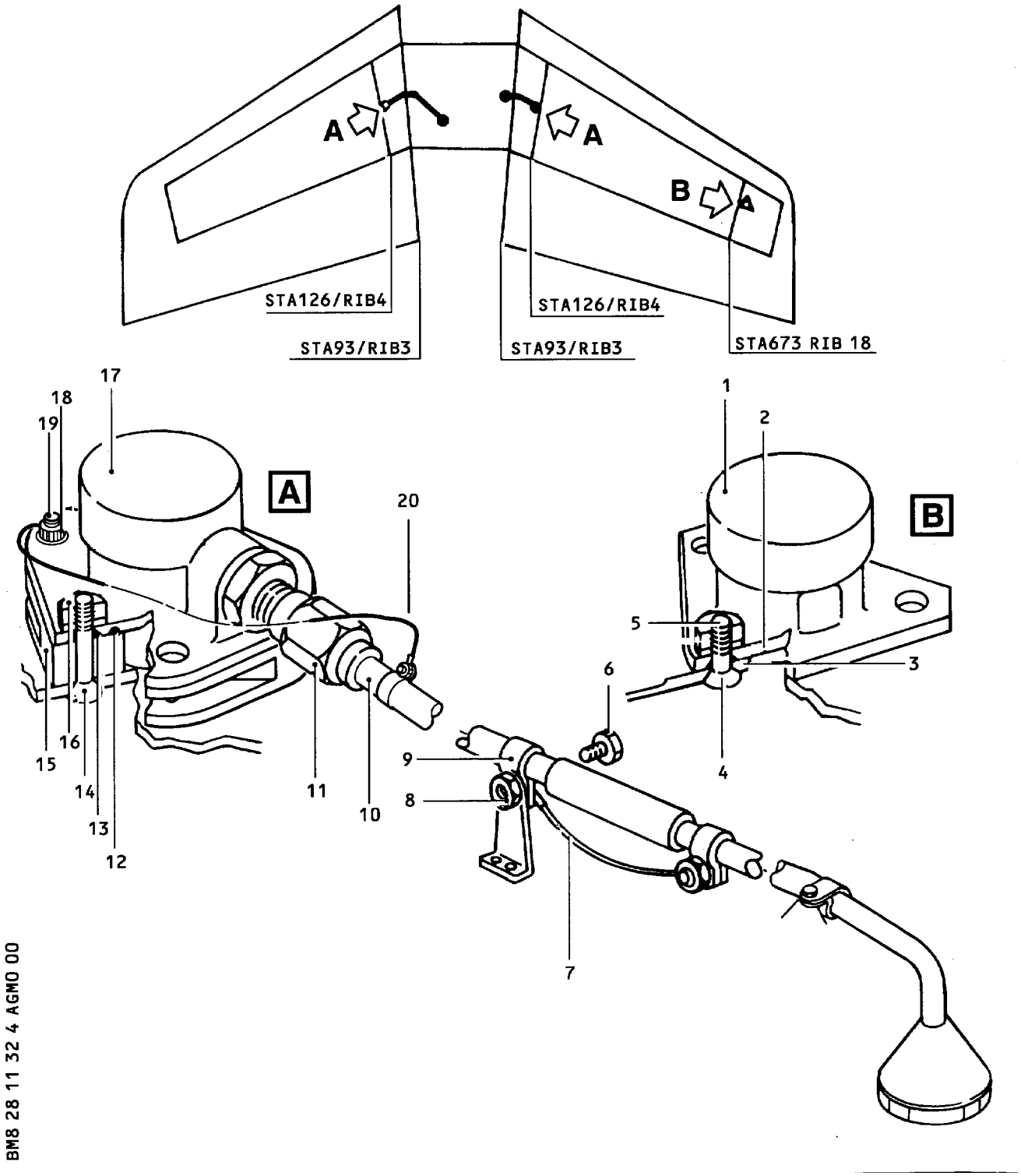
(1)Job Set-Up
  (a)Position access platform beneath manhole cover.
  (b)Remove manhole cover 333(334)BB (Ref. 28-11-33, P. Block 401).

(2)Removal
  (a)Unscrew water drain pipe retaining nut (11) at water drain valve (17).
  (b)Remove nut (8) and bolt (6) securing pipe retaining clip (9) and bonding lead (7) at end nearest drain valve.
  (c)Carefully ease water drain pipe (10) away from drain valve (17).
  (d)Remove nuts (16) and bolts (14) securing drain valve; hold packing piece (15) in position on lower skin and withdraw valve from locating hole in lower skin. Discard O-ring seals (12) and (13).

(3)Preparation of Replacement Component
  (a)Check all mating faces are clean and undamaged.



Water Drain Valves Installation - Trim Tank
Figure 402



Water Drain Valves Installation - Trim Tank
Figure 403

(4)Installation
(a)Hold packing piece (15) in position on lower skin and insert drain valve attachment bolts (14) into holes in lower skin and packing piece (15); position a new O-ring seal (13) over each bolt.
(b)Install new O-ring seal (12) to water drain valve (17).
(c)Position water drain valve (17) over bolts (14) in lower skin; secure with drain valve retaining nuts (16).
(d)Attach water drain pipe (10) to drain valve; secure with pipe retaining nut (11).
(e)Connect bonding lead (7) and pipe retaining clip (9) and secure with nut (8) and bolt (6) (Ref. 20-28-11, P. Block 1).
(f)Apply either primer (Material No. 16-006), sealant (Material No. 09-007) or sealant (Material No. 09-014) to drain valve retaining nuts (16) and water drain pipe retaining nut (11).

(5)Tests
R (a)Examine the water drain valve for leakage during the test of the
R manhole cover.
R (b)If the valve does leak, use the purging tool to push (in) and
R release (out) the center of the valve three or four times.
R No leaks are permitted.
R (c)If leakage still occurs, either install a new primary poppet valve
R assembly (Ref. Paragraph 2.) or install a new drain valve and do the
R test again.

(6)Close-Up
(a)Make sure that the working area is clean and clear of all tools and other items of equipment.
(b)Install manhole cover 333(343)BB (Ref. 28-11-33, P. Block 401).
(c)Remove all ground handling and maintenance equipment, standard and special tools, all access equipment and miscellaneous items.

**ON A/C ALL

Post SB 28-2153 For A/C ALL

R (1)Job Set-Up
R (a)Position access platform beneath manhole cover.
R (b)Remove manhole cover 333(334)BB (Ref. 28-11-33, P. Block 401).

R (2)Removal
(a)Remove the nut (18) and the bonding bolt (19) and release the bonding lead (20).

NOTE : It is not necessary to remove the bonding lead (20) from the drain pipe (10).

(b)Loosen the nut (11) and release the drain pipe (10) from the water drain valve (17).

(c)Remove the nut (8), the bolt (6) and release the end of the bonding lead (7) from the pipe clip (9) nearest the water drain valve (17).
(d)Carefully ease the drain pipe (10) from the water drain valve (17).
(e)Remove the nuts (16) and the bolts (14) securing the drain valve. Hold the packing piece (15) in position on the lower skin and withdraw the valve from the locating hole in the lower skin. Discard the O-ring seals (12) and (13).

(3)Preparation of Replacement Component
(a)Make sure that all the mating faces are clean and undamaged.

(4)Installation
(a)Hold the packing piece (15) in position on the lower skin.
(b)Install the bonding bolt (19) into the correct hole in the lower skin and the packing piece (15).
(c)Install the bolts (14) into the lower skin and the packing piece (15).
(d)Install a new O-ring seal (13) on each bolt (14) and on the bonding bolt (19).
(e)Install a new O-ring seal (12) into the groove in the mating surface of the water drain valve (17).
(f)Locate the water drain valve (17) on the bolts (14) and the bonding bolt (19).
(g)Connect the drain pipe (10) to the water drain valve (17) and tighten the nut (11).

WARNING : THIS INSTRUCTION IS APPLICABLE TO A CRITICAL DESIGN CONFIGURATION CONTROL LIMITATION (CDCCL) ITEM. CAREFULLY OBEY ALL GIVEN INSTRUCTIONS WHEN YOU DO THIS STEP. IF YOU DO NOT OBEY THESE INSTRUCTIONS, A DANGEROUS CONDITION CAN OCCUR THAT CAN CAUSE A POSSIBLE FUEL TANK EXPLOSION.

(h)Do the electrical bonding procedure (Ref. 20-28-11, P. Block 1, para 3.D.(4)) to install the bonding lead (20) and the nut (18), onto the bonding bolt (19).
(j)Install the nuts (16) onto the bolts (14).
(k)Do the electrical bonding procedure (Ref. 20-28-11, P. Block 1, para 3.D.(6)) to install the bonding lead (7), the pipe clip (9), the nut (8) and the bolt (6).
(l)Apply primer (Material No. 16-006), or sealant (Material No. 09-007), or sealant (Material No. 09-014) to the nuts (16) and (11).

(5)Tests
R (a)Examine the water drain valve for leakage during the test of the
R manhole cover.
R (b)If the valve does leak, use the purging tool to push (in) and
R release (out) the center of the valve three or four times.
R No leaks are permitted.
R (c)If leakage still occurs, either install a new primary poppet valve
R assembly (Ref. Paragraph 2.) or install a new drain valve and do the
R test again.

(6)Close-Up
(a)Make sure that the working area is clean and clear of all tools and other items of equipment.
(b)Install manhole cover 333(343)BB (Ref. 28-11-33, P. Block 401).
(c)Remove all the ground handling and maintenance equipment, standard and special tools and all the access equipment.

**ON A/C ALL

4. Water Drain Valve - Vent tank

A. Equipment and Materials

	ITEM	DESIGNATION
R	A.	Access platform 6 m (19 ft 8 in.)
R	B. 98A28104000000	Purging Tool - Water Drain
R	C.	O-ring seal (valve)
R	D.	O-ring seals (bolts)
R	E. Material No. 09-007	Sealants (Ref. 20-31-00)
R	F. Material No. 09-014	Sealants (Ref. 20-31-00)
R	G. Material No. 16-006	Structure Paints (Ref. 20-31-00)
	Referenced Procedures	
	- 28-00-00, P. Block 301	Fuel General
	- 28-10-00, P. Block 301	Storage
	- 28-12-33, P. Block 401	Trim Tank NACA Intake and Vent Protector

B. Procedure

(1)Job Set-Up
(a)Position the access platform beneath the NACA intake.
(b)Remove the NACA intake and vent protector panel 346AB (Ref. 28-12-33, P. Block 401).

**ON A/C ALL

Post SB 28-2153 For A/C ALL

4. Water Drain Valve - Vent Tank

A. Equipment and Materials

	ITEM	DESIGNATION
R	A.	Access platform 6 m (19 ft 8 in.)
R	B. 98A28104000000	Purging Tool - Water Drain
R	C.	O-ring seal (valve)
R	D.	O-ring seals (bolts)
R	E. Material No. 07-001C	Paints (Ref. 20-31-00)
R	F. Material No. 09-007	Sealants (Ref. 20-31-00)
R	G. Material No. 09-014	Sealants (Ref. 20-31-00)
R	H. Material No. 16-006	Structure Paints (Ref. 20-31-00)
	Referenced Procedures	
	- 20-28-11, P. Block 1	Electrical Bonding
	- 28-00-00, P. Block 301	Fuel General
	- 28-10-00, P. Block 301	Storage
	- 28-12-33, P. Block 401	Trim Tank NACA Intake and Vent Protector

B. Procedure

(1)Job Set-Up

(a)Position access platform beneath NACA intake.

(b)Remove the NACA intake-vent protector panel 346AB (Ref. 28-12-33, P. Block 401).

**ON A/C 004-200,

(2)Removal (Ref. Fig. 402).

**ON A/C ALL

Post SB 28-2153 For A/C ALL

(2)Removal (Ref. Fig. 403).

**ON A/C ALL

R (2)Removal

(a)Remove nuts (5) and bolts (4) securing drain valve (1); withdraw

valve from locating hole in lower skin. Discard O-ring seals (2) and (3).

(3)Preparation of Replacement Component
(a)Check all mating faces are clean and undamaged.

(4)Installation
(a)Insert drain valve attachment bolts (4) into holes in lower skin; position a new O-ring seal (3) over each bolt.
(b)Install new O-ring seal (2) to water drain valve.
(c)Position water drain valve (1) over bolts (4) in lower skin; secure with drain valve retaining nuts (5).
(d)Apply either primer (Material No. 16-006), sealant (Material No. 09-007) or sealant (Material No. 09-014) to drain valve retaining nuts.

(5)Tests
R (a)Examine the water drain valve for leakage during the test of the NACA
R intake and vent protector.
R (b)If the valve does leak, use the purging tool to push (in) and
R release (out) the center of the valve three or four times.
R No leaks are permitted.

(6)Close-Up
R (a)Make sure that the work area is clean and clear of tools and miscellaneous equipment.
(b)Install NACA intake and vent protector (Ref. 28-12-33, P. Block 401).
(c)Remove all ground handling and maintenance equipment, standard and special tools, all access equipment and other items.

**ON A/C ALL

Post SB 28-2153 For A/C ALL

R (2)Removal
(a)Remove the nuts (5) and the bolts (4) securing the drain valve (1) and remove the drain valve (1) from the locating hole in the lower skin. Discard the O-ring seals (2) and (3).

(3)Preparation of Replacement Component
(a)Make sure that all the mating faces are clean and undamaged.

(4)Installation
(a)Install the bonding bolt (4) into the correct hole in the lower skin.
(b)Install the bolts (4) into the holes in the lower skin.
(c)Put a new O-ring seal (3) over the bolts (4) and the bonding bolt (4).
(d)Install a new O-ring seal (2) to the water drain valve (1).
(e)Position the water drain valve (1) over the bonding bolt and the bolts (4) in the lower skin.

WARNING : THIS INSTRUCTION IS APPLICABLE TO A CRITICAL DESIGN CONFIGURATION CONTROL LIMITATION (CDCCL) ITEM. CAREFULLY OBEY ALL GIVEN INSTRUCTIONS WHEN YOU DO THIS STEP. IF YOU DO NOT OBEY THESE INSTRUCTIONS, A DANGEROUS CONDITION CAN OCCUR THAT CAN CAUSE A POSSIBLE FUEL TANK EXPLOSION.

(f) Do the electrical bonding procedure (Ref. 20-28-11, P. Block 1, para 3.D.(2)) to install a nut (5) onto the bonding bolt (4). Allow the sealant to dry.
(g) Install the remaining nuts (5) onto the bolts (4) and apply either primer (Mat No. 16-006) or sealant (Mat No. 09-014) on the nuts.
(h) Apply a layer of paint (Material No. 07-001C) over the head and tail of the bonding bolt (4). This is to identify the bonding bolt.

(5) Tests

R (a) Examine the water drain valve for leakage during the test of the NACA intake-vent protector.
R (b) If the valve does leak, use the purging tool to push (in) and
R release (out) the center of the valve three or four times.
R No leaks are permitted.

(6) Close-Up

(a) Make sure that the work area is clean and clear of tools and all other items of equipment.
(b) Install the NACA intake-vent protector (Ref. 28-12-33, P. Block 401).
(c) Remove all ground handling and maintenance equipment, standard and special tools, all access equipment and other items.

WARNING: THIS PROCEDURE USES A FUEL SYSTEM ITEM THAT IS IN A CATEGORY KNOWN AS A CRITICAL DESIGN CONFIGURATION CONTROL LIMITATION (CDCCL) CDCCL IDENTIFIES AN ITEM THAT CAN BE THE SOURCE OF A POSSIBLE FUEL TANK IGNITION. YOU MUST KEEP ALL CDCCL ITEMS IN THE APPROVED CONFIGURATION. DAMAGE, WEAR OR CHANGES TO A CDCCL ITEM CAN CAUSE A POSSIBLE FUEL TANK EXPLOSION.

WARNING: DO THE FOLLOWING SAFETY PROCEDURES:
LANDING GEAR - MAKE SURE THAT GROUND SAFETIES INCLUDING WHEEL CHOCKS ARE IN POSITION.

FLIGHT CONTROLS - MAKE SURE THAT GROUND SAFETIES AND NOTICES ARE IN POSITION.

OBEY THE SAFETIY PRECAUTIONS GIVEN IN 28-00-00, P.BLOCK 301 AND 28-10-00, P. BLOCK 301.

BEFORE ELECTRICAL POWER IS SUPPLIED TO THE AIRCRAFT, MAKE SURE THAT THE ELECTRICAL CIRCUITS UPON WHICH WORK IS IN PROGRESS ARE ISOLATED.

MAKE SURE THAT THE FIREFIGHTING EQUIPMENT IS AVAILABLE AND ADEQUATE.

1. Equipment and Materials

ITEM	DESIGNATION
A.	Access Platform up to 5m (16ft)
B. 97A27302009000	Locking-Tool - Pitch Trim Control Wheel
C. 98A57304002000	Tool - Manhole Bolt Extraction
D. 98A28109008000	Protective Ring - Stabilizer Manholes
E. 98A28109009000	Protective Ring - Stabilizer Manholes
F. 98A28109010000	Protective Ring - Stabilizer Manholes
G. 98A28109011000	Protective Ring - Stabilizer Manholes
H. 98A28109012000	Protective Ring - Stabilizer Manholes
J.	Circuit Breaker Safety Clips
K.	Fuel Spillage Container
L.	Non-Metallic Scraper
M.	Torque-Set Driver
N. Material No. 04-004	Common Greases (Ref. 20-31-00)
P. Material No. 09-007	Sealants (Ref. 20-31-00)
R. Material No. 11-002	Cleaning Agents (Ref. 20-31-00)
Referenced Procedures	
- 12-11-28, P. Block 301	Tank Replenishing of Fuel
- 20-28-11, P. Block 1	Electrical Bonding
- 28-00-00, P. Block 301	Fuel - General
- 28-00-00, P. Block 601	Fuel - General
- 28-10-00, P. Block 301	Storage
- 28-11-35, P. Block 401	Vapor Seal
- 28-25-00, P. Block 301	Refuel/Defuel System

2. Procedure

WARNING: OBEY THE SAFETY PROCEDURES WHEN YOU WORK IN A FUEL TANK THIS WILL PREVENT INJURY OR DAMAGE.

A. Job Set-Up

(1)Move the horizontal stabilizer to the 3 deg. A/C nose down position and install the pitch-trim control locking (97A27302009000) to the pitch-trim control wheel.

(2)Defuel the trim tank (Ref. 28-25-00, P.Block 301).

(3)Open, safety and tag the following circuit breakers.

	PANEL	SERVICE	IDENT.	LOCATION
	22VU	FUEL/TRIM TANK/FWDXFR AUX VALVE	2QL	J21
	22VU	FUEL/TRIM TANK/FWDXFR PUMP 1-CTL	3QN	J22
	22VU	FUEL/TRIM TANK/FWDXFR PUMP 1-WARN	5QN	J23
	22VU	FUEL/TRIM TANK/FWDXFR CGCC	2GU	J24
	132VU	FUEL/TRIM TANK CGCC	6GU	K51
R	132VU	FUEL/TRIM TANK/FWDXFR MAIN VALVE	1QL	K53
R	132VU	FUEL/TRIM TANK/XFR PUMP 2 WARN	6QN	K54
R	132VU	FUEL/TRIM TANK/XFR PUMP 2 CTL	4QN	K55
R	132VU	FUEL/TRIM TANK/AFT L&R XFR VALVE	4QL	K56

(4)Put the access platform in position below the horizontal stabilizer.

(5)Drain the trim tank. (Ref. 28-10-00, P.Block 301).

(6)Open access door 312AR.

(7)To get access to the manhole covers 319AZ/319BZ inside of the fuselage:

(a)Remove the vapor-seal manhole panels 319AB/319BB. (Ref. 28-11-35, P. Block 401).

B. Removal

CAUTION: YOU MUST RELEASE THE PRESSURE ON THE EXTRACTION TOOL WHEN THE FASTENER STARTS TO TURN. THIS PREVENTS DAMAGE TO THE ANCHOR NUT OR THREAD INSERT ON THE MANHOLE COVER OR THS SKIN.

(1)For the removal of the manhole covers outside the fuselage (Ref. Fig. 401):

(a)Remove the screws (4) with the correct torque-set driver in diametrically opposite order.

NOTE: If any of the screws are difficult to remove, use the manhole bolt extraction (98A57304002000).

(b)Remove manhole cover (3) and sealing ring (2).

(c)Install a protective ring to the edge of the manhole.

(2)For the removal of the manhole covers inside the fuselage (Ref. Fig. 402):

(a)Remove the screws (4) and the washers (5) with the correct torque-set driver in diametrically opposite order. Discard the washers (5).
(b)Remove manhole cover (3) and sealing ring (2).
(c)Install a protective ring to the edge of the manhole.
(3)Identify the manhole covers for the installation in the original position.

WARNING : DO NOT ENTER A FUEL TANK UNTIL IT HAS BEEN VENTED AND THE CORRECT SAFETY EQUIPMENT IS IN USE.

(4)Ventilate the trim tank (Ref. 28-10-00, P,Block 301).

C. Preparation for Installation (Ref. Fig. 401, 402)
(1)Do an inspection of all the bonding straps on the fuel pipes. (Ref. 28-00-00 P. Block 601).
R (2)Do capacitance and insulation resistance functional test
R (Ref. 28-42-00 P. Block 501).

R NOTE :This procedure is only necessary if you have entered a tank.
R You may have caused accidental damage to the FQI equipment.
R This procedure will show if the equipment continues to be
R serviceable.

R (3)Examine the manhole cover (3), the retaining ring (1), and the mating surfaces of the manhole cover and the horizontal stabilizer skin.
R (4)Examine the sealing ring (2) to make sure that it is in good condition. If necessary, replace the sealing ring :
(a)Remove the sealing ring (2) from the manhole cover (3).
(b)Remove the old sealant from the manhole cover with a non-metallic scraper.
(c)Clean the sealing ring (2) with a lint-free cloth moist in cleaning agent (Mat. No.11-002) until contamination is removed. Do not let the cleaning agent dry on the surfaces.
(d)Apply a thin layer of sealant (Mat. No. 09-007) to the groove of the manhole cover.
(e)Install the sealing ring (2) in the groove of the manhole cover (3).
(f)Let the sealant cure for fifteen minutes.

NOTE: Do not touch sealing ring (2) after its installation in the manhole cover (3).

R (5)Apply a layer of grease (Mat. No. 04-004) to screws (4).
R (6)Make sure that the work area is clean and clear of tools and other items.

D. Installation
(1)Remove the protective ring.
(2)Put the manhole cover (3) in the corect position.
(3)For the installation of the manhole covers outside of fuselage (Ref. Fig. 401):
(a)Install the screws (4) with the correct torque-set driver in

diametrically opposite order.
(b)Torque the screws (4) to 0.94 m.daN (83.18 lbf.in) in a diametrically opposite order.

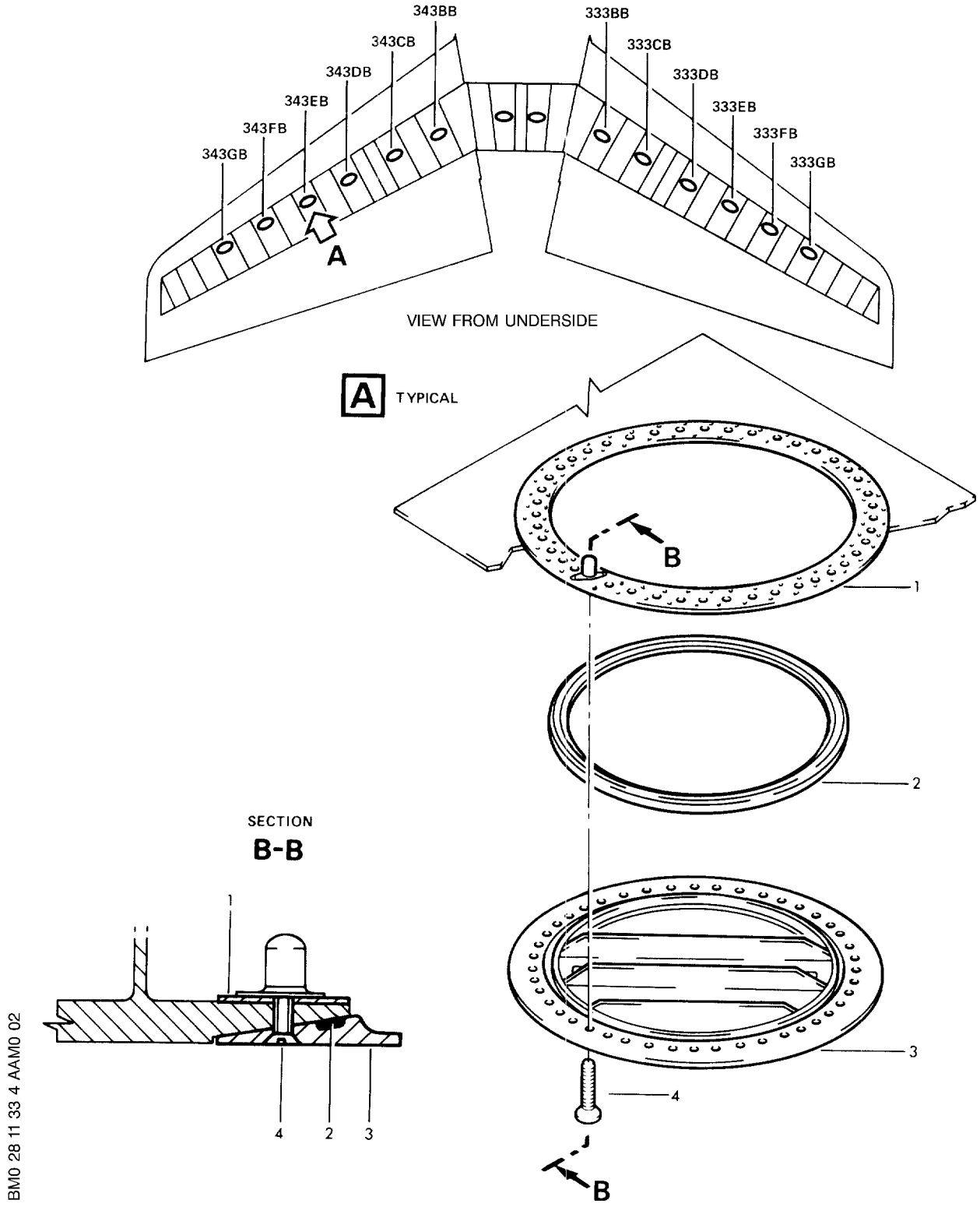
(4)For the installation of the manhole covers inside of fuselage (Ref. Fig. 402):
(a)Install the screws (4) and the new washers (5) with the correct torque-set driver in diametrically opposite order.
(b)Torque the screws (4) to 0.94 m.daN (83.18 lbf.in) in a diametrically opposite order.

WARNING: THIS INSTRUCTION IS APPLICABLE TO A CRITICAL DESIGN CONFIGURATION CONTROL LIMITATION (CDCCL). CAREFULLY OBEY ALL GIVEN INSTRUCTIONS WHEN YOU DO THIS STEP. IF YOU DO NOT OBEY THESE INSTRUCTIONS, A DANGEROUS CONDITION CAN OCCUR THAT CAN CAUSE A POSSIBLE FUEL TANK EXPLOSION.

(5)Do a test of the electrical bonding between the manhole cover and a suitable grounding point (Ref. 20-28-11, P.Block 1).
(6)Remove the safety clips and tags and close the circuit breakers 2QL, 3QN, 5QN, 2GU, 6GU, 1QL, 6QN, 4QN and 4QL.
(7)Remove the pitch-trim control locking.

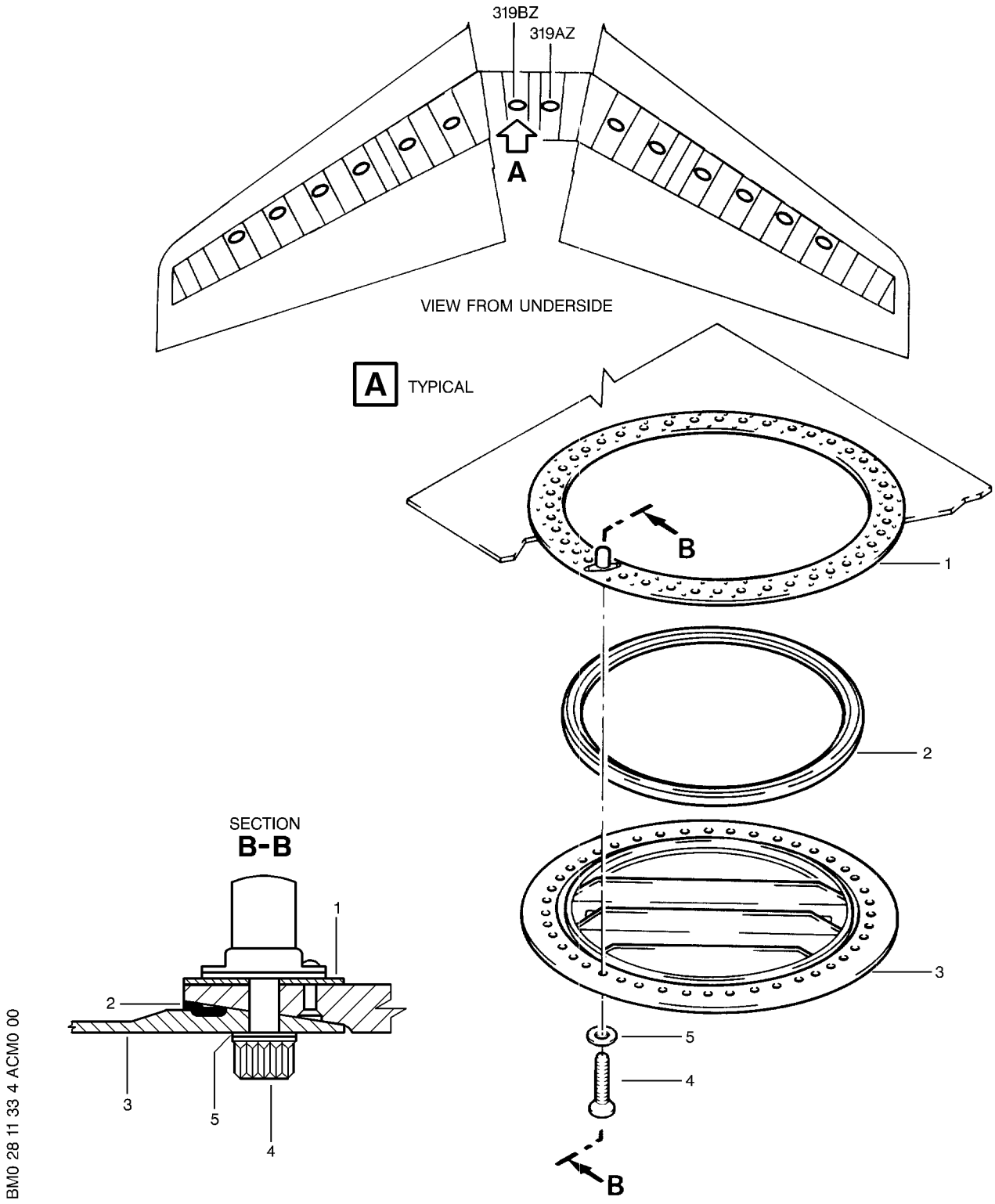
E. Test.
(1)Fill-up the trim tank with fuel (Ref. 12-11-28, P.Block 301).
(2)Examine the manhole cover for fuel leakage.

F. Close-Up
(1)Make sure that the work area is clean and clear of tools and other items.
(2)Install the vapor-seal access panels 319AB/319BB after the installation of the manhole covers 319BZ/319AZ. (Ref. 28-11-35, P. Block 401).
(3)Close access door 312 AR.
(4)Remove the access platform.



Manhole Covers Outside the Fuselage
Figure 401

R



Manhole Covers Inside the Fuselage
Figure 402

TRIM TANK MANHOLE COVERS - INSPECTION/CHECK

WARNING : LANDING GEAR-MAKE CERTAIN THAT GROUND SAFETIES AND CHOCKS ARE IN POSITION.
FLIGHT CONTROLS-MAKE CERTAIN THAT GROUND SAFETIES AND NOTICES ARE IN POSITION.
OBSERVE THE SAFETY PRECAUTIONS IN 28-00-00, P.BLOCK 301 AND 28-10-00, P.BLOCK 301.
MAKE CERTAIN THAT THE FIRE FIGHTING EQUIPMENT IS AVAILABLE AND ADEQUATE.

BEFORE POWER IS SUPPLIED TO THE AIRCRAFT
MAKE CERTAIN THAT ELECTRICAL CIRCUITS UPON WHICH WORK IS IN PROGRESS ARE ISOLATED

1. Reason for the Job
   A. Inspection of manhole cover, sealing ring, retaining ring securing bolts and manhole surround.

2. Equipment and Materials

ITEM	DESIGNATION
A.	Access Platform 2m to 6 m (6ft to 19ft)
Referenced Procedures	
- 28-00-00, P. Block 301	Fuel General
- 28-11-33, P. Block 401	Covers-Manhole, Trim Tank
- 28-25-00, P. Block 301	Refuel/Defuel System
- 28-46-00, P. Block 501	Tank Level Warning
- 51-23-10, P. Block 1	Paint Coatings
- 55-00-00, P. Block 301	Stabilizers-Standard Warnings and Procedures

3. Procedure

   A. Job Set-Up
      (1)Remove fuel from trim tank (Ref. 28-25-00, P.Block 301.
      (2)Put access platform in position.
      (3)Remove manhole cover (Ref. 28-11-33, P.Block 401).

   B. Inspection
      (1)Manhole cover
         (a)Check that cover is clean, undamaged and free from corrosion. Check for correct condition of paint work (Ref. 51-23-10, P.Block 1)
         (b)Check that the sealing ring is in good condition and located correctly.

      (2)Retaining ring.
         (a)Check that the retaining ring is clean, undamaged and free from corrosion.
         (b)Inspect for correct condition of the retaining ring protective treatment (Ref. 51-23-10, P.Block 1).

(c)Check that the anchor nuts are secure and undamaged.

(3)Manhole surround
(a)Check that surround is clean and protective treatment is undamaged (Ref. 51-23-10, P.Block 1).

(4)Manhole cover securing bolts.
(a)Inspect for deterioration of cadmium coating; flaking, peeling or cracking is unacceptable.
(b)Inspect for correct condition of bolt threads and drive heads; any damage is unacceptable.

C. Job Close-Up
(1)Install manhole cover(Ref. 28-11-33, P.Block 401).
(2)Remove access platform.

TRIM TANK MANHOLE COVER - APPROVED REPAIRS

WARNING : LANDING GEAR - MAKE CERTAIN THAT GROUND SAFETIES AND CHOCKS ARE IN POSITION.
FLIGHT CONTROLS - MAKE CERTAIN THAT GROUND SAFETIES AND NOTICES ARE IN POSITION.
OBSERVE THE SAFETY PRECAUTIONS IN 28-00-00 P, BLOCK 301 AND 28-10-00 P. BLOCK 301.
MAKE CERTAIN THAT FIRE FIGHTING EQUIPMENT IS AVAILABLE AND ADEQUATE.BEFORE POWER IS SUPPLIED TO THE AIRCRAFT
MAKE CERTAIN THAT ELECTRICAL CIRCUITS UPON WHICH WORK IS IN PROGRESS ARE ISOLATED.

1. Equipment and Material

ITEM		DESIGNATION
A		Access Platform
B Material No. 13-002		Pretreatment For Painting (Ref. 20-31-00)
Referenced Procedures		
- 28-00-00	P.Block 301	Fuel General
- 28-11-33	P.Block 401	Covers Manhole, Trim Tank
- 28-25-00	P.Block 301	Refuel/Defuel System
- 28-42-00	P.Block 501	Quantity indicating
- 51-23-10	P.Block 001	Paint Coatings
- 55-00-00	P.Block 301	Stabilizer-General

2. Procedure

A. Job Set-Up.
(1) Remove Fuel from trim tank (Ref. 28-25-00, P.Block 301).
(2) Position access platform.
(3) Remove manhole cover (Ref. 28-11-33, P.Block 401).

B. Approved Repair.
(1) Refurbish cover using Material No. 13-002 (Ref. 20-31-00, P.Block 001).
(2) Refurbish cover surface using Paint Coatings (Ref. 51-23-10, P.Block 001).

C. Preparation of Replacement Component.
Not applicable.

D. Fuel System Test.
Do a functional test of the fuel system (Ref. 28-42-00 P.Block 501).

NOTE: This test is only necessary if you have entered a tank. You may have caused accidental damage to the FQIC equipment. This procedure will show if the equipment continues to be serviciable.

E. Installation.
(1) Install manhole covers (Ref. 28-11-33, P.Block 401).

F. Test.
(1) Carry out electrical bonding test.

G. Close-Up.
(1) Make certain that working area is clean and clear of tools miscellaneous items of equipment.
(2) Remove access platform.

FLAP VALVE - TRIM TANK
REMOVAL/INSTALLATION

WARNING : LANDING GEAR - MAKE CERTAIN GROUND SAFETIES AND WHEEL CHOCKS ARE IN POSITION.

FLIGHT CONTROLS - MAKE CERTAIN THAT GROUND SAFETIES AND NOTICES ARE IN POSITION.

MAKE CERTAIN THAT FIRE FIGHTING EQUIPMENT IS AVAILABLE AND ADEQUATE.

BEFORE AND DURING MAINTENANCE OPERATIONS TO BE UNDERTAKEN INSIDE A FUEL TANK, THE PRESCRIBED SAFETY PRECAUTIONS MUST BE RIGOROUSLY OBSERVED (REF. 28-00-00, P. BLOCK 301 AND 28-10-00, P. BLOCK 301).

BEFORE POWER IS SUPPLIED TO THE AIRCRAFT MAKE CERTAIN THAT ELECTRICAL CIRCUITS UPON WHICH WORK IS IN PROGRESS ARE ISOLATED.

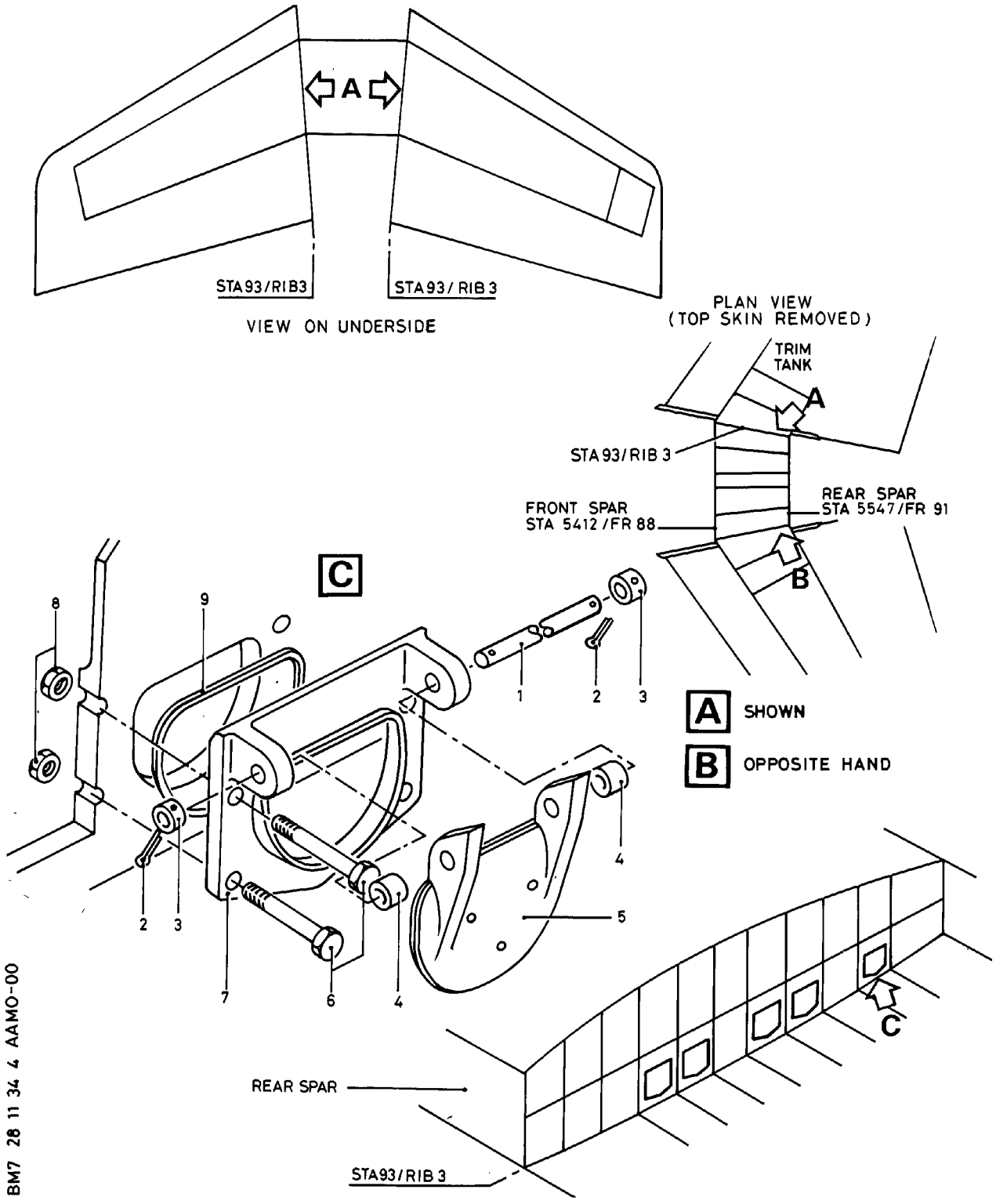
1. Equipment and Material

ITEM	DESIGNATION
A.	Access platform 7m (23ft)
B.	O-ring seal
C.	Cotter Pins
D. Material No. 09-017	Sealants (Ref. 20-31-00)
E. Material No. 01-001	Fuels (Ref. 20-31-00)
Referenced Procedures	
- 28-00-00, P. Block 301	Fuel - General
- 28-10-00, P. Block 301	Storage
- 28-11-00, P. Block 801	Tanks - Approved Repairs
- 28-11-33, P. Block 401	Trim Tank - Manhole Covers

2. Procedure

A. Job Set-Up
(1)Position access platform.
(2)Remove manhole covers 319AZ (319BZ) and 333 (343) BB (Ref. 28-11-33, P. Block 401).

B. Removal
(Ref. Fig. 401)
(1)Flap valve (5):
(a)Remove one cotter pin (2) and collar (3).
(b)Withdraw spindle (1) and remove valve (5). Collect distance tubes (4).
(c)If necessary, remove remaining cotter pin (2) and collar (3) from spindle (1).
(2)Seating (7):
(a)Remove nuts (8) and bolts (6).



Flap Valves - Installation
Figure 401

(b)Remove seating (7). Discard O-ring seal (9).
(c)Clean and inspect component interface and adjacent area.

C. Installation
(1)Seating (7):
(a)Lubricate new O-ring seal (9) with fuel (Material No. 01-001) and place in position on seating (7).
(b)Install seating (7); secure with four bolts (6) and nuts (8). Overcoat nuts and bolt heads with sealant (Material No. 09-017) (Ref. 28-11-00, P. Block 801).
(2)Flap valve (5):
(a)Position one collar (3) on spindle (1) and safety with cotter pin (2).
(b)Slide spindle (1) into pivot on valve seat (7) fitting distance tube (4), flap valve (5) and distance tube (4) in sequence.
(c)Install other collar (3) on spindle (1) and insert, but do not bend over cotter pin (2).

D. Test
R (1)Make sure that the valve (5) is free to pivot on the spindle (1), and
R that the valve drops freely onto the contact face of the valve seat (7).

E. Close-Up
R (1)Safety the cotter-pin (2).
R (2)Make sure that the work area is clean and clear of tools and all other
R items of equipment.
R (3)Install the manhole covers 319AZ (319BZ) and 333 (343) BB (Ref. 28-11-33, P. Block 401).
R (4)Remove the access platform.

WARNING : LANDING GEAR - MAKE CERTAIN THAT GROUND SAFETIES INCLUDING WHEEL CHOCKS ARE IN POSITION.
FLIGHT CONTROLS - MAKE CERTAIN THAT GROUND SAFETIES AND NOTICES ARE IN POSITION.
BEFORE ELECTRICAL POWER IS SUPPLIED TO THE AIRCRAFT MAKE CERTAIN THAT CIRCUITS UPON WHICH WORK IS IN PROGRESS ARE ISOLATED.

1. Reason for the Job

A. Removal/Installation of the rubber vapor seal for access to the lower surface of the horizontal stabilizer center box.

B. Removal/Installation of the vapor seal panels 319AB/BB for access to the manhole covers of the horzontal stabilizer center box.

C. Removal/Installation of the vapor seal covers for access to the pump pressure switches (15QN and 16QN) and to the refuel transfer valve (0437).

2. Equipment and Materials

	ITEM	DESIGNATION
	A.	Access Platform, up 5.5m (18ft)
	B. 97A27302009000	Locking Equipment - Pitch Trim Control Wheel
	C.	Circuit Breaker Safety Clips
	D.	Protective Caps - Electrical Wires
	E.	Protective Caps - Fuel Pipelines
	F.	Protective Caps - Hydraulic Pipelines
	G.	Warning Notice
R	H. MIL-C-5040E TYPE III	Nylon Cord
	J.	Nonmetallic Spatula
	K. Material No. 09-002	Sealant (Ref. 20-31-00)
	L. Material No. 11-010	Cleaning Agents (Ref. 20-31-00)
	Referenced Procedures	
	- 12-11-28, P. Block 301	Fuel
	- 20-28-11, P. Block 1	Electrical Bonding
	- 24-41-00, P. Block 301	AC External Power Control
	- 28-11-35, P. Block 601	Vapor Seal
	- 28-11-35, P. Block 801	Vapor Seal
	- 28-12-38, P. Block 401	Vapor Seal Vent and Drain
	- 28-13-00, P. Block 501	External Ventilation of Center Tank
	- 28-27-14, P. Block 401	Pressure Switch (Trim Tank)
	- 29-10-00, P. Block 301	Main Hydraulic Power- Pressurization/ Depressurization

3. Procedure

A. Job Set-Up

(1)Put the access platform in position.
(2)Move the horizontal stabilizer to the 3 deg. A/C nose down position and install the locking equipment P/N 97A27302009000 on the pitch trim control wheel.
(3)Put a warning notice in the flight compartment to prohibit the operation of the pitch controls.
(4)Open, safety and tag the following circuit brakers

PANEL	SERVICE	IDENT.	LOCATION
22VU	FUEL/TRIM TANK FWDXFR/PUMP1/CTL	3QN	J22
22VU	FUEL/TRIM TANK FWDXFR/PUMP1/WARN	5QN	J23
132VU	FUEL/TRIM TANK/XFR PUMP2/WARN	6QN	K54
132VU	FUEL/FQI SUPPLY & IND	1QT	P59
132VU	FUEL/TRIM TANK/XFR PUMP 2/CLT	4QN	K55
132VU	FUEL/FQI CHAN SUPPLY 1	3QT	P60
132VU	FUEL/FQI CHAN SUPPLY 2	4QT	P61

(5)Depressurize the hydraulic system (Ref. 29-10-00, P.Block 301)
(6)Open access doors 312AR and 313AL
(7)If necessary, remove the hydraulic pipelines at the horizontal stabilizer rear spar between RIB 2 and RIB4 (RH/LH), and install protective caps.

B. Removal (Ref. Fig. 401, 402, 403)

CAUTION : HANDLE THE RUBBER VAPOR SEAL CAREFULLY.

(1)Remove the rubber vapor seal (1).
(a)Disconnect and remove the vapor seal drain pipelines (Ref. 28-12-38, P.Block 401). Install protective caps.
(b)Remove the nuts (6), the screws (4), the clamps (5) then disconnect the bonding straps (3).
(c)Disconnect the electrical connectors (8) 13QN-A and 14QN-A from the pumps (7). Install protective caps.
NOTE : To make the installation easier, make a record of the positions of the bolts (12) and (15) and the clamp strips (18).
(d)Remove the bolts (15), the washers (14) and the spacers (17). Remove the clamps (16) together with the wire bundles.
(e)Remove the bolts (12), the sealing washers (13) and the clamp strips (18).
(f)Remove the cords (20).
(g)Carefully remove the rubber vapor seal (1).Do not discard the rubber vapor seal. It must be used as a template to punch out the attachement holes on the new vapor seal.
(2)Remove the vapor seal panels 319AB/BB (2).

(a)Remove the bolts (11), the sealing washers (10) and the panels (2).
(b)Remove the seals (9).
(3)Remove the vapor seal covers (22).
(a)Disconnect the electrical connector(s) (21) 6079VC-A for LH cover, or 6080VC-A, 6081VC-A and 6082VC-A for RH cover.
Install protective caps.
(b)Remove the bolts (23), the sealing washers (24) and the cover (22).
(c)Remove the seal (25).
(d)Remove the nut (27) and the receptacle (26). Install a protective cap.

C. Preparation for Installation (Ref. Fig. 401, 402, 403)

CAUTION : HANDLE THE RUBBER VAPOR SEAL CAREFULLY.

Note: If new vapor seal is bigger than the old one, use the old item as a template and cut it to size.

(1)Examine the rubber vapor seal (1) for damage. (Ref. 28-11-35, P. Block 601).
(2)Use the old item of the vapor seal as a template, and put marks and make attachment holes through it on the new vapor seal.
(3)Examine the vapor seal fittings (19) and the anchor nuts to make sure that they are in good condition and are correctly attached. If necessary, replace any of the fittings refer to 28-11-35, P.Block 801.
(4)Examine all the bolts, nuts and washers to make sure that they are in in good condition.
(5)Use a nonmetallic spatula and cleaning agent (Material No. 11-010) to remove the remaiming sealant from the center trim tank in the vapor seal contour.

D. Installation (Ref. Fig. 401, 402, 403)

CAUTION : HANDLE THE RUBBER VAPOR SEAL CAREFULLY.

(1)Install the rubber vapor seal (1).
(a)Put the rubber vapor seal (1) in position.
(b)Put the cords (20) in position and tie them.
(c)Fasten the rubber vapor seal (1) with the clamp strips (18), the sealing washers (13) and the bolts (12) in the positions recorded during removal.
(d)Install the wire bundles with the clamps (16), the bolts (15), the washers (14) and the spacers (17).
(e)Remove the protective caps and connect the connectors (8) 13 QN-A and 14QN-A to the pumps (7).
(f)Put the clamps (5) in position, then connect the bonding straps (3) with the screws (4) and the nuts (6). Do an electrical bonding test between the wire bundle braiding and a suitable earth point (Ref. 20-28-11, P. Block 1).
(2)Install the vapor seal panels 319 AB/BB (2).
(a)Put the seals (9) in position.
(b)Put the panels (2) in position and fasten with the sealing washers

(10) and the bolts (11).

(3)Install the vapor seal covers (22).

(a)Install the receptacle(s) (26) in the cover and fasten with the nut(s) (27).

(b)Put the seal (25) in position.

(c)Put the cover (22) in position and fasten with the sealing washers (24) and the bolts (23).

(d)Remove the protective caps, then install and connect the vapor seal drain pipes (Ref. 28-12-38, P.Block 401).

(4)Put a fillet of sealant 09-002 on the vapor seal corners and contour where there is a clamp strip (18) discontinuity.

E. Test

(1)Do this test if the rubber vapor seal and/or the vapor seal covers have been removed and installed.

(a)Remove the circuit breaker safety clips and tags and close circuit breakers:

PANEL	SERVICE	IDENT.	LOCATION
22VU	FUEL/TRIM TANK FWDXFR/PUMP1/CTL	3QN	J22
22VU	FUEL/TRIM TANK FWDXFR/PUMP1/WARN	5QN	J23
101VU	FUEL/TRIM TANK/PUMP1/SUPPLY	1QN	B14
101VU	FUEL/TRIM TANK/PUMP2/SUPPLY	2QN	C2
132VU	FUEL/TRIM TANK/XFR PUMP2/WARN	6QN	K54
132VU	FUEL/TRIM TANK/XFR PUMP2/CTL	4QN	K55
132VU	FUEL/FQI SUPPLY & IND	1QT	P59
132VU	FUEL/FQI CHAN SUPPLY1	3QT	P60
132VU	FUEL/FQI CHAN SUPPLY2	4QT	P61

(b)Fill the trim tank with fuel (Ref. 12-11-28, P.Block 301).

(c)Energize the aircraft electrical network (Ref. 24-41-00, P. Block 301). Make certain that the electronics racks are ventilated.

(d)Do the following:

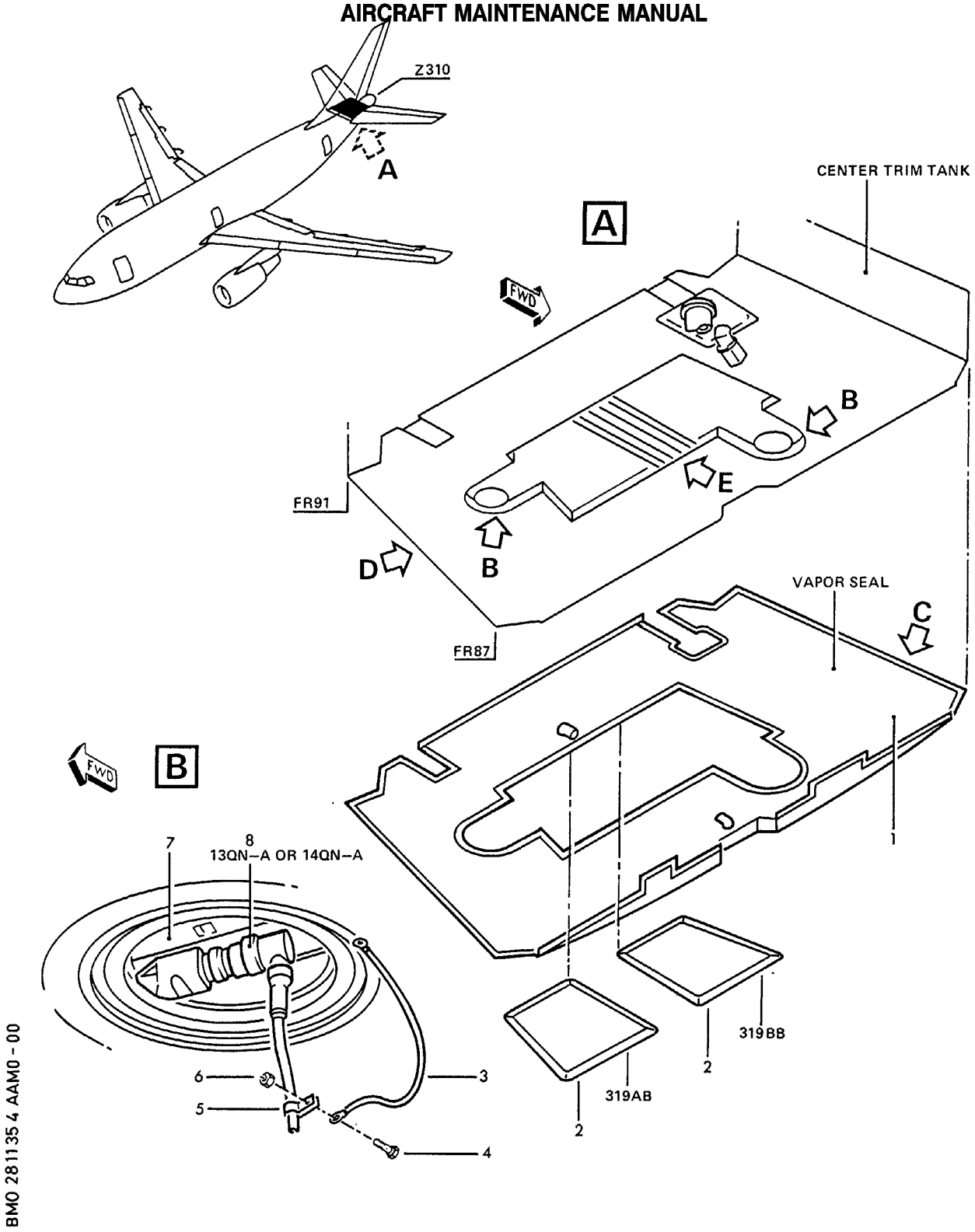
ACTION	RESULT
1. On the FUEL section of panel430 VU: - Press the TRIM TANK PUMP 1 (2) switch on. - Press the MODE switch on.	- The FWD legend comes on. - The TRIM TANK PUMP 1 (2) OFF legend goes OFF. - The TRIM TANK PUMP 1 (2) LO PR legend flashes then stays off.
2. On the FUEL section of panel 430 VU: - Press the TRIM TANK PUMP 1 (2) switch to release it.	- The TRIM TANK PUMP 1 (2)

ACTION	RESULT
	OFF legend comes on. - The TRIM TANK PUMP 1 (2) LO PR legend stays off.
- Press the MODE switch to release it.	- The FWD legend goes off.

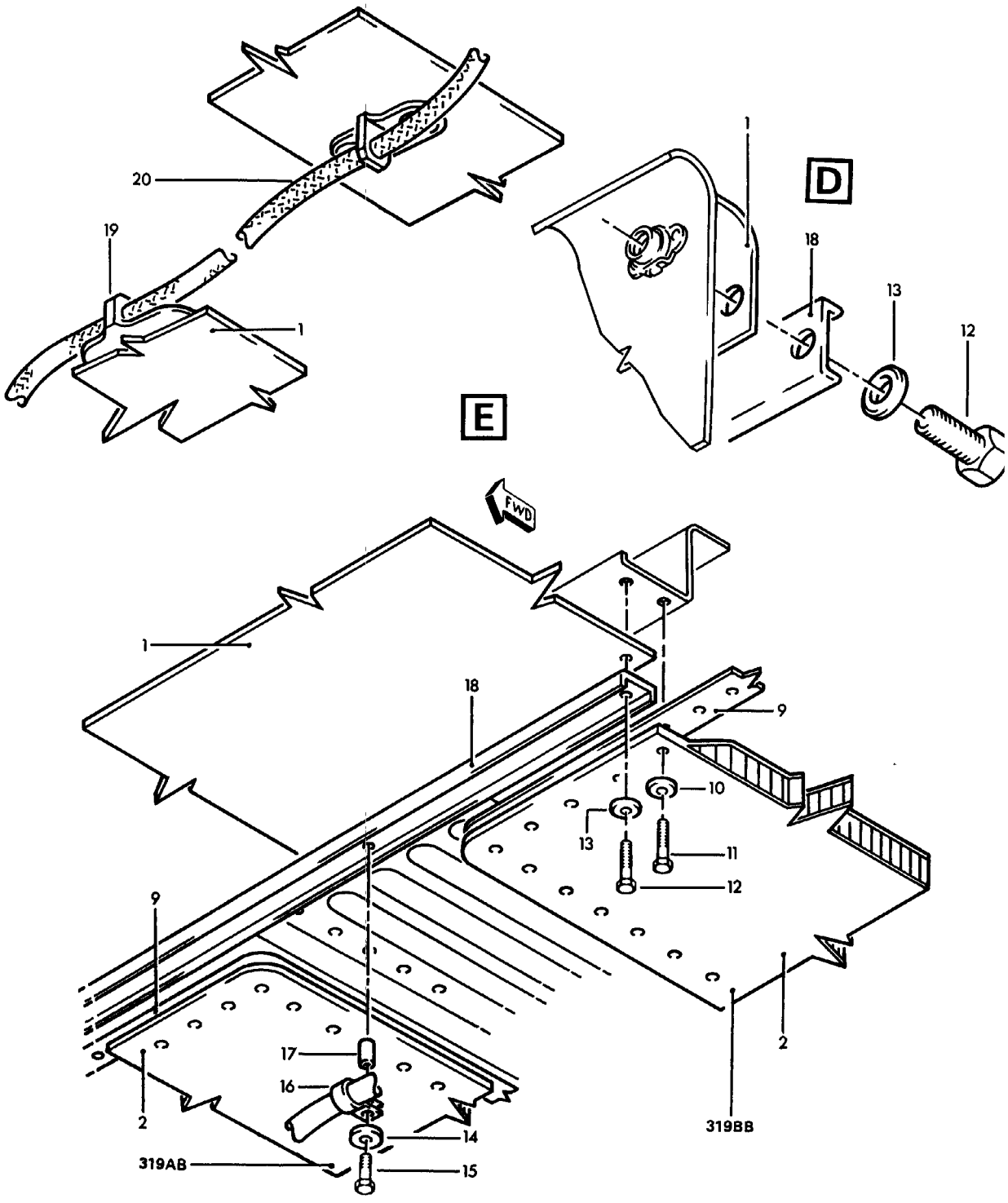
(e)Do a pressure test of the vapor seal (Ref. 28-13-00, P. Block 501).
(f)Examine the hydraulic connections to make certain that there are no leaks.
(2)Do this test when only the vapor seal panels 319 AB/BB have been removed and installed.
(a)Do a pressure test of the vapor seal (Ref. 28-13-00, P. Block 501).

4. Close-Up

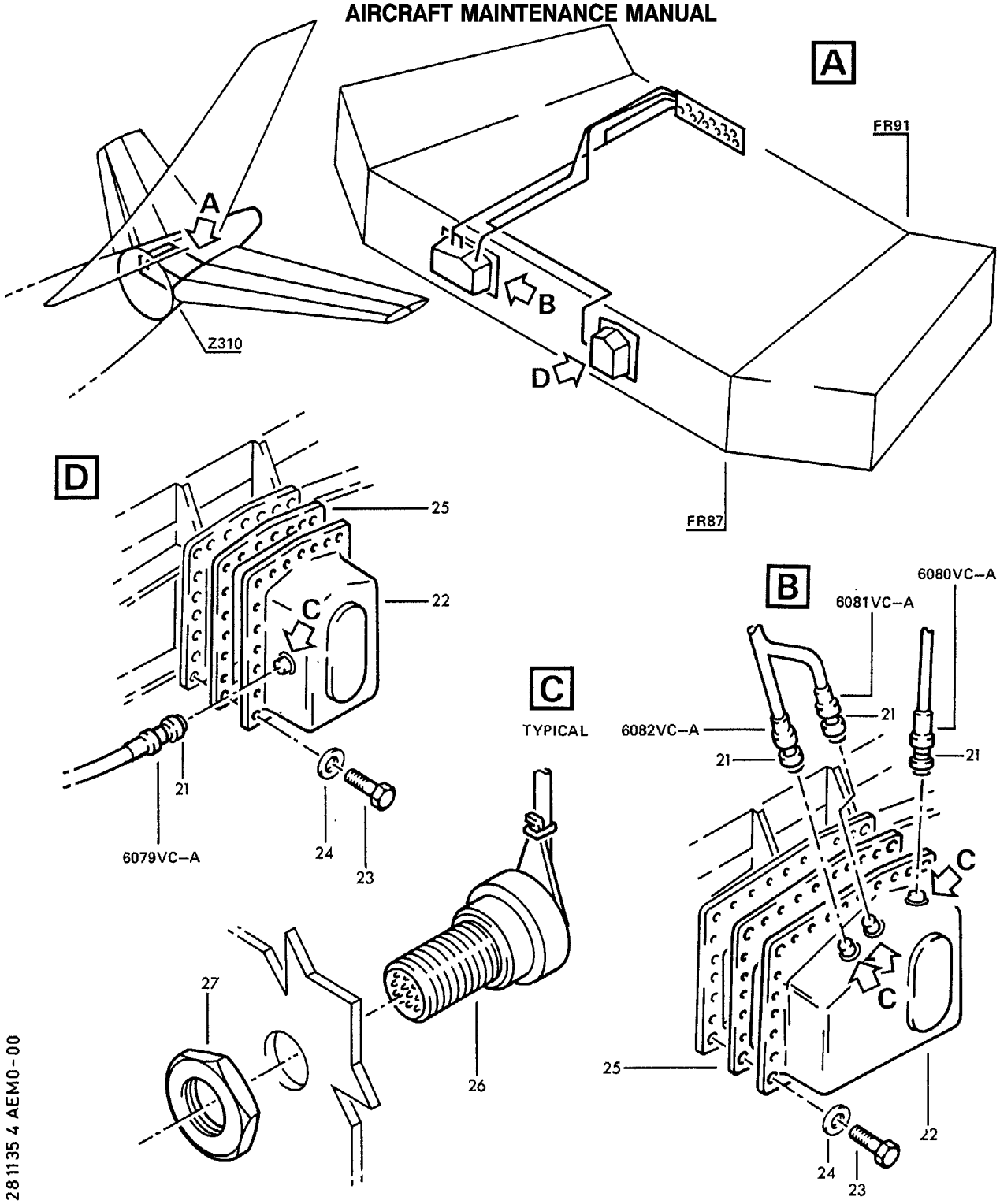
(1)Make certain that the working area is clean and clear of tools and miscellaneous items of equipment.
(2)Close the access doors 312 AR and 313 AL.
(3)Remove the access platform.
(4)Remove the warning notice.



Vapor Seal (Sheet 1 of 3)
Figure 401



Vapor Seal (Sheet 2 of 3)
Figure 402



Vapor Seal (Sheet 3 of 3)
Figure 403

VAPOR SEAL - INSPECTION /CHECK

WARNING : LANDING GEAR - MAKE CERTAIN THAT GROUND SAFETIES INCLUDING WHEEL CHOCKS ARE IN POSITION.
FLIGHT CONTROLS - MAKE CERTAIN THAT GROUND SAFETIES AND NOTICES ARE IN POSITION.
BEFORE POWER IS SUPPLIED TO THE AIRCRAFT, MAKE CERTAIN THAT ELECTRICAL CIRCUITS UPON WHICH WORK IS IN PROGRESS ARE ISOLATED.

1. Equipment and Materials

ITEM	DESIGNATION
A.	Access Platform, up to 5.5 m (18 ft.)
B. 97A27302009000	Locking Equipment - Pitch Trim Control Wheel
C.	Warning Notice

Referenced Procedures
- 28-11-35, P. Block 401 Vapor Seal
- 28-11-35, P. Block 801 Vapor Seal
- 28-13-00, P. Block 501 External Ventilation of Center Tank

A. Job Set-Up
(1) Position access platform.
(2) Move horizontal stabilizer to 3° A/C nose down and install locking equipment P/N 97A27302009000 at pitch trim control wheel.
(3) Display warning notice in flight compartment prohibiting operation of pitch control.
(4) Open access door 312AR and 313AL.
(5) Remove vapor seal (Ref. 28-11-35, P. Block 401).

B. Check rubber vapor seal
(1) Check vapor seal for cuts, holes and ruptures.
If damage is less than 250 mm (10 in.) repair must be carried out (Ref. 28-11-35, P. Block 801).
If damage is greater than 250 mm (10 in.) vapor seal must be replaced.
(2) Check vapor seal for loose or missing ferrules and condition of hangers.
For repair of hangers and ferrules refer to 28-11-35, P. Block 801.
(3) Install vapor seal (Ref. 28-11-35, P. Block 401).
(4) Check vapor seal vent/drain system for good condition and security.
R (5) Carry out detailed inspection of vapor seal moulded drains whilst
R deflecting them in different directions.
R (6) Remove locking equipment P/N 97A27302009000.
R (7) Carry out pressure test of vapor seal (Ref. 28-13-00, P. Block 501).

C. Close-Up
(1) Make certain that working area is clean and clear of tools and miscellaneous items of equipment.
(2) Close access door 312AR and 313AL.
(3) Remove access platform.
(4) Remove warning notice.

VAPOR SEAL - APPROVED REPAIRS

WARNING : LANDING GEAR - MAKE CERTAIN THAT GROUND SAFETIES INCLUDING WHEEL CHOCKS ARE IN POSITION.
FLIGHT CONTROLS - MAKE CERTAIN THAT GROUND SAFETIES AND NOTICIES ARE IN POSITION.
BEFORE ELECTRICAL POWER IS SUPPLIED TO THE AIRCRAFT, MAKE CERTAIN THAT ELECTRICAL CIRCUITS UPON WHICH WORK IS IN PROGRESS ARE ISOLATED.

1. Equipment and Materials

ITEM	DESIGNATION
A.	Access Platform, up to 5.5 m (18ft)
B. 97A27302009000	Locking Equipment-Pitch Trim Control Wheel
C.	Non-Metallic Scraper
D.	Emery Cloth (Grade 120)
E.	Roller
F. Material No. 11-003	Cleaning Agents (Ref. 20-31-00)
G. 09-031	Adhesive, Uniroyal Englebert, FSCM C0076
H. 5187/5200	Patch Material, Uniroyal Englebert, FSCM C0076
J. FCB-60981	Hanger, Uniroyal Englebert, FSCM C0076
Referenced Procedures	
- 28-11-35, P. Block 401	Vapor Seal
- 51-77-10, P. Block 801	Repair of Honeycomb Components

2. Procedure

A. Job Set-Up
(1)Move the horizontal stabilizer to the 3 deg. A/C nose-down position. Install the locking equipment P/N 97A27302009000 on the pitch trim control wheel.
(2)Put the access platform in position.
(3)Open the access doors 312AR and 313AL.
(4)Remove the vapor seal as required to get access to both sides of the damaged area (Ref. 28-11-35, P.Block 401)

B. Repair of the Rubber Vapor Seal (Ref. Fig. 801)
(1)Repair of damage to the rubber vapor seal.

R NOTE :

R - If damage closes ≤25 mm (0.98 mm) to the internal and external shapes (Ref. Fig. 802): the repair must be referred to Airbus Industrie.

R - If damage is greater than 127 mm (5 in.): replace the vapor seal or referred to the vendor information.

(a)Clean and degrease the vapor seal with the cleaning agent (Mat. No. 11-003).
(b)Mark out the repair area as is shown in Fig. 801.
(c)Make the patch as shown in Fig. 801.
R (d)Make rough the vapor seal surfaces of the repair area and of the patch with the emery cloth.
(e)Clean the roughened surfaces of the repair area and of the patch with cleaning agent (Mat. No. 11-003).
(f)Apply a coat of adhesive (Mat. No. 09-031) to the prepared area of the vapor seal and the patch. Let the adhesive dry for 5 to 10 minutes, until it is dry to the touch.
(g)Put the patch in position on the repair area. Make certain that there are no creases or bubbles of trapped air.
(h)Use the roller to press the patch flat on the repair area.
(j)Apply a fillet of the adhesive (Mat. No. 09-031) to the edges of the patch.
(k)Let the adhesive cure for the least 24 hours.

(2)Replacement of a hanger.

CAUTION : TAKE CARE TO AVOID DAMAGE TO THE RUBBER VAPOR SEAL.

(a)Remove the old hanger from the vapor seal. Use a non-metallic scraper to help to break the adhesive bond.
(b)Clean the vapor seal with cleaning agent (Mat. No. 11-003).
(c)Use the emery cloth to make rough the contact surfaces of the hanger and the vapor seal.
(d)Clean the roughened surfaces of the hanger and the vapor seal with cleaning agent (Mat. No. 11-003).
(e)Apply a coat of adhesive (Mat. No. 09-031) to the roughened surfaces of the vapor seal and the hanger. Let the adhesive dry for 5-10 minutes, until it is dry to the touch.
(f)Put the hanger in position on the vapor seal. Make certain that there are no creases or bubbles of trapped air.

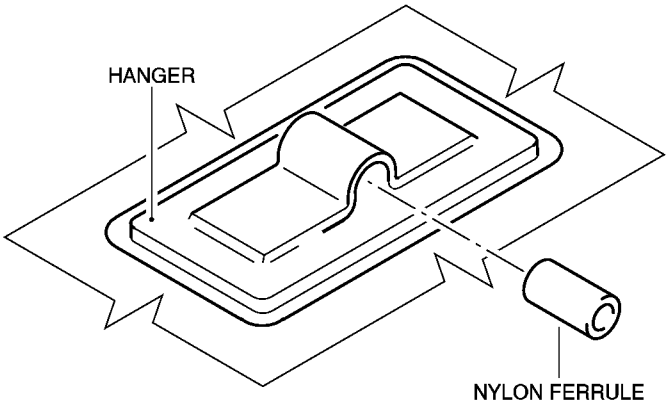
(g)Use the roller to press the hanger on to the vapor seal.
(h)Apply a fillet of the adhesive (Mat. No. 09-031) to the edges of the hanger.
(k)Let the adhesive cure for at least 24 hours.

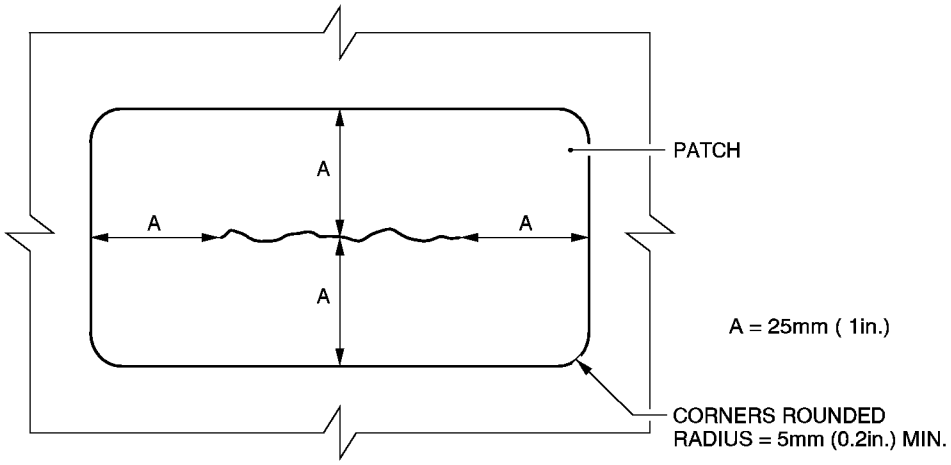
(3)Repair of a loose ferrule.
(a)Remove the loose ferrule.
(b)Use the emery cloth to make rough the surface of the ferrule where it is in contact with the hanger.
(c)Apply adhesive (Mat. No. 09-031) to the roughened surface of the ferrule. Let the adhesive dry for 1 minute.
(d)Install the ferrule into the hanger.

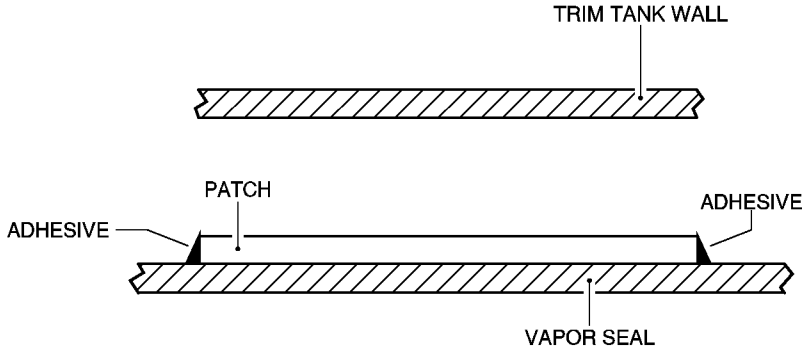
(4)Repair of the access panels 312 AR and 313 AL.
(a)Refer to 51-77-10, P.Block 801.

D. Close-Up

(1)Make certain that the working area is clean and clear of tools and miscellaneous items of equipment.
(2)Install the vapor seal (Ref. 28-11-35, P.Block 401).
(3)Close the access doors 312 AR and 313 AL.
(4)Remove the access platform.
(5)Remove the locking equipment P/N 97A27302009000.







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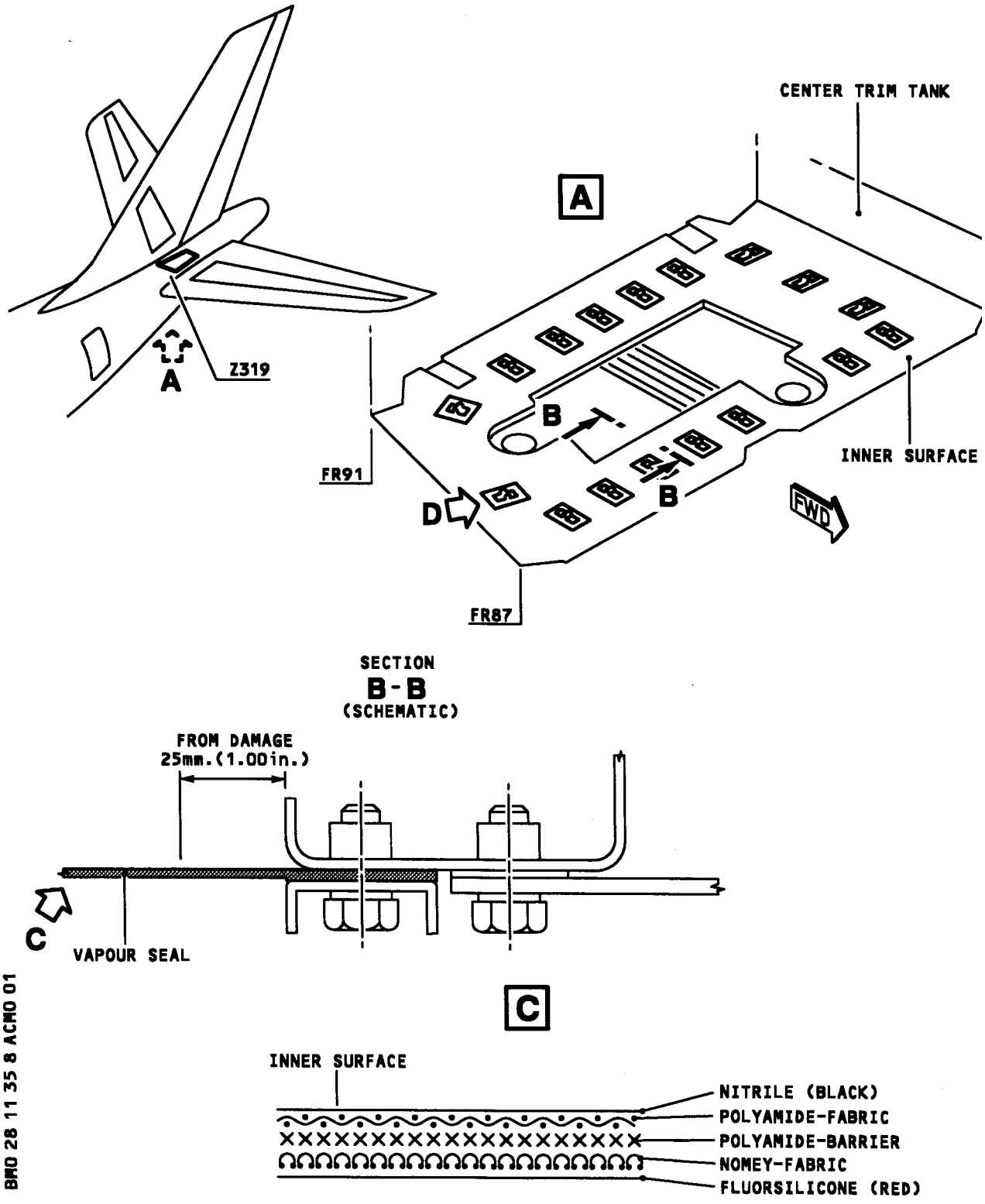
Repair Scheme
Figure 801

R



Damages Locating Criteria
Figure 802

WARNING : OBEY THE SAFETY PRECAUTIONS IN 28-00-00, P. BLOCK 301 AND 28-10-00, P. BLOCK 301.
MAKE SURE THAT THE FIRE FIGHTING EQUIPMENT IS AVAILABLE AND NEAR TO THE WORK AREA BEFORE THE MAINTENANCE OPERATIONS ARE STARTED.
MAKE SURE THAT THE ELECTRICAL CIRCUITS ON WHICH THE WORK IS IN PROGRESS ARE ISOLATED BEFORE THE POWER IS SUPPLIED TO THE AIRCRAFT.

1. Equipment and Materials

ITEM	DESIGNATION
A.	Access Platform, 2.7 m (9 ft.)
B.	Low Pressure Air Supply with Gage
C. 98A28108001000	Water Drain Adapter
D. MS21914-10D	Blanking Cap - Air Line 'T'-Piece
E. MS21914-10D	Blanking Cap - Non Return Valve
F.	Blanking Cap Assembly - Fuel Pipe Flange
G.	Blanking Cap Assembly - Vent Pipe Flange
H.	Blanking Caps - Cavity Drain Connections
I. MS21914-8D	Blanking Caps - Cavity Drain Fitting
J.	Blanking Caps - Cavity Drain Hoses
K.	Blanking Caps - Electrical Connections
L.	Blanking Caps - Air Hose
M.	Blanking Plates - Additional Center Tank
N.	Blanking Plates - Cavity Drain Positions
O.	Blanking Plates - Sidewall Lining
P.	Blanking Plates - Water Drain
Q.	Blanking Plugs - Water Drain Openings
R.	Blank Flange - ACT Fuel Pipe Flange
S.	Blank Flange - ACT Vent Pipe Flange

**ON A/C 101-200,

Post SB 28-2105 For A/C 101-200,

Post SB 28-2108 For A/C 101-200,

D.	Door Sill Roller
E.	XY-Guide
F.	Blanking Cap Assemblies - Fuel Pipe Flanges
G.	Blanking Cap Assemblies - Vent Pipe Flanges
H.	Blanking Caps - Air Hoses
I.	Blanking Caps - Cavity Drain Connections
J.	Blanking Caps - Cavity Drain Hoses
K. MS21914-8D	Blanking Caps - Cavity Drain Fitting
L.	Blanking Caps - Electrical Connections
M. MS21914-10D	Blanking Caps - Non-Return Valves and T-Pieces

ITEM	DESIGNATION
N.	Blanking Plates - Additional Center Tanks
O.	Blanking Plates - Cavity Drain Positions
P.	Blanking Plates - Sidewall Lining
Q.	Blanking Plates - Water Drain
R.	Blank Flange - ACT Fuel Pipe Flange
S.	Blank Flange - ACT Vent Pipe Flange

**ON A/C 101-200,

T.	Stowage Box (part of the conversion kit)

**ON A/C 101-200,

Post SB 28-2105 For A/C 101-200,

T.	Stowage Box (part of the conversion kit)

**ON A/C 101-200,

U.	Measuring Equipment
V.	O-Rings
W.	Circuit Breaker Safety Clips and Tags
X.	Drainage Containers
Y.	Warning Notice
Z.	Lockwire, Corrosion-Resistant Steel, Dia. 0.63 mm (0.025 in.)
AA.	Plastilin Putty
AB.	Adhesive Tape
AC.Material No. 03-008	Oils (Ref. 20-31-00)
AD.Material No. 04-012	Common Greases (Ref. 20-31-00)
AE.Material No. 05-002	Special Materials (Ref. 20-31-00)
AF.Material No. 05-005	Special Materials (Ref. 20-31-00)
AG.Material No. 05-027	Special Materials (Ref. 20-31-00)
AH.Material No. 09-016	Sealants (Ref. 20-31-00)
AI.Material No. 11-003	Cleaning Agents (Ref. 20-31-00)

Referenced Procedures

- 12-11-28, P. Block 301	Fuel Tank Replenishing
- 20-28-11, P. Block 1	Electrical Bonding
- 25-52-44, P. Block 401	Fixed YZ-Latch

**ON A/C 101-200,

Post SB 28-2105 For A/C 101-200,

Post SB 28-2108 For A/C 101-200,

- 25-52-33, P. Block 401 Latch 42 - Pallet Locking
- 25-52-44, P. Block 401 Fixed YZ-Latch
- 25-52-48, P. Block 401 XY-Guide and Door Sill Roller

**ON A/C 101-200,

- 28-00-00, P. Block 1 Fuel - General
- 28-00-00, P. Block 301 Fuel - General
- 28-00-00, P. Block 601 Fuel - General
- 28-10-00, P. Block 301 Storage
- 28-11-36, P. Block 601 Additional Center Tank
- 28-11-37, P. Block 401 Manhole Cover - Additional Center Tank
- 28-11-38, P. Block 601 Bladder Tank
- 28-13-00, P. Block 501 External Ventilating and Drainage System
- 28-25-00, P. Block 301 Refuel/Defuel System
- 28-26-15, P. Block 801 Trim Tank Fuel Transfer Line
- 28-28-00, P. Block 501 Additional Center Tank Transfer System
- 28-28-24, P. Block 401 Air Filter
- 52-30-00, P. Block 1 Cargo Compartment Doors

2. Procedure

A. Job Set-Up
(1)Make sure that the aircraft is statically grounded.
(2)Transfer the fuel from additional center tanks (ACT) or defuel as applicable (Ref. 28-25-00, P. Block 301).
(3)Put the access platform in position.
(4)Open the door of the AFT cargo compartment (Ref. 52-30-00, P. Block 1).
(5)Open, safety and tag the following circuit breakers:

PANEL	SERVICE	IDENT.	LOCATION
22VU	FUEL TK LO LVL AND CAL - L OUTR, R INR AND CTR R	1QJ	208/B26
22VU	FUEL TK LO LVL AND CAL - R OUTR, L INR AND CTR L	2QJ	208/B27
101VU	FUEL CARGO TK PUMP SUPPLY	1QH	GEN1/B02
132VU	FUEL ACT VENT AND PRESS VALVE	3QH	325/K57
132VU	FUEL ACT XFR VALVE MOTOR 1	4QH	325/K58
132VU	FUEL ACT PUMP CTL XFR VALVE MOTOR 2	5QH	325/K59
132VU	FUEL FQI SUPPLY AND IND	1QT	321/P59
132VU	FUEL FQI CHAN SUPPLY 1	3QT	321/P60
132VU	FUEL FQI CHAN SUPPLY 2	4QT	321/P61
132VU	FUEL FUELLING OVERFLOW AND CALIBRATION	5QJ	321/P58
132VU	FUEL FUELLING HI LVL	6QJ	321/P57
132VU	FUEL FUELLING XFR VALVE	2QU	321/P55

(6)Put the warning notices in position on:
- the refuel/defuel panel 110VU
- the fuelling panel 430VU

to tell persons not to operate the MODE SELECTOR switch.

B. Removal
(Ref. Fig. 401)

**ON A/C 101-200,

Post SB 28-2105 For A/C 101-200,

Post SB 28-2108 For A/C 101-200,

(Ref. Fig. 402)

**ON A/C 101-200,

(Ref. Fig. 403)

**ON A/C 101-200,

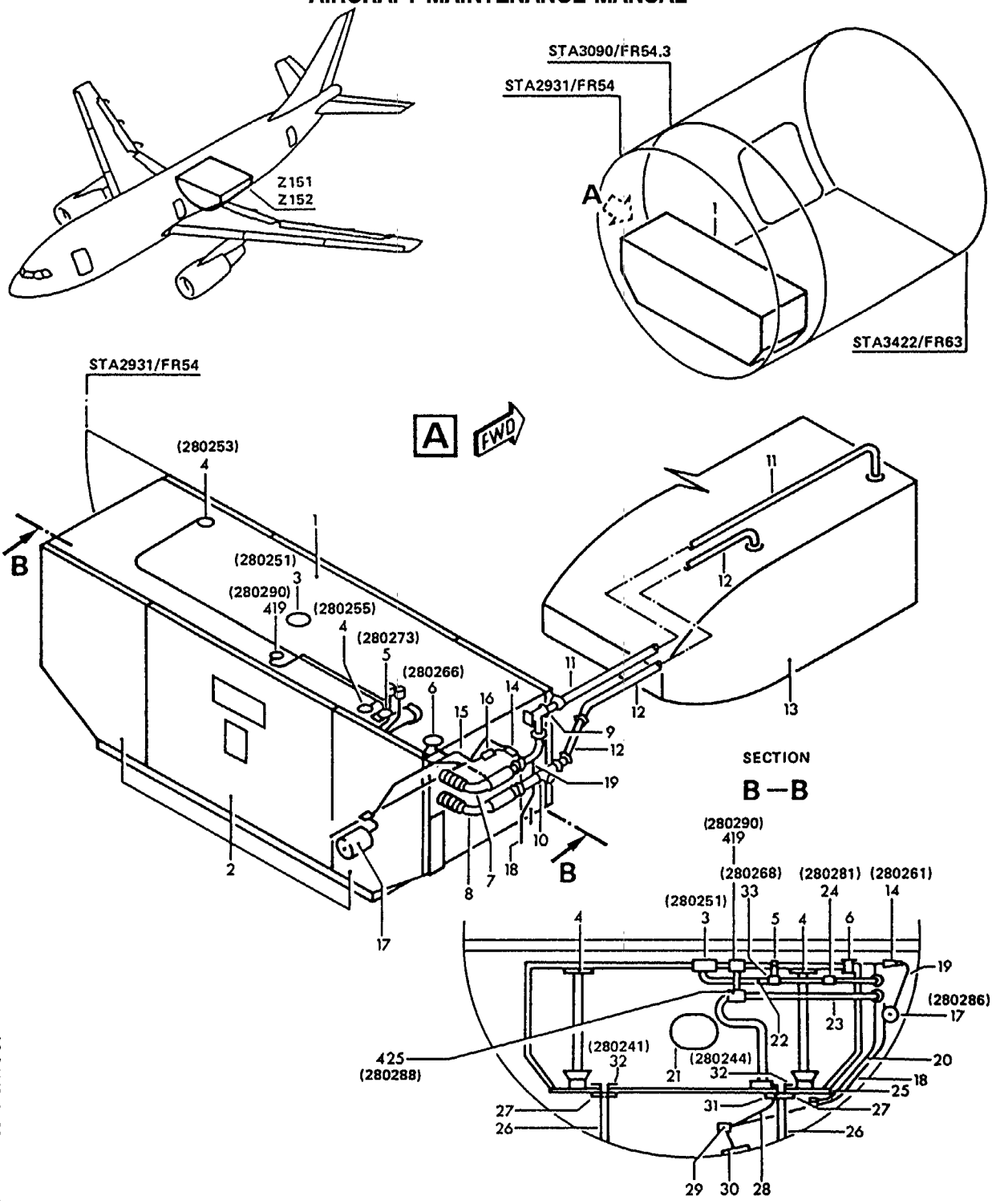
Post SB 28-2105 For A/C 101-200,

Post SB 28-2108 For A/C 101-200,

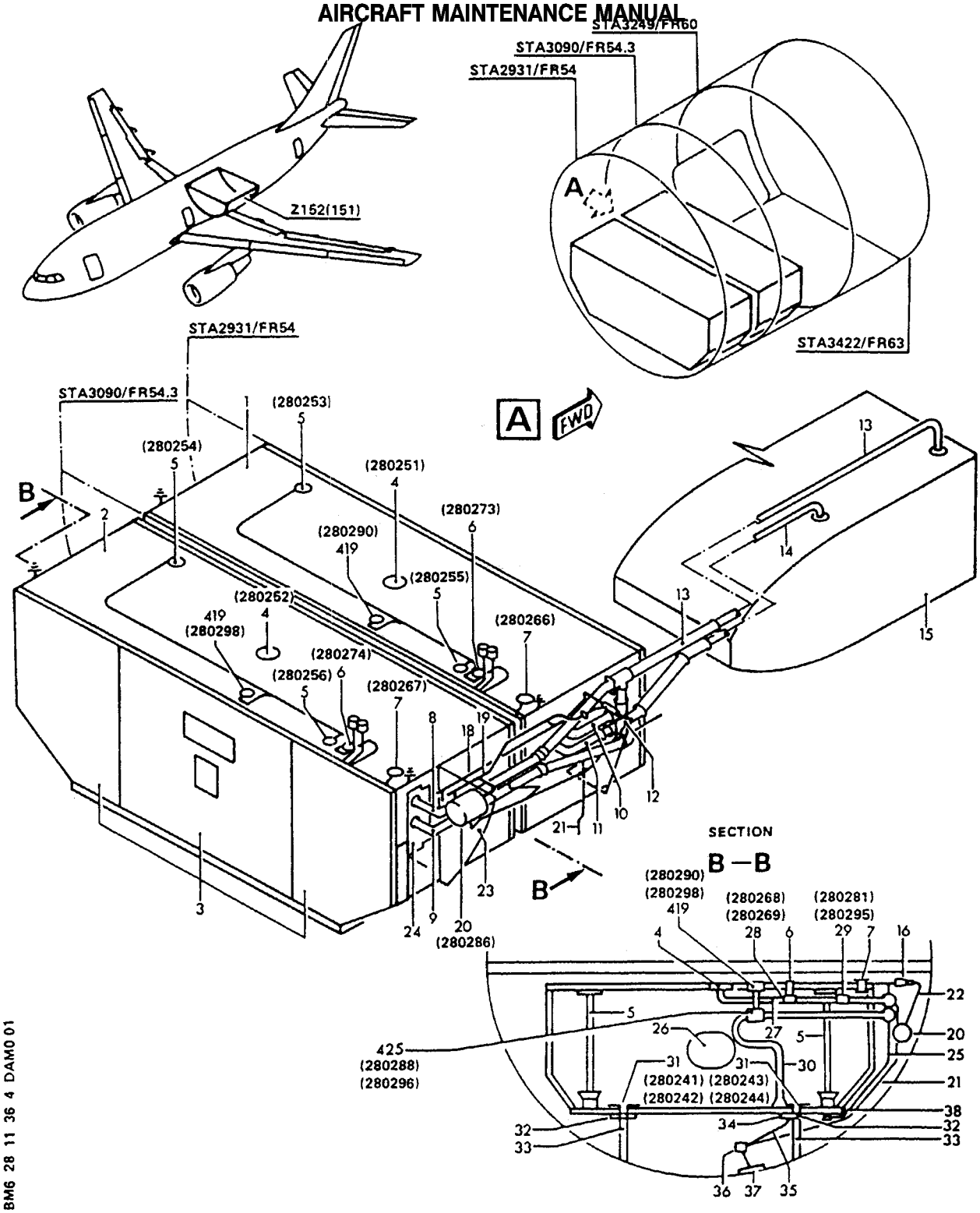
(Ref. Fig. 404)

**ON A/C 101-200,

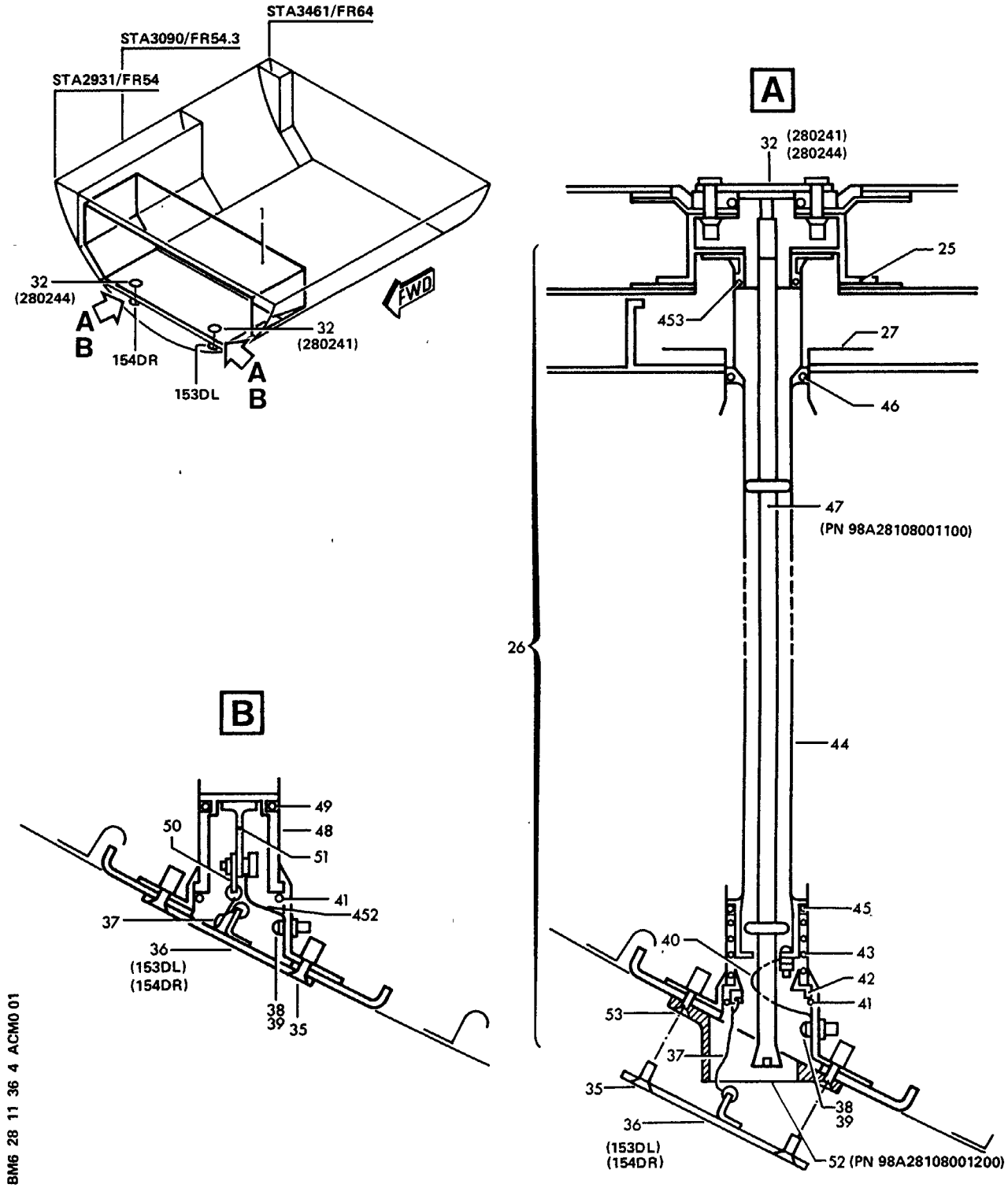
(1)Do a check of the drain monitor (30) and look for signs of fuel leakage.
(2)Do a check of the access panels 153DL and 154DR (36) for the water drain mechanisms (26) and look for signs of fuel leakage.
(3)Remove the water drain mechanisms (26) (Ref. Fig. 403).
(a)Put the drainage container in position below the water drain access panel 153DL (154DR) (36) aft of FR54.
(b)Disconnect the screws (35) at the access panel 153DL (154DR) (36).
(c)Disconnect the safety cord (37) from the spring support (42).
(d)Remove and retain the access panel 153DL (154DR) (36) complete with the safety cord (37).
(e)Disconnect the bonding strap (40) from the sidewall.
1 Remove and retain the screw (38) and the washer (39).
2 Disconnect the bonding strap (40) from the sidewall.
NOTE : Do not disconnect the bonding strap (40) from drain tube (44) unless a repair or a new installation is necessary.
CAUTION : REMOVE ANY FUEL LEAKAGE IMMEDIATELY.
(f)Use the water drain adaptor PN 98A28108001000 and drain the remaining



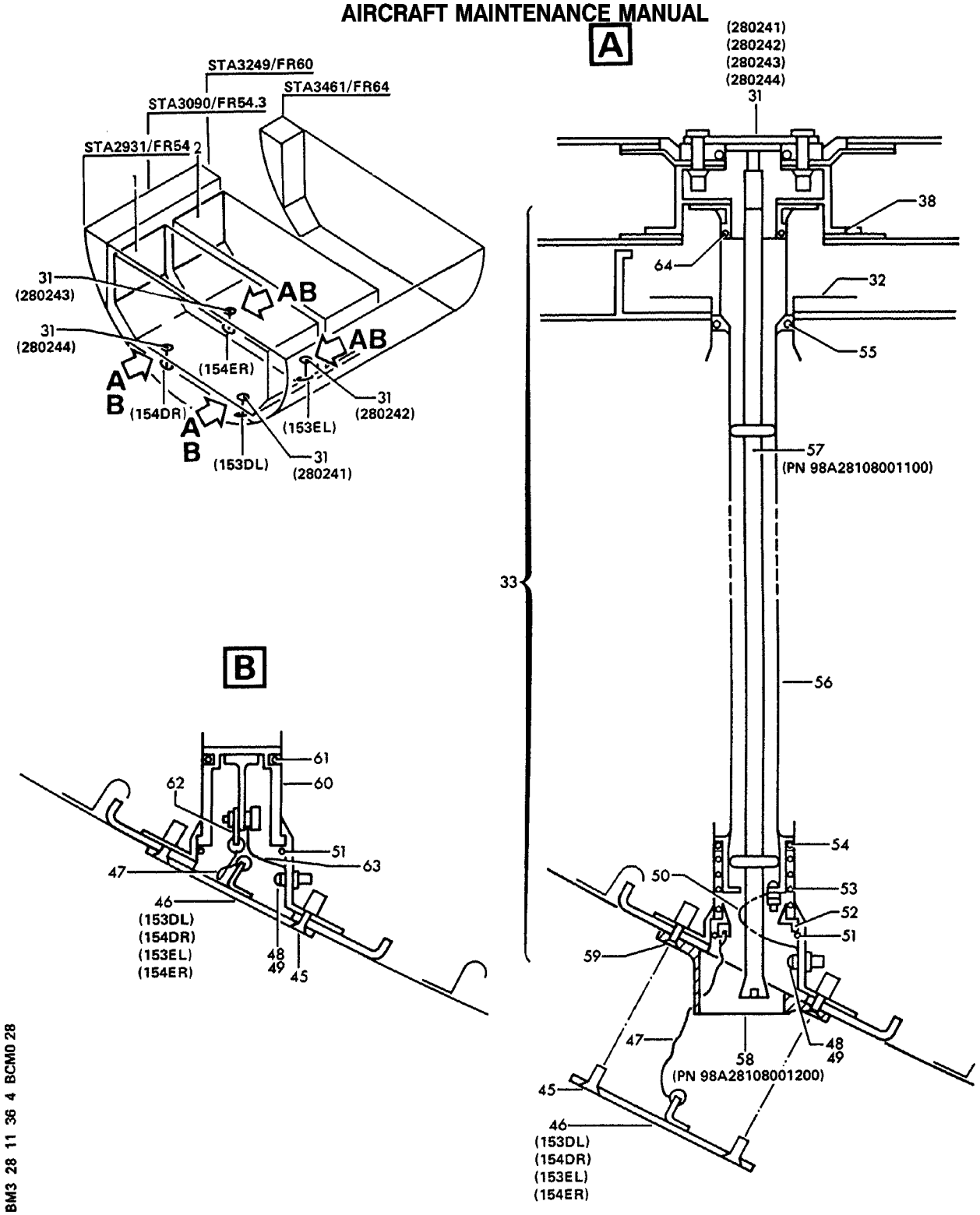
Additional Center Tank - Component Location
Figure 401



Additional Center Tank - Component Location
Figure 402



Water Drain Mechanism and Plug
Figure 403



Water Drain Mechanis and Plug
Figure 404

fuel from the ACT (1).

1 Put the flange (52) in position at the water drain opening.

2 Connect the flange (52) to the aircraft skin with the quick-release fasteners (53).

3 Put the thrust rod (47) of the water drain adaptor, through the flange (52) into the drain tube (44).

4 Use the thrust rod (47) to lift the drain valve 280241 (280244) (32) to drain the fuel from the ACT (1).

5 Remove the thrust rod (47).

6 Disconnect the quick-release fasteners (53) and remove the flange (52).

(g) Remove and retain the lockring (41).

(h) Remove the spring support (42) and the spring (43) and put them in the stowage box.

(i) Put the thrust rod (47) in the drain tube (44).

(j) Turn the thrust rod (47) thru 90° and then remove the thrust rod (47) and the drain tube (44).

(k) Remove and discard the O-rings (45),(46) from the drain tube (44).

(l) Put the drain tube (44) in the stowage box.

(m) Do the steps (a) thru (l) again and remove the other water drain mechanism (26).

(n) Remove the drainage container.

(4)Install the water drain plugs (48) (Ref. Fig. 403).
(a)Get the drain plug (48) from the stowage box.
(b)Apply vaseline (Material No. 04-012) to the new O-ring (49).
(c)Put the O-ring (49) in the groove in the body of the drain plug (48).
(d)Put the drain plug (48) in the water drain opening.
(e)Safety the drain plug (48) with the lockring (41).
(f)Connect the bonding strap (452) from to the bracket (51) to the sidewall with the screw (38) and the washer (39) (Ref. 20-28-11, P. Block 1).
(g)Put the access panel 153DL (154DR) (36) in position at the water drain opening.
(h)Connect the safety cord (37) from the access panel 153DL (154DR) (36) to the bracket (50).
(i)Connect the access panel 153DL (154DR) (36) to the aircraft skin with the screws (35).
(j)Do the steps (a) thru (i) again and install the other drain plug (48).
(5)Disconnect the quick-release fasteners and remove the heat shield (2) from the rear wall of the ACT (1).

**ON A/C 101-200,

Post SB 28-2105 For A/C 101-200,

Post SB 28-2108 For A/C 101-200,

(1)Do a check of the drain monitor (37) and look for signs of fuel leakage.
(2)Remove the aft ACT (2).
(a)Do a check of the access panels 153EL, 154ER (46) and look for signs of fuel leakage.
1 Put the drainage containers in position below the access panels 153EL (46) and 154ER (46), aft of FR54.3.
2 Disconnect the screws (45) at the access panels 153EL, 154ER (46).
3 Use the water drain adapter PN 98A28108001000 and drain the remaining fuel from the ACT (2).
a Put the flange (58) in position at the water drain opening.
b Connect the flange (58) to the aircraft skin with the quick-release fasteners (59).
c Put the thrust rod (57) through the flange (58) into the drain tube (56).
d Use the thrust rod (57) to lift the valve 280242 (280243) (31) and let the fuel drain from the ACT (2).
e Remove the thrust rod (57).
f Disconnect the quick-release fasteners (59) and remove the flange (58).
g Do the steps (a)3a thru (a)3f again at the other drain valve 280243 (280242 (31).
4 Hold the access panel 153EL (154ER) (46) and disconnect the safety cord (47) from the spring support (52).
5 Remove and retain the access panel 153EL (154ER) (46) complete

with the safety cord (47).

6 Remove and retain the screw (48) and the washer (49) and remove the bonding strap (50) from the side wall of the water drain opening.

NOTE : Do not disconnect the bonding strap (50) from the drain tube (56) unless a repair or a new installation is necessary.

7 Remove and retain the lockring (51).

8 Remove the spring support (52) and the spring (53).

9 Put the spring support (52) and the spring (53) in the stowage box.

10 Put the thrust rod (57) into the drain tube (56).

11 Turn the thrust rod (57) thru 90° and then remove the thrust rod (57) and the drain tube (56) together with the bonding strap (50).

12 Remove and discard the O-rings (54),(55) from the drain tube (56).

13 Put the drain tube (56) in the stowage box.

14 Do the steps (a)4 thru (a)13 again and remove the other water drain mechanism (33).

15 Remove the drainage containers.

(b)Install the water drain plugs (60) (Ref. Fig. 404).

1 Get the drain plugs (60) from the stowage box.

2 Apply vaseline (Material No. 04-012) to the new O-rings (61).

3 Put the O-rings (61) in the grooves in bodies of drain plug (60).

4 Install the drain plugs (60).

a Put the drain plug (60) in the water drain opening.

b Safety the drain plug (60) with the lockring (51).

c Use the screw (48) and the washer (49) and attach the bonding strap (63) from the drain plug (60) to the side wall (Ref. 20-28-11, P. Block 1).

d Hold the access panel 153EL (153ER) (46) in position at the water drain opening.

e Connect the safety cord (47) from the access panel 153EL (154ER (46) to the bracket (62) of the drain plug (60).

f Safety the access panel 153EL (154ER (46) to the aircraft skin with the screws (45).

g Do the steps (b)4a thru (b)f again and install the other drain plug (60) at the aft ACT (2) position.

(c)Disconnect the quick-release fasteners and remove the three sections of the heat shield (3) from the rear wall of the ACT (2) (Ref. Fig. 402).

(d)Disconnect the bonding jumpers (73) of the ACT (2).

**ON A/C 101-200,

(Ref. Fig. 405)

**ON A/C 101-200,

Post SB 28-2105 For A/C 101-200,

Post SB 28-2108 For A/C 101-200,

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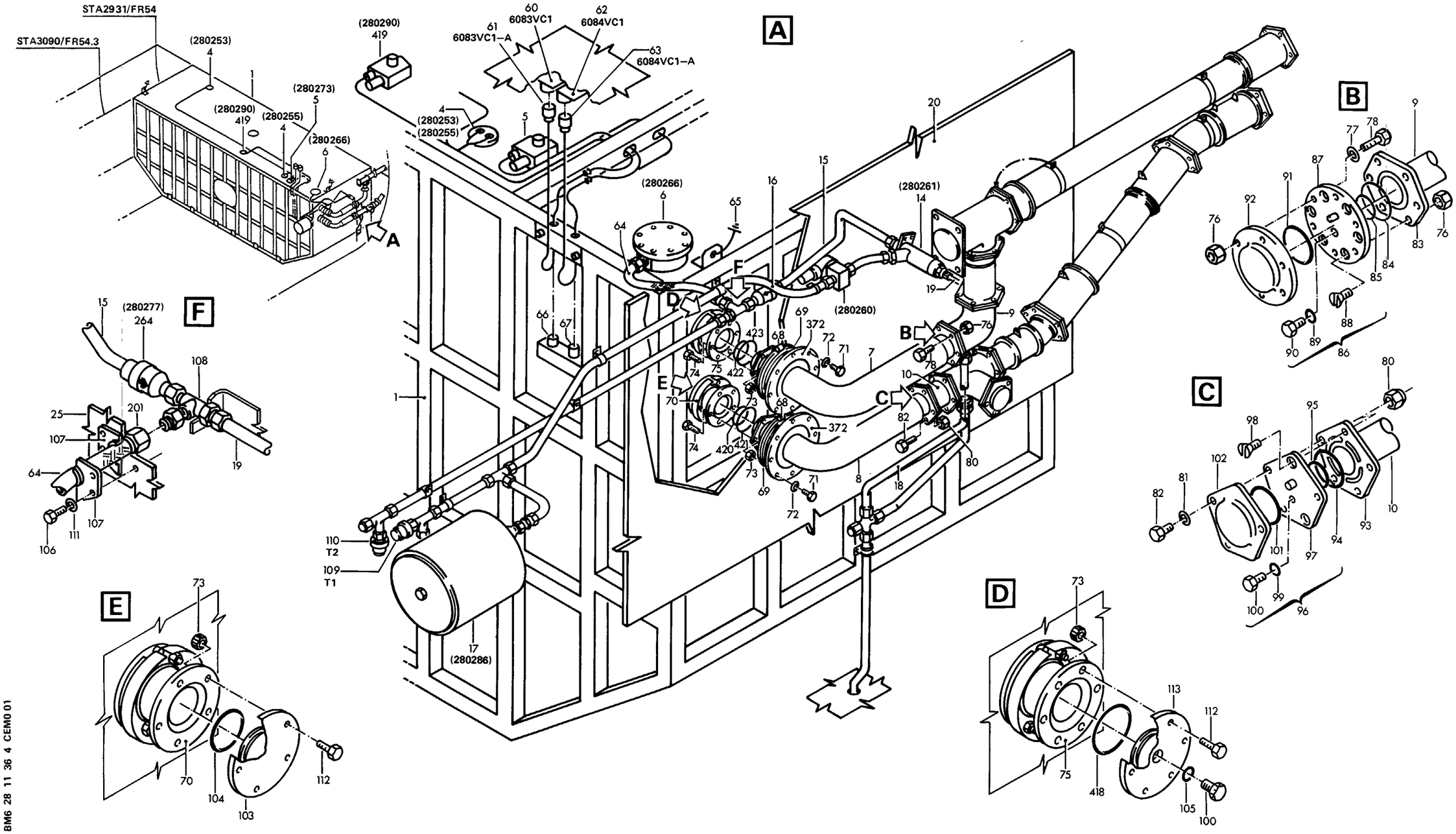

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ACT - Disconnection Points
Figure 405

EFFECTIVITY: 101-200,

PIA

Printed in France

(Ref. Fig. 406)

**ON A/C 101-200,

(6)Disconnect the bonding straps (65) from the aircraft structure connections at the LH and RH sides of the AFT cargo compartment.
(7)Safety the bonding straps (65) to the top surface of the ACT (1) with adhesive tape to prevent damage during the removal of the ACT (1).
NOTE : Do not disconnect the bonding straps (65) from the brackets on the ACT (1) unless a repair or new installation is necessary.
(8)Disconnect the FQI probes 280253 and 280255 (4) (Ref. Fig. 405).
(a)Disconnect the electrical connector 6083VC1-A (61) from the plug 6083VC1 (60) in the ceiling panel.
(b)Put the electrical connector 6083VC1-A (61) in the stowage plug (66) installed on the rear wall of the ACT (1).
(c)Remove the dummy plug from the stowage position in the ceiling panel.
(d)Put the dummy plug in the plug 6083VC1 (60) the ceiling panel.
(9)Disconnect the vent valve actuator 280273 (5) and the fuel inlet valve actuator 280290 (419) (Ref. Fig. 405).
(a)Disconnect the electrical connector 6084VC1-A (63) from the plug 6084VC1 (62) in the ceiling panel.
(b)Put the electrical connector 6084VC1-A (63) in the stowage plug (67) installed on the rear wall of the ACT (1).
(c)Put a blanking cap on the plug 6084VC1 (62) in the ceiling panel.
(10)Remove the panel section of the right sidewall lining (20) installed aft of FR54.3.
(11)Remove the air hose (64) (Ref. Fig. 405).
(a)Remove and retain the screws (106) and the washers (111) from the split bracket (107) on the sidewall lining (20) fwd of FR54.3.
(b)Remove the split bracket (107).
(c)Put the split bracket (107) in the stowage box.
(d)Disconnect the air hose (64) from the non-return valve (NRV) 280266 (6) installed on the top surface of the ACT (1).
(e)Disconnect the air hose (64) from the T-piece (108) of the air pipe (15) behind the sidewall lining (20).
(f)Remove the air hose (64).
(g)Put a blanking cap PN MS21914-10D on the NRV 280266 (6).
(h)Put a blanking cap PN MS21914-10D on the T-piece (108).
(i)Put the blanking caps on the ends of the air hose (64).
(j)Put the air hose (64) in the stowage box.
(k)Remove the blanking caps PN MS21914-10D from the stowage box.

(12)Put the drainage containers at the flange connections of the vent pipe (7) and the fuel pipe (8) behind the sidewall lining (20).
(13)Remove the vent pipe (7) (Ref. Fig. 405).
(a)Loosen the clamp (68) which attaches the bellows (69) on the bellows support ring (70).
(b)Remove the bolts (71) and the washers (72) which connect the bellows (69) to the rear face of the sidewall lining (20).
(c)Move the bellows (69) and the bellows attachment ring (372) along the vent pipe (7) away from the sidewall lining (20).

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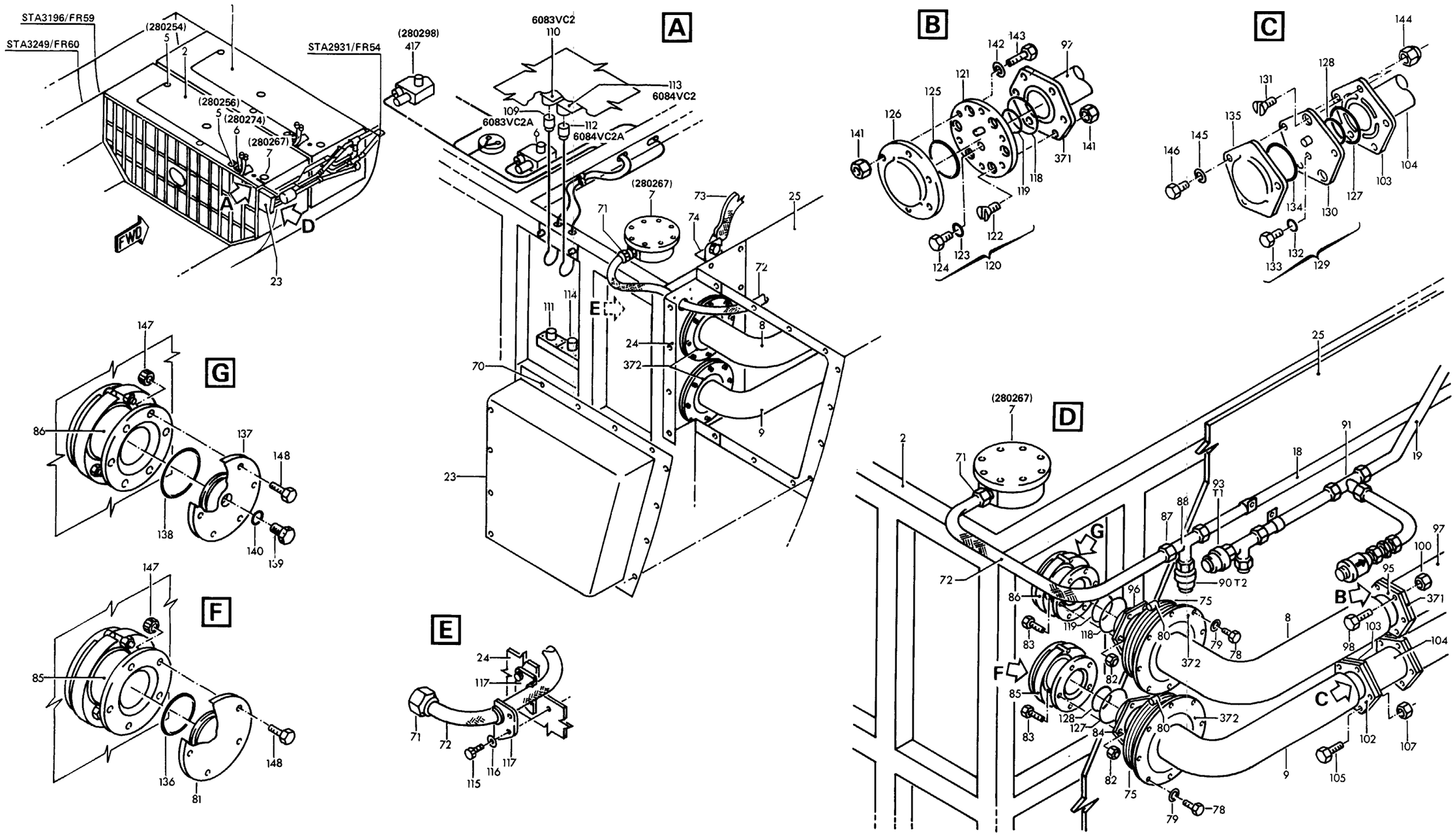

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AFT ACT - Disconnection Points
Figure 406

CAUTION : REMOVE FUEL LEAKAGE IMMEDIATELY.

(d)Remove and retain the nuts (73) and the bolts (74) from the connection of the vent pipe (7) to the ACT flange (75).

CAUTION : REMOVE FUEL LEAKAGE IMMEDIATELY.

NOTE : Bolts (78) are of different lengths, write down their positions to facilitate their installation.

(e)Remove and retain the nuts (76) and the bolts (78) from the flange connection of the vent pipes (7) and (9).

(f)Move the vent pipe (7) from the ACT flange (75) and through the opening in the sidewall lining (20).

(g)Remove the vent pipe (7), complete with the bellows (69) and the bellows attachment ring from behind the sidewall lining (20).

(h)Remove and discard the O-rings (422),(423) from the inner pipe and from the flange at both ends of the vent pipe (7).

(i)Cap the open flanges of the vent pipe (7).

(j)Put the vent pipe (7), the bolts (71) and the washers (72) in the stowage box.

(14)Install the blanking cap assembly (86) on the vent pipe (9) (Ref. Fig. 405).

(a)Remove the blanking cap assembly (86) from the stowage box.

(b)Remove the drain and bleed plug (90) from the inner cap (87).

(c)Remove and discard the O-ring (89) from the drain and bleed plug (90).

(d)Apply vaseline (Material No. 04-012) to the new O-rings (84),(85), (89),(91).

(e)Install the O-ring (84) in the groove in the interface of the flange (83) of the vent pipe (9).

(f)Install the O-ring (85) on the stub pipe of the inner cap (87).

(g)Install the O-ring (89) on the drain and bleed plug (90).

(h)Put the drain and bleed plug (90) in position in the inner cap (87).

(i)Put the inner cap (87) in position on the flange (83) of the vent pipe (9).

CAUTION : MAKE SURE THAT THE DRAIN AND BLEED PLUG (90) IN THE INNER CAP (87) IS AT THE LOWEST POSITION.

(j)Install the screws (88) at the connection of the inner cap (87) and the flange (83).

NOTE : Make sure that the O-rings (84),(85) are correctly installed.

(k)Tighten the drain and bleed plug (90).

NOTE : Make sure that the O-ring (89) is correctly installed.

(l)Safety the drain and bleed plug (90) with lockwire.

(m)Install the O-ring (91) in the groove in the interface of the inner cap (87).

(n)Put the outer cap (92) in position on the inner cap (87).

(o)Install the bolts (78), the washers (77) and the nuts (76), retained in step B.(13)(e), at the connection of the outer cap (92) and the inner cap (87).

NOTE : Make sure that the O-ring (91) is correctly installed.

(15)Remove the fuel pipe (8) (Ref. Fig. 405).

(a)Loosen the clamp (68) which attaches the bellows (69) on the bellows support ring (70).

(b)Remove the bolts (71) and the washers (72) which connect the bellows (69) to the rear face of the sidewall lining (20).

(c)Move the bellows (69) along the fuel pipe (8) away from the sidewall lining (20).

CAUTION : REMOVE FUEL LEAKAGE IMMEDIATELY.

(d)Remove and retain the nuts (73) and the bolts (74) from the connection of the fuel pipe (8) to the ACT flange (75).

CAUTION : REMOVE FUEL LEAKAGE IMMEDIATELY.

(e)Remove the nuts (80) and the bolts (82) from the flange connection of the fuel pipes (8) and (10).

NOTE : Retain three nuts (80) and three bolts (82). Tag the remaining nuts (80) and bolts (82) and put them in the stowage box.

(f)Move the fuel pipe (8) from the ACT flange (75) and through the opening in the sidewall lining (20).

(g)Remove the fuel pipe (8), complete with the bellows (69) from behind the sidewall lining (20).

(h)Remove and discard the O-rings (420),(421) from the inner pipe and from the flange at both ends of the fuel pipe (8).

(i)Cap the open flanges of the fuel pipe (8).

(j)Put the fuel pipe (8), the bolts (71) and the washers (72) in the stowage box.

(16)Install the blanking cap assembly (96) on the fuel pipe (10) (Ref. Fig. 405).

(a)Remove the blanking cap assembly (96) from the stowage box.

(b)Remove and discard the O-rings (95),(101) from the inner cap (97).

(c)Remove the drain and bleed plug (100) from the inner cap (97).

(d)Remove and discard the O-ring (99) from the drain and bleed plug (100).

(e)Apply vaseline (Material No. 04-012) to the new O-rings (94),(95), (99),(101).

(f)Install the O-ring (94) in the groove in the interface of the flange (93) of the fuel pipe (10).

(g)Install the O-ring (95) on the stub pipe of the inner cap (97).

(h)Install the O-ring (99) on the drain and bleed plug (100).

(i)Put the drain and bleed plug (100) in position in the inner cap (97).

(j)Put the inner cap (97) in position on the flange (93) of the fuel pipe (10).

CAUTION : MAKE SURE THAT THE DRAIN AND BLEED PLUG (100) IN THE INNER CAP (97) IS AT THE LOWEST POSITION.

(k)Install the screws (98) at the connection of the inner cap (97) and the flange (93).

NOTE : Make sure that the O-rings (94),(95) are correctly installed.

(l)Tighten the drain and bleed plug (100).

NOTE : Make sure that the O-ring (99) is correctly installed.

(m)Safety the drain and bleed plug (100) with lockwire.

(n)Install the O-ring (101) in the groove in the interface of the inner cap (97).

(o)Put the outer cap (102) in position on the inner blanking cap (97).

(p)Install the bolts (82), the washers (81) and the nuts (80) at the connection of the outer cap (102), the inner cap (97) and the flange (93).

NOTE : Use the bolts (82), the washers (81) and the nuts (80) which were retained in step (15)(e).

NOTE : Make sure that the O-ring (101) is correctly installed.

(17)Disconnect the cavity drain hoses (28) from the ACT base plate (25).

**ON A/C 101-200,

Post SB 28-2105 For A/C 101-200,

Post SB 28-2108 For A/C 101-200,

1 Remove the screws and the washers and disconnect the bonding strap (73) from the aircraft structure.
NOTE : The aircraft structure connections are at the left and right sides of the cargo compartment.
NOTE : Temporarily install the screws and the washers to the structure connections.
2 Use adhesive tape and safety the bonding straps (73) to the top surface of the ACT (2), clear of the sidewall linings (25).
NOTE : Do not remove the bonding straps (73) from the brackets (74) unless a repair or a new installation is necessary.

(e)Disconnect the fuel-quantity indicator (FQI) probes 280254 (5) and 280256 (5) (Ref. Fig. 406).
1 Disconnect the electrical connector 6083VC2-A (109) from the plug 6083VC2 (110) in the ceiling panel.
2 Put the connector 6083VC2-A (109) in the stowage plug (111) on the rear wall of the ACT (2).
3 Put a dummy plug on the plug 6083VC2 (110) in the ceiling panel.

(f)Disconnect the vent valve actuator 280274 (6) and the fuel inlet valve actuator 280290 (417) (Ref. Fig. 406).
1 Disconnect the electrical connector 6084VC2-A (112) from the plug 6084VC2 (113) in the ceiling panel.
2 Put the connector 6084VC2-A (112) in the stowage plug (114) on the rear wall of the ACT (2).
3 Remove the dummy plug from the stowage position in the ceiling panel.
4 Put the dummy plug in the plug 6084VC2 (113).

(g)Remove the panel section (23) of the sidewall at the door of the AFT cargo compartment (Ref. Fig. 406).
1 Disconnect the quick-release fasteners (70) and remove the panel section (23).
2 Put the panel section (23) in the stowage box.

(h)Remove the aft air hose (72) (Ref. Fig. 406).
1 Remove the screws (115) and the washers (116) from the split bracket (117) at the panel (24), fwd of FR60.
2 Remove the split bracket (117).
3 Put the screws (115), the washers (116) and the split bracket (117) in the stowage box.
4 Disconnect the union nut (71) of the air hose (72) from the non-return valve (NRV) (7) on the top surface of the ACT (2).
5 Disconnect the union nut (87) of the air hose (72) from the T-piece (88) of the air pipe (18) behind the sidewall lining (25).

6 Move the air hose (72) away from the NRV (7) and through the opening in the panel (24).
7 Remove the air hose (72).
8 Put blanking caps on the ends of the air hose (72).
9 Put the air hose (72) in the stowage box.
10 Get the two blanking caps PN MS21914-10D from the stowage box.
11 Put a blanking cap PN MS21914-10D on the NRV (7).
12 Put a blanking cap PN MS21914-10D on the T-piece (88).

(i)Remove the vent pipe (8) (Ref. Fig. 406).

1 Put the drainage containers in position at:
- the flange connection of the vent pipe (8) to the ACT (2),
- the flange connection of the vent pipe (8) to the vent pipe (97) behind the sidewall lining (25).

2 Loosen the clamp (80) which attaches the bellows (75) to the bellows support ring of the vent pipe flange (86) of the ACT (2).
3 Remove the bolts (78) and the washers (79) which connect the flange of the bellows (75) to the rear face of the panel (24).
4 Put the bolts (78) and the washers (79) in the stowage box.
5 Move the bellows (75) off the bellows support ring of the vent pipe flange (86) and along the vent pipe (8) away from the panel (24).

CAUTION : REMOVE FUEL LEAKAGE IMMEDIATELY.

6 Remove the nuts (82) and the bolts (83) from the flange (86).
7 Put the nuts (82) and the bolts (83) in the stowage box.

CAUTION : REMOVE FUEL LEAKAGE IMMEDIATELY.

8 Remove the nuts (100) and the bolts (98) from the flange connection of the vent pipes (8),(97).
9 Put the bolts (98) and the nuts (100) in the stowage box.
pipe (8).
10 Move the flange (96) of the vent pipe (8) from the flange (86) of the ACT (2).
11 Move the flange (95) of the vent pipe (8) away from the flange (371) of the vent pipe (97).
12 Hold the vent pipe (8) and move the flange (96) through the opening in the panel (24).
13 Remove the vent pipe (8) complete with:
- the bellows (75),
- the clamp (80),

from behind the sidewall lining (25).

NOTE : Do not disconnect the bonding strap (101) from the vent pipe flange (371) unless a repair or a new installation is necessary.

14 Remove and discard the O-rings (118) from the interfaces of the flanges (96),(95) on both ends of the vent pipe (8).
15 Remove and discard the O-rings (119) from both ends of the inner pipe of the vent pipe (8).
16 Put end caps on the open ends of the vent pipe (8).
17 Put the vent pipe (8) in the stowage box.
18 Remove the drainage containers.

(j)Install the blanking cap assembly (120) on the vent pipe (97) behind the sidewall lining (25) (Ref. Fig. 406).

1 Get the blanking cap assembly (120), the nuts (141), the washers (142)

and the bolts (143) from the stowage box.
2 Remove the drain and bleed plug (124) from the inner cap (121).
3 Remove and discard the O-ring (123) from the drain and bleed plug (124).
4 Apply vaseline (Material No. 04-012) to the new O-rings (118), (119),(123),(125).
5 Install the O-ring (118) in the interface of the flange (371) of the vent pipe (97).
6 Install the O-ring (119) on the stub pipe of the inner cap (121).
7 Install the O-ring (123) on the drain and bleed plug (124).
8 Put the drain and bleed plug (124) in position at the inner cap (121).
9 Put the inner cap (121) in position at the flange (371) of the vent pipe (97).
CAUTION : MAKE SURE THAT THE DRAIN AND BLEED PLUG (124) IN THE INNER CAP (121) IS AT THE LOWEST POSITION.
10 Install the screws (122) and connect the inner cap (121) to the flange (96).
NOTE : Make sure that the O-rings (118),(119) are correctly installed.
11 Tighten the drain and bleed plug (124).
NOTE : Make sure that the O-ring (123) is correctly installed.
12 Safety the drain and bleed plug (124) with lockwire.
13 Install the O-ring (125) in the groove in the interface of the outer cap (126).
14 Put the outer cap (126) in position on the inner cap (121).
15 Install the bolts (143), the washers (142) and the nuts (141), at the connection of the outer cap (126) and the inner cap (121).
NOTE : Make sure that the O-ring (125) is correctly installed.

(k)Remove the fuel pipe (9) (Ref. Fig. 406).
1 Put the drainage containers in position at:
- the flange connection of the fuel pipe (9) to the ACT (2),
- the flange connection of the fuel pipe (9) to the fuel pipe (104) behind the sidewall lining (25).
2 Loosen the clamp (80) which attaches the bellows (75) to the bellows support ring (81) of the fuel pipe flange (85) of the ACT (2).
3 Remove the bolts (78) and the washers (79) which connect the flange of the bellows (75) to the rear face of the panel (24).
4 Put the bolts (78) and the washers (79) in the stowage box.
5 Move the bellows (75) off the bellows support ring and along the fuel pipe (9) away from the panel (24).
CAUTION : REMOVE FUEL LEAKAGE IMMEDIATELY.
6 Remove the nuts (82) and the bolts (83) from the flange (85).
7 Put the nuts (82) and the bolts (83) in the stowage box.
CAUTION : REMOVE FUEL LEAKAGE IMMEDIATELY.
8 Remove the nuts (107) and the bolts (105) from the flange connection of the fuel pipes (9),(104).
9 Put the bolts (105) and the nuts (107) in the stowage box.
10 Move the flange (84) of the fuel pipe (9) away from the flange (85) of the ACT (2).
11 Move the flange (102) of the fuel pipe (9) away from the flange (103) of the fuel pipe (104).
12 Hold the fuel pipe (9) and move the flange (84) through the opening

in the panel (24).
13 Remove the fuel pipe (9) complete with:
- the bellows (75) and the bellows attachment ring (372),
- the clamp (80),
from behind the panel (24).
14 Remove and discard the O-rings (127) from the interface of the flange on both ends of the fuel pipe (9).
15 Remove and discard the O-rings (128) from the inner pipe on both ends of the fuel pipe (9).
16 Put end caps on the open ends of the fuel pipe (9).
17 Put the fuel pipe (9) in the stowage box.
18 Remove the drainage containers.

(l)Install the blanking cap assembly (129) on the fuel pipe (104) behind the sidewall lining (25) (Ref. Fig. 406).
1 Get the blanking cap assembly (129), the nuts (144), the washers (145) and the bolts (146) from the stowage box.
2 Remove the drain and bleed plug (133) from the inner cap (130).
3 Remove and discard the O-ring (132) from the drain and bleed plug (133).
4 Apply vaseline (Material No. 04-012) to the new O-ring (127),(128), (132),(134).
5 Install the O-ring (127) in the interface of the flange (103) of the fuel pipe (104).
6 Install the O-ring (128) on the stub pipe of the inner cap (130).
7 Install the O-ring (132) on the drain and bleed plug (133).
8 Put the drain and bleed plug (133) in position at the inner cap (130).
9 Put the inner cap (130) in position at the flange (103) of the fuel pipe (104).

CAUTION : MAKE SURE THAT THE DRAIN AND BLEED PLUG (133) IN THE INNER CAP (130) IS AT THE LOWEST POSITION.

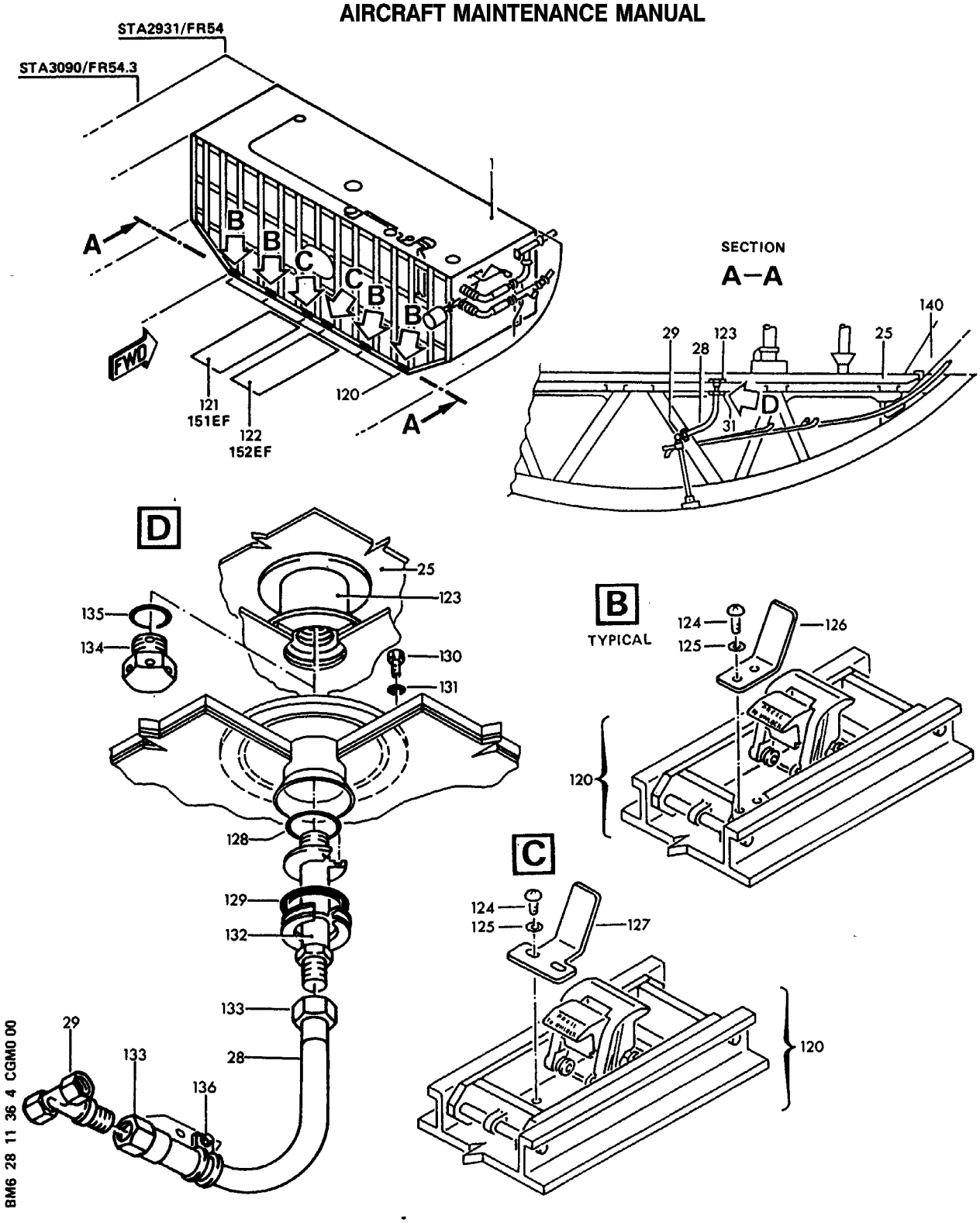
10 Install the screws (131) and connect the inner cap (130) to the flange (103).
NOTE : Make sure that the O-rings (127),(128) are correctly installed.
11 Tighten the drain and bleed plug (133).
NOTE : Make sure that the O-ring (132) is correctly installed.
12 Safety the drain and bleed plug (133) with lockwire.
13 Install the O-ring (134) in the groove in the interface of the outer cap (135).
14 Put the outer cap (135) in position on the inner cap (130).
15 Install the bolts (146), the washers (145) and the nuts (144), at the connection of the outer cap (135) and the inner cap (130).
NOTE : Make sure that the O-ring (134) is correctly installed.

(m)Disconnect the cavity drain hoses (35) from the ACT base plate (38).

**ON A/C 101-200,

(Ref. Fig. 407)

**ON A/C 101-200,



Cavity Drain Connection and Pallet Latch
Locking Plates
Figure 407

Post SB 28-2105 For A/C 101-200,

Post SB 28-2108 For A/C 101-200,

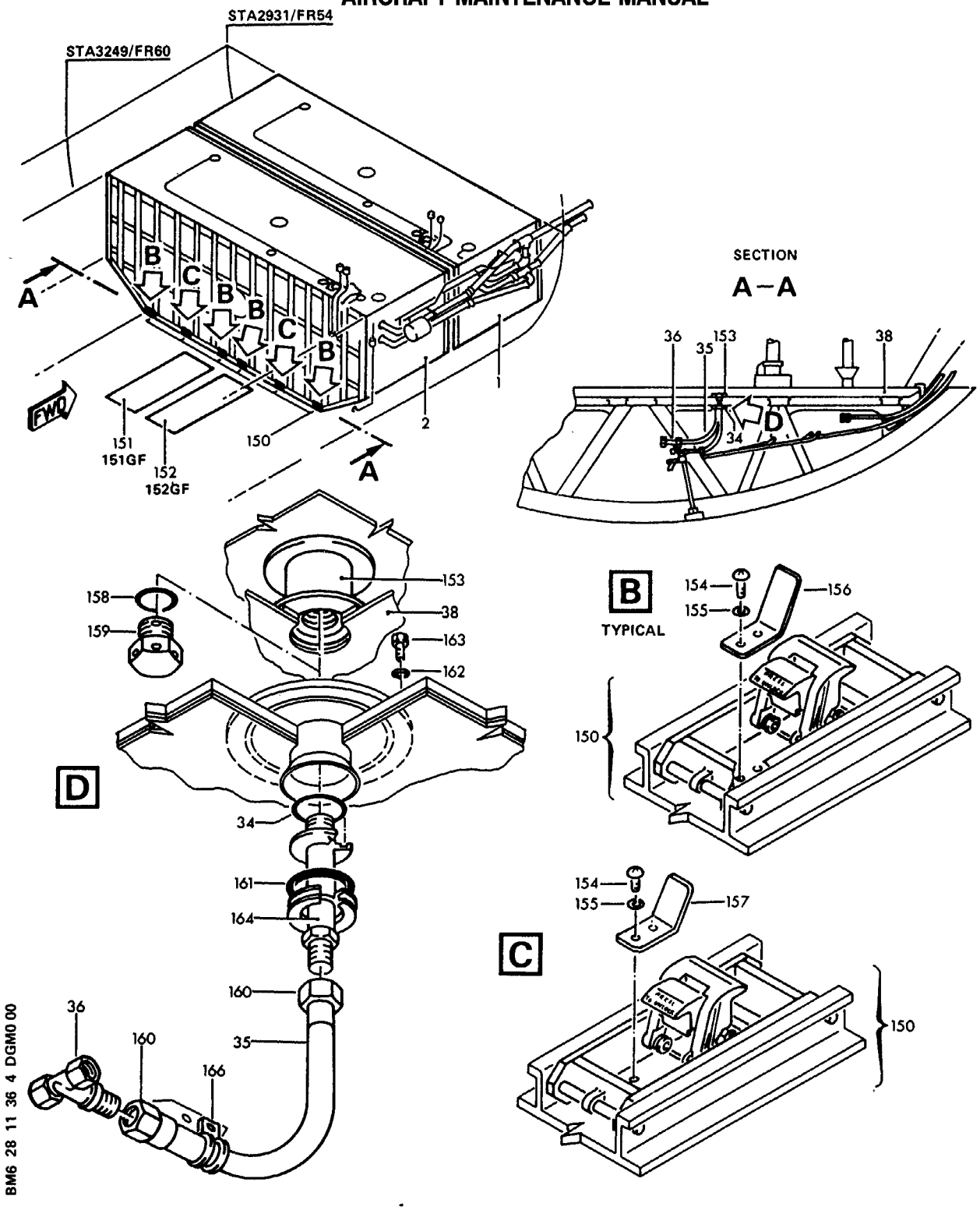
(Ref. Fig. 408)

**ON A/C 101-200,

(a)Remove and retain the floor panels 151EF (121) and 152EF (122) of the AFT cargo compartment.
CAUTION : REMOVE FUEL LEAKAGE IMMEDIATELY.
(b)Release the union nuts (133) and disconnect the drain hose (28) from the drain fitting (132) and from the T-piece (29).
(c)Remove the clamp (136) with the bolt and the nut from the structure.
(d)Temporarily install the bolt and the nut in the clamp (136) and put the clamp (136) in the stowage box.
(e)Put the blanking caps on the open ends of the drain hose (28) and put the drain hose (28) in the stowage box.
(f)Remove the drain fitting (132) from the ACT (1).
(g)Remove and discard the O-rings (128),(129) from the drain fitting (132).
(h)Put the blanking caps on the drain fitting (132) and put the drain fitting (132) in the stowage box.
(i)Get the plug (134) from the stowage box.
(j)Apply vaseline (Material No. 04-012) to the new O-ring (135).
(k)Put the O-ring (135) in position at the interface of the plug (134).
(l)Install the plug (134) in the cavity drain connection (123) of the ACT (1).
(m)Put the blanking cap on the T-piece (29).
(n)Make sure that no tools or other items have been left in the under-floor area.
(o)Install the floor panels 151EF (121) and 152EF (122).

(18)Lower the pallet latches (120) which hold the ACT (1) at the base plate (25) (Ref. Fig. 407).
(a)Remove the screws (124), the washers (125) and the locking plates (126),(127) from the floor panels.
NOTE : Identify the locking plates (126),(127) for installation in the same positions.
(b)Put the locking plates (126), (127) in the stowage box.
(c)Install the screws (124) and the washers (125) at the latches (120) in the roller tracks.
(d)Lower the latches (120).

(19)Remove the ACT (1) from the AFT cargo compartment (Ref. 25-52-00, P. Block 1).
(a)Remove the YZ-latches between FR58 and FR62 (Ref. 25-52-44, P. Block 401), if necessary.
NOTE : Do not remove:
- the fuel inlet valve actuator 280290 (419),
- the emergency relief valve 280251 (3),
- the FQI probes 280253 and 280255 (4),



Cavity Drain Connection and Pallet Latch
Locking Plates
Figure 408

- the vent valve actuator 280273 (5),
- the NRV 280266 (6),
- the manhole cover (21),
- the internal vent pipe assembly (22),
- the internal fuel pipe (23),
- the vent valve 280268 (33),

unless a repair or a new installation is necessary.

(20)Remove and discard the O-rings (453) from the water drain pipes at the base plate (25) of the ACT (1) (Ref. Fig. 403).

(21)Install the blank flanges (103),(113) to the vent pipe flange (75) and the fuel pipe flange (70) of the ACT (1) (Ref. Fig. 405).

(a)Install the blank flange (113) on the vent pipe (upper) flange (75).

NOTE : The blank flange (113) on the vent pipe flange (75) has a drain and bleed plug (100) and an O-ring (105) at its center.

1 Remove the blank flange (113), the bolts (112) and the nuts (73) from the stowage box.

2 Examine:
- the drain and bleed plug (100)

and replace them if necessary.

3 Apply vaseline (Material No. 04-012) to the new O-ring (418).

4 Put the O-rings (418) in the groove in the interface of the blank flange (113).

5 Position the blank flange (113) on the flange (75).

6 Install the bolts (112) and the nuts (73).

NOTE : Make sure that the O-ring (418) is correctly installed.

7 Install the O-ring (105) and the drain and bleed plug (100) at the center of the blank flange (75).

a Safety the drain and bleed plug (100) with lockwire.

NOTE : Make sure that the O-ring (105) is correctly installed.

(b)Install the blank flange (103) on the fuel pipe (lower) flange (70).

1 Remove the blank flange (103) from the stowage box.

2 Apply vaseline (Material No. 04-012) to the new O-ring (104).

3 Put the O-ring (104) in the groove in the interface of the blank flange (103).

4 Position the blank flange (103) on the flange (70).

5 Install the bolts (112) and the nuts (73).

NOTE : Make sure that the O-ring (104) is correctly installed.

(22)Install the blanking plate (142) on the sidewall lining (20), fwd of FR54.3.

**ON A/C 101-200,

Post SB 28-2105 For A/C 101-200,

Post SB 28-2108 For A/C 101-200,

1 Remove and retain the floor panels 151EF (151) and 152EF (152) of the AFT cargo compartment.

CAUTION : REMOVE FUEL LEAKAGE IMMEDIATELY.

2 Release the union nuts (160) and disconnect the drain hose (35) from the drain fitting (164) and from the T-piece (36).
3 Remove the clamp (166) with bolt and nut from the structure.
4 Temporarily install the bolt and the nut in the clamp (166) and put the clamp (166) in the stowage box.
5 Put the blanking caps on the open ends of the drain hose (35) and put the drain hose (35) in the stowage box.
6 Remove the drain fitting (164) from the ACT (2).
7 Remove and discard the O-rings (34),(161) from the drain fitting (164).
8 Put the blanking caps on the drain fitting (164) and put the drain fitting (164) in the stowage box.

9 Make sure that no tools or other items have been left in the under-floor area.
10 Install the floor panels 151EF (151) and 152EF (152).

(n) Lower the latches (150) which hold the ACT (2) at the base plate (38), at FR60 (Ref. Fig. 408).
1 Remove the screws (154), the washers (155) and the locking plates (156),(157) from the roller tracks.
NOTE : Identify the locking plates (156),(157) for installation in the same positions.
2 Put the locking plates (156),(157) in the stowage box.
3 Install the screws (154) and the washers (155) in the roller tracks.
4 Lower the latches (150).

(o) Remove the ACT (2) from the AFT cargo compartment (Ref. 25-52-00, P. Block 1).
NOTE : Loosen or remove the YZ-latches at FR61 and FR62 if necessary (Ref. 25-52-44, P. Block 401).
1 Get the plug (159) from the stowage box.
2 Apply vaseline (Material No. 04-012) to the new O-ring (158).
3 Put the O-ring (158) in position at the interface of the plug (159).
4 Install the plug (159) in the cavity drain connection (153) of the ACT (2).
CAUTION : MAKE SURE THAT THE PLUG (159) IS WELL FITTED AND NOT PROTRUDING FROM THE ACT SKIN.

(p) Remove and discard the O-rings (64) from the water drain pipes in the base plate (38) of the ACT (2) (Ref. Fig. 404).

(q) Install the blank flanges (137),(81) at the vent pipe flange (86) and the fuel pipe flange (85) of the ACT (2) (Ref. Fig. 406).
1 Get the blank flanges (81),(137), the nuts (147) and the bolts (148) from the stowage box.
2 Apply vaseline (Material No. 04-012) to the new O-ring (138).
3 Install the blank flange (137) at the vent pipe flange (86).
a Put the O-ring (138) in the groove in the insert of the blank flange (137).
NOTE : The blank flange (137) for the vent pipe flange (86) has:
- a drain and bleed plug (139),
- an O-ring (140),
installed at its center.

b Examine the drain and bleed plug (139) and replace them as necessary.
c Install the drain and bleed plug (139) and the new O-ring (140) in the blank flange (137).
d Put the blank flange (137) on the vent pipe flange (86).
e Install the bolts (148) and the nuts (147).
NOTE : Make sure that the O-ring (138) is correctly installed.
f Safety the drain and bleed plug (139) with lockwire.

4 Install the blank flange (81) at the fuel pipe flange (85).
a Put the new O-ring (136) in the groove in the insert of the blank flange (81).
b Put the blank flange (81) on the fuel pipe flange (85).
c Install the bolts (148) and the nuts (147).
NOTE : Make sure that the O-ring (136) is correctly installed.

(r)Do this step if the ACT (2) is to stay off the aircraft for more than twenty days.

1 Remove the manhole cover (26) (Ref. 28-11-37, P. Block 401).
2 Examine:
- the vent pipe (27),
- the vent valve 280269 (28),
- the fuel inlet valve 280296,
- the burst disc 280295,
- the fuel pipe assembly (30),
- the water drain valves 280242 and 280243 (31),
inside the ACT (2) (Ref. 28-11-36, P. Block 601).
3 Examine the internal surfaces of the bladder tank 280262 (Ref. 28-11-38, P. Block 601).
4 Apply a light engine oil (Material No. 03-008) to the inner lining of the bladder tank 280262 to prevent cracks.
5 Install the manhole cover (26) (Ref. 28-11-37, P. Block 401).
6 Attach a tag to the manhole cover (26) to tell persons:
- "Do a leak test of the manhole cover after installation of the ACT in the aircraft (Ref. 28-11-37, P. Block 401)".

(3)Preparation for Operation with the Fwd ACT (1) only, after Removal of the Aft ACT (2) (Ref. Fig. 402, 406).

**ON A/C 101-200,

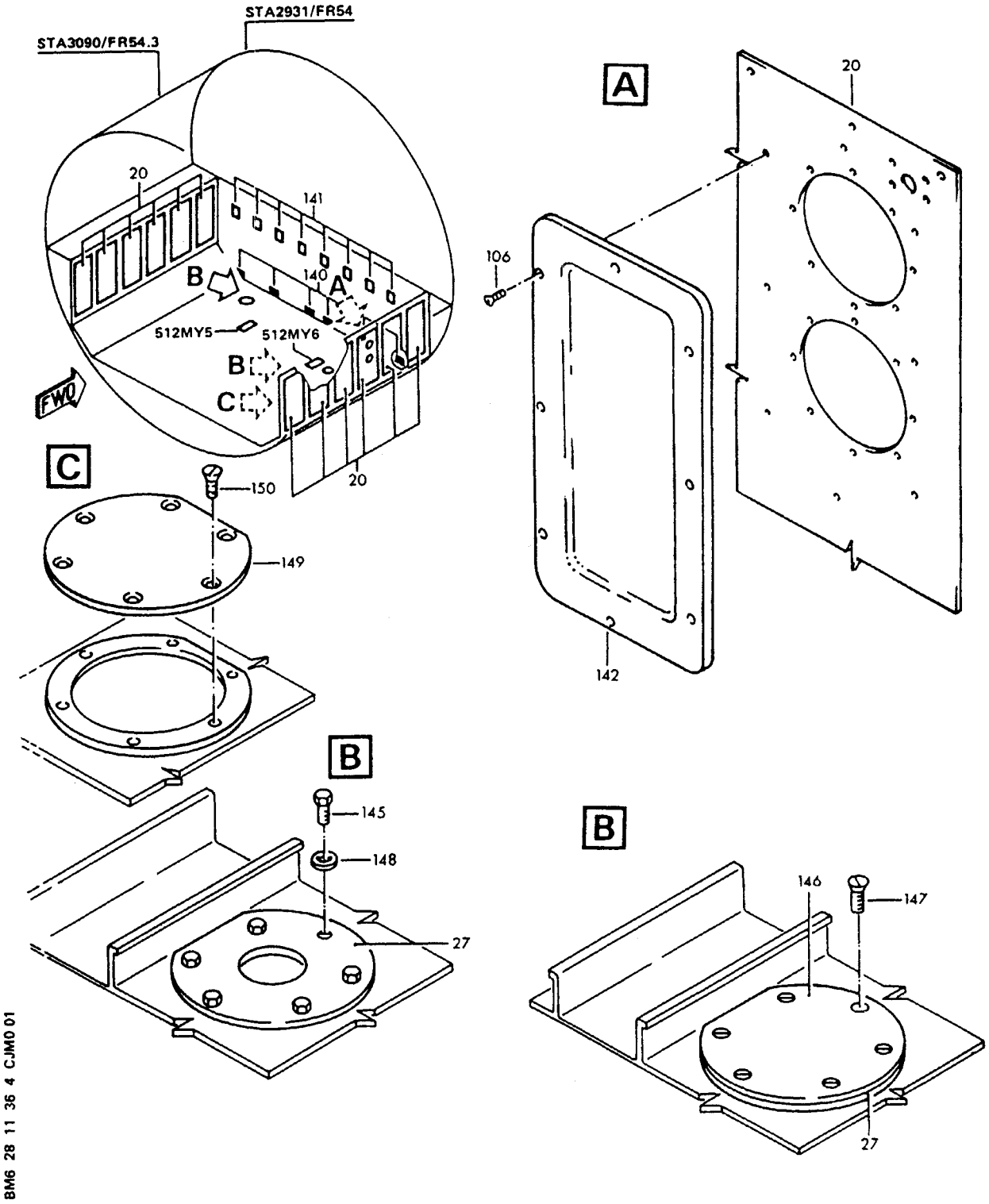
(Ref. Fig. 409)

**ON A/C 101-200,

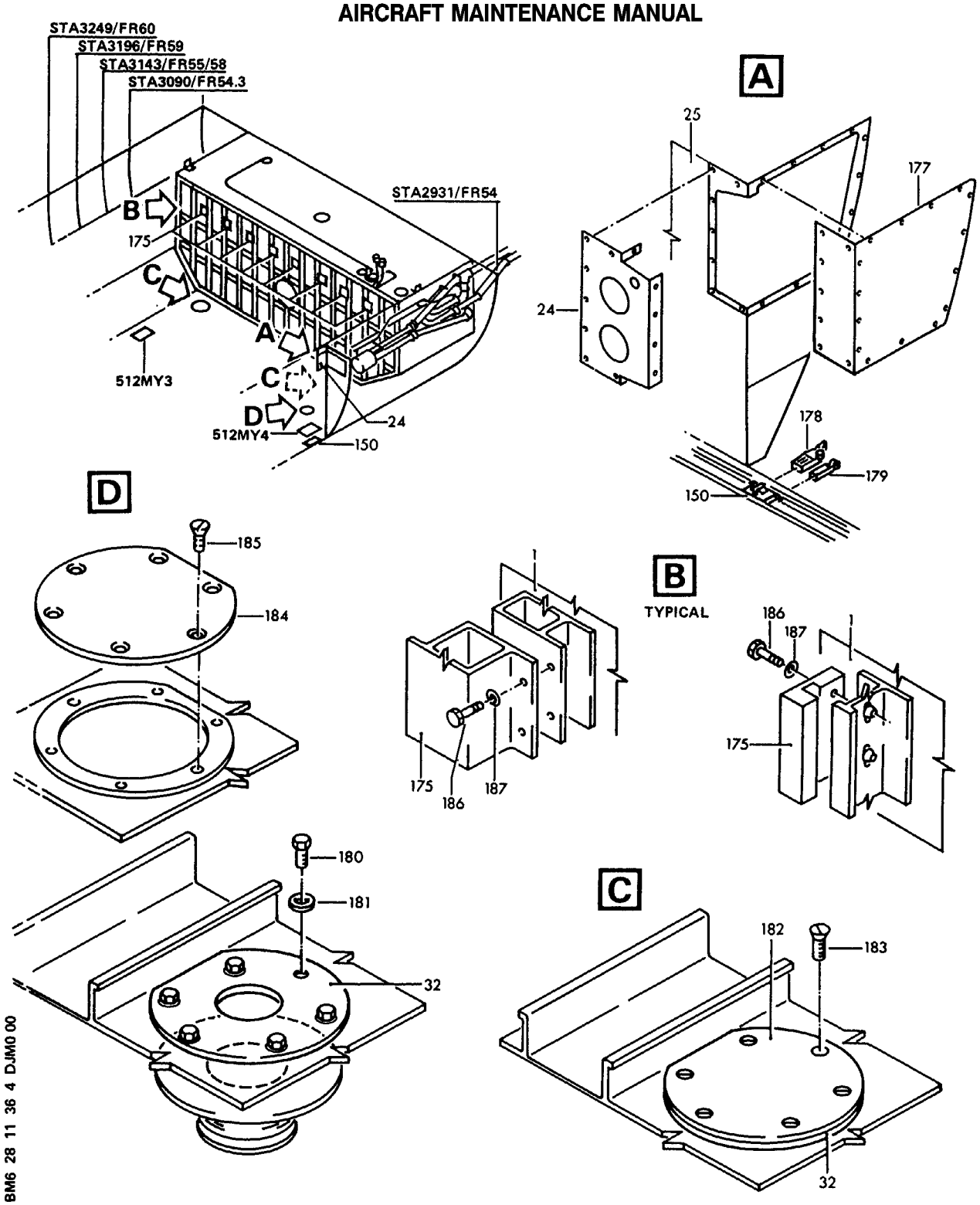
Post SB 28-2105 For A/C 101-200,

Post SB 28-2108 For A/C 101-200,

(Ref. Fig. 410)



Blanking Plates and Power Drive Unit Location
Figure 409



Blanking Plates and Power Drive Unit Location
Figure 410

**ON A/C 101-200,

(a)Remove the blanking plate (142) from the stowage box.
(b)Put the blanking plate (142) in position at the opening in the sidewall lining (20).
(c)Install the screws (106) which were retained in step (11)(a) in the blanking plate (142).

(23)Install the blanking plates (146) on the water drain plates (27), aft of FR54, in the floor of the AFT cargo compartment (Ref. Fig. 409).
(a)Remove the screws (145) and the washers (148) from the plates (27).
(b)Put the screws (145) and the washers (148) in the stowage box.
(c)Remove the blanking plates (146) and the screws (147) from the stowage box.
(d)Put the blanking plates (146) in position on the plates (27).
NOTE : The blanking plates (146) are LH and RH and are not interchangeable.
(e)Install the screws (147) at the connection of the blanking plates (146) and the plates (27).
(24)Install the cover (149) at the cavity drain location in the floor of the AFT cargo compartment (Ref. Fig. 409).
(a)Remove the cover (149) and the screws (150) from the stowage box.
(b)Put the cover in position at the cavity drain location.
(c)Install the screws (150) through the cover (149) into the cargo compartment floor.

**ON A/C 101-200,

Post SB 28-2105 For A/C 101-200,

Post SB 28-2108 For A/C 101-200,

(a)Install the blanking plates (182) on the water drain flanges (32) in the cargo compartment floor, aft of FR54.3 (Ref. Fig. 410).
1 Remove the bolts (180) and the washers (181) from the flanges (32).
2 Put the bolts (180) and the washers (181) in the stowage box.
3 Get the blanking plates (182) and the screws (182) from the stowage box.
4 Put the blanking plates (182) in position on the flanges (32).
NOTE : The blanking plates (182) are LH and RH and are not interchangeable.
5 Install the screws (183) and connect the blanking plates (182) to the flanges (32).
(b)Install the blanking plates (184) at the cavity drain locations in the cargo compartment floor aft of FR59 (Ref. Fig. 410).
1 Get the blanking plates (184) and the screws (185) from the stowage box.
2 Put the blanking plates (184) in position at the cavity drain

locations.
3 Install the screws (185) and connect the blanking plates (184) to the cargo compartment floor.

**ON A/C 101-200,

Post SB 28-2105 For A/C 101-200,

Post SB 28-2108 For A/C 101-200,

(c)Remove the latch (150) at the door sill position (Ref. 25-52-33, P. Block 401) (Ref. Fig. 410).
(d)Remove the bracket.

**ON A/C 101-200,

Post SB 28-2105 For A/C 101-200,

(Ref. Fig. 411)

**ON A/C 101-200,

Post SB 28-2105 For A/C 101-200,

1 Remove the nuts (362),(365), the washers (363),(366), the bolts (361),(364),(367) and remove the bracket (369).
2 Put the bracket (369) with the attaching parts in the stowage box.
(e)Install the XY-guide (178) and the door sill roller (179) at the door sill position (Ref. 25-52-48, P. Block 401) (Ref. Fig. 410).

**ON A/C 101-200,

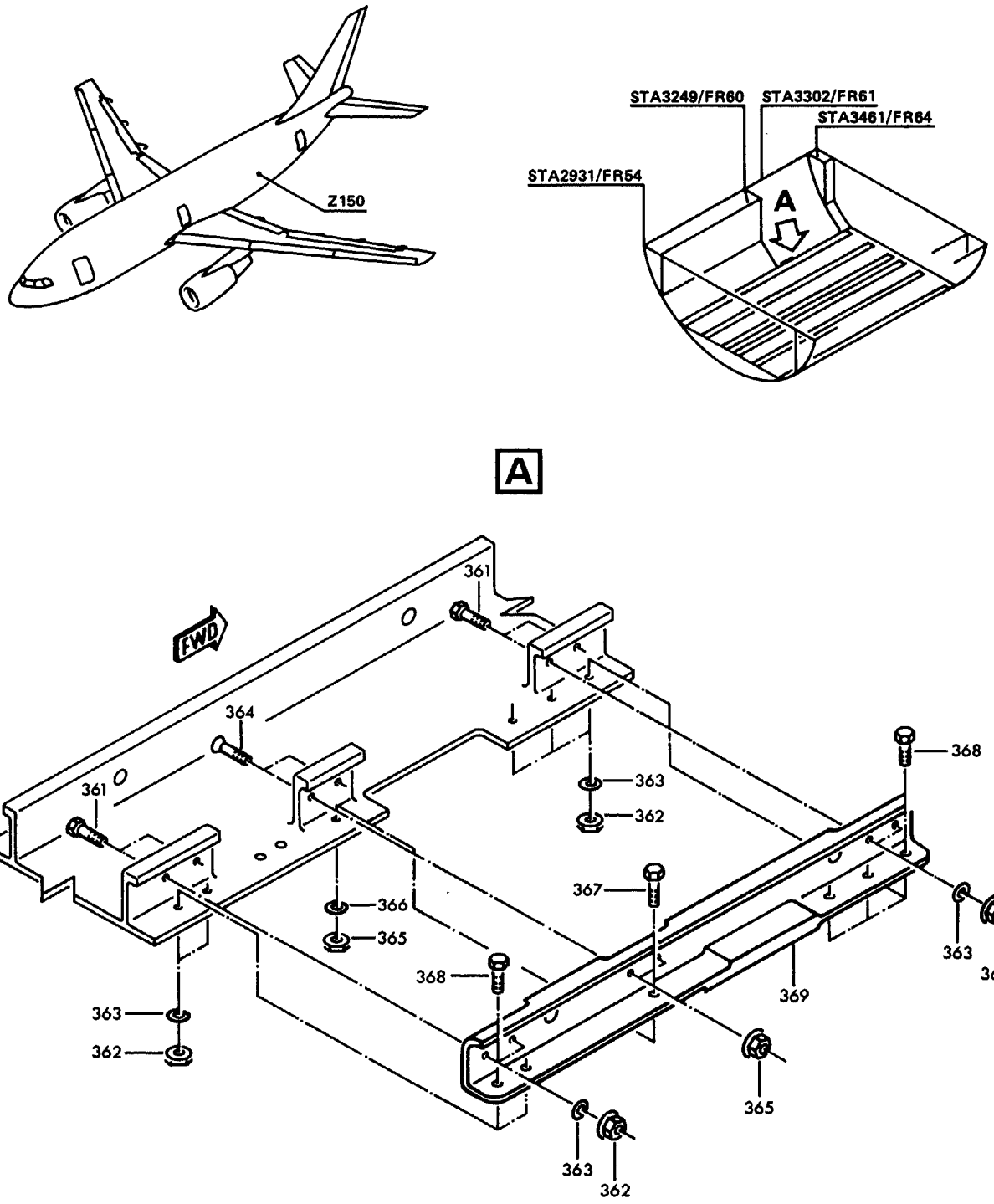
(Ref. Fig. 412)

**ON A/C 101-200,

Post SB 28-2105 For A/C 101-200,

Post SB 28-2108 For A/C 101-200,

1 Remove the panel section of the sidewall lining aft of FR54.3.
(f)Remove the safety clips and tags and close the circuit breakers 1QJ, 2QJ,1QH,3QH,4QH,5QH,1QT,3QT,4QT,5QJ,6QJ,1QU and 2QU.
(g)Do a functional check of the interspace and drain/vent system for free flow and leakage rate (Ref. 28-13-00, P. Block 501).



Bracket
Figure 411

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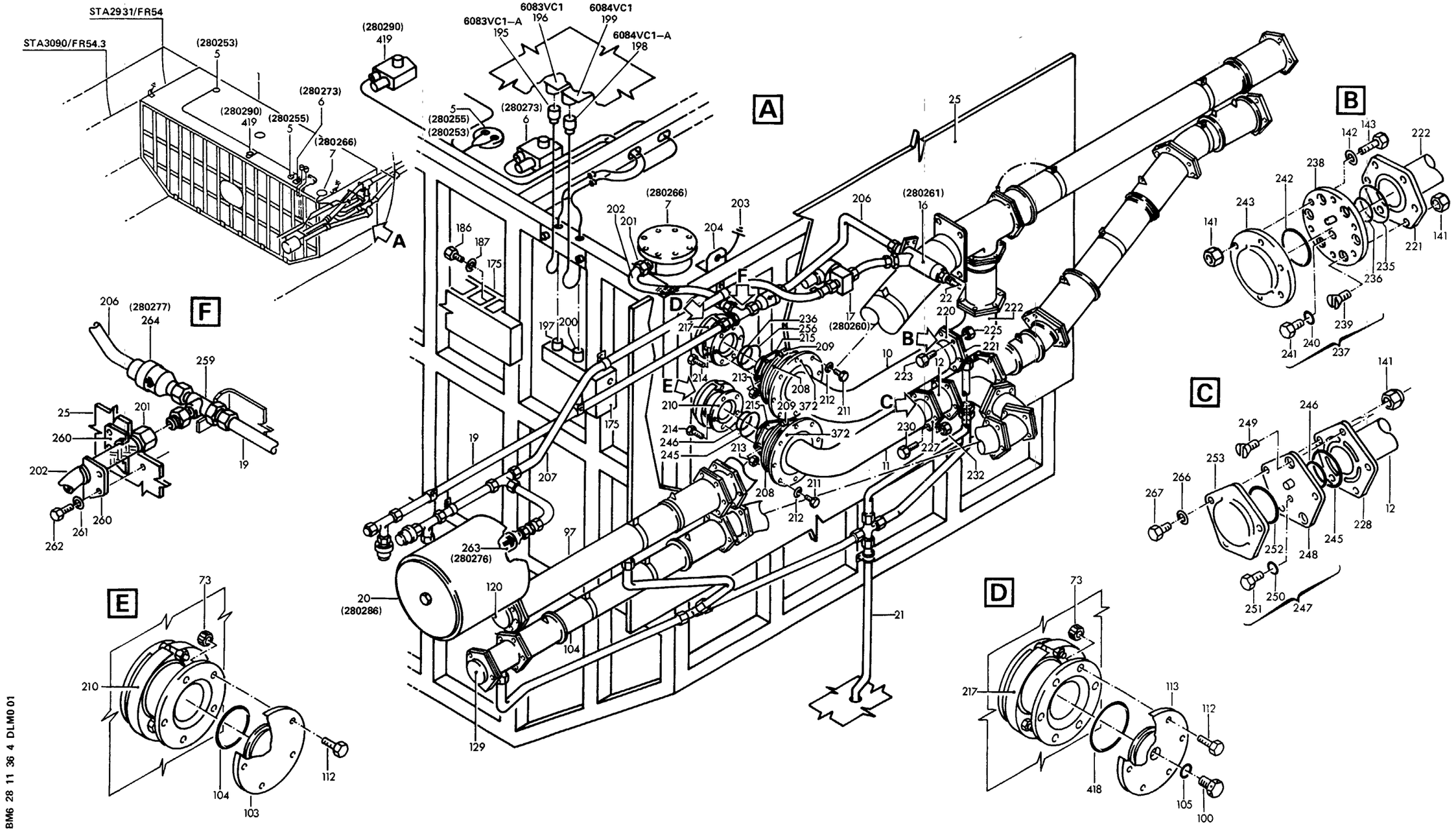


Disconnection Points - Fwd ACT
Figure 412

BM6 28 11 36 4 DLM0 01

(h)Do a leak check of the installed system (Ref. Fig. 402, 406).
CAUTION : REMOVE FUEL LEAKAGE IMMEDIATELY.
1 Open the refuel valve on the center tank (15).
2 Refuel the aircraft as required (Ref. 12-11-28, P. Block 301).
3 Make sure that there is no leakage from:
- the blanking cap assembly (120) on the vent pipe (97),
- the blanking cap assembly (129) on the fuel pipe (104),
- the flange connections of the vent pipes (8),(97),
- the flange connections of the fuel pipes (9),(103),(104).
4 Close the refuel valve on the center tank (15).
5 Install the panel section of the sidewall lining aft of FR54.3.
(i)Tighten or install the YZ-latches at FR61 and FR62, if necessary (Ref. 25-52-44, P. Block 401).
(j)Remove the panel section (24) of the sidewall lining (25) fwd of FR60 (Ref. Fig. 410).
1 Disconnect the quick-release fasteners and remove the panel section (24).
2 Put the panel section (24) in the stowage box.
(k)Make sure that the work area behind the sidewall lining (25) is clean and clear of tools and other items.
(l)Install the panel section (177) at the cargo door position fwd of FR60 (Ref. Fig. 410).
1 Get the panel section (177) from the stowage box.
2 Put the panel section (177) in position at the sidewall of the cargo door position.
3 Connect the panel section (177) to the sidewall and the sidewall lining (25) with the quick-release fasteners.
(m)Remove the buffers (175) from the rear wall of the ACT (1) (Ref. Fig. 410).
1 Remove the screws (186) and the washers (187) from the buffers (175).
2 Remove the buffers (175) from the rear wall of the ACT (1).
3 Put the buffers (175), the screws (186) and the washers (187) in the stowage box.
(n)Install the heat shield (3) on the rear wall of the ACT (1).
1 Put the three sections of the heat shield (3) in position at the rear wall of the ACT (1).
2 Attach the heat shield (3) to the rear wall of the ACT (1) with the quick-release fasteners.
(o)Remove the warning notices from the refuel/defuel panel 110VU and the fuelling panel 430VU.
(p)Make sure that the work area is clean and clear of tools and other items.
(q)Close the door of the AFT cargo compartment (Ref. 52-30-00, P. Block 1).
(r)Remove the access platform.

(4)Removal of the Fwd ACT (1)
(a)Do these steps if the aircraft has been operated with the fwd ACT (1) only installed (Ref. Fig. 402).
1 Make sure that the aircraft is statically grounded.
2 Transfer the fuel from the ACT (1) or defuel it as applicable (Ref. 28-25-00, P. Block 301).

3 Put the access platform in position.
4 Open the door of the AFT cargo compartment (Ref. 52-30-00, P. Block 1).
5 Loosen or remove the YZ-latches at FR61 and FR62, if necessary (Ref. 25-52-44, P. Block 401).
6 Disconnect the quick-release fasteners and remove the three sections of the heat shield (3) from the rear wall of the ACT (1).
7 Do a check of the drain monitor (37) and look for signs of fuel leakage.
8 Open, safety and tag the following circuit breakers:

PANEL	SERVICE	IDENT.	LOCATION
22VU	FUEL TK LO LVL AND CAL - L OUTR, R INR AND CTR R	1QJ	208/B26
22VU	FUEL TK LO LVL AND CAL - R OUTR, L INR AND CTR L	2QJ	208/B27
101VU	FUEL CARGO TK PUMP SUPPLY	1QH	GEN1/B02
132VU	FUEL ACT VENT AND PRESS VALVE	3QH	325/K57
132VU	FUEL ACT XFR VALVE MOTOR 1	4QH	325/K58
132VU	FUEL ACT PUMP CTL XFR VALVE MOTOR 2	5QH	325/K59
132VU	FUEL FQI SUPPLY AND IND	1QT	321/P59
132VU	FUEL FQI CHAN SUPPLY 1	3QT	321/P60
132VU	FUEL FQI CHAN SUPPLY 2	4QT	321/P61
132VU	FUEL FUELLING OVERFLOW AND CALIBRATION	5QJ	321/P58
132VU	FUEL FUELLING HI LVL	6QJ	321/P57
132VU	FUEL FUELLING XFR VALVE	2QU	321/P55
132VU	FUEL FUELLING CTL ! REFUEL VALVE	1QU	321/P56

9 Put the warning notices in position on:
- the refuel/defuel panel 110VU,
- the fuelling panel 430VU,
to tell persons not to operate the MODE SELECTOR switch.

(b) Do a check of the access panels 153DL, 154DR (46) and look for signs of fuel leakage.

(c) Remove the water drain mechanisms (33) (Ref. Fig. 404).
1 Put the drainage containers in position below the access panels 153DL (46) and 154DR (46), aft of FR54.
2 Disconnect the screws (45) at the access panels 153DL, 154DR (46).
3 Use the water drain adapter PN 98A28108001000 and drain the remaining fuel from the ACT (1).
a Put the flange (58) in position at the water drain opening.
b Connect the flange (58) to the aircraft skin with the quick-release fasteners (59).
c Put the thrust rod (57) through the flange (58) into the drain tube (56).
d Use the thrust rod (57) to lift the valve 280241 (280244) (31) and let the fuel drain from the ACT (1).
e Remove the thrust rod (57).
f Disconnect the quick-release fasteners (59) and remove the flange (58).

g Do the steps (c)3a thru (c)3f again at the other drain valve 280244 (280241) (31).

4 Hold the access panel 153DL (154DR) (46) and disconnect the safety cord (47) from the spring support (52).

5 Remove and retain the access panel 153DL (154DR) (46), complete with the safety cord (47).

6 Remove and retain the screw (48) and the washer (49) and remove the bonding strap (50) from the side wall of the water drain opening.
NOTE : Do not disconnect the bonding strap (50) from the drain tube (54) unless a repair or a new installation is necessary.

7 Remove and retain the lockring (51).

8 Remove the spring support (52) and the spring (53).

9 Put the spring support (52) and the spring (53) in the stowage box.

10 Put the thrust rod (57) into the drain tube (56).

11 Turn the thrust rod (57) thru 90° and then remove the thrust rod (57) and the drain tube (56) together with the bonding jumper (50).

12 Remove and discard the O-rings (54),(55) from the drain tube (56).

13 Put the drain tube (56) in the stowage box.

14 Do the steps (b)4 thru (b)13 again and remove the other water drain mechanism (33).

15 Remove the drainage containers.

(d)Install the water drain plugs (60) (Ref. Fig. 404).

1 Get the drain plugs (60) from the stowage box.

2 Apply vaseline (Material No. 04-012) to the new O-rings (61).

3 Put the O-rings (61) in the grooves in the bodies of the drain plugs (60).

4 Install the drain plugs (60).

a Put the drain plug (60) in the water drain opening.

b Safety the drain plug (60) with the lockring (51).

c Use the screw (48) and the washer (49) and attach the bonding strap (63) from the drain plug (60) to the side wall (Ref. 20-28-11, P. Block 1).

d Hold the access panel 153DL (154DR) (46) in position at the water drain opening.

e Connect the safety cord (47) from the access panel 153DL (154DR) (46) to the bracket (62) of the drain plug (60).

f Safety the access panel 153DL (154DR) (46) to the aircraft skin with the screws (45).

g Do the steps (d)4 a thru (d)4f again and install the other drain plug (60) at the fwd ACT (1) position.

(e)Disconnect the bonding straps (203) of the ACT (1) (Ref. Fig. 412).

**ON A/C 101-200,

Post SB 28-2105 For A/C 101-200,

Post SB 28-2108 For A/C 101-200,

1 Remove the screws and the washers and disconnect the bonding straps (203) from the aircraft structure.
NOTE : The aircraft structure connections are at the left and right sides of the AFT cargo compartment.
NOTE : Temporarily install the screws and the washers to the structure connections.
2 Use adhesive tape and safety the bonding straps (203) to the top surface of the ACT (1), clear of the sidewall lining (25).
NOTE : Do not remove the bonding straps (203) from the brackets (204) unless a repair or a new installation is necessary.

(f)Disconnect the FQI probes 280253 (5) and 280255 (5) (Ref. Fig. 412).
1 Disconnect the electrical connector 6083VC1-A (195) from the plug 6083VC1 (196) in the ceiling panel.
2 Put the electrical connector 6083VC1-A (195) in the stowage plug (197) on the rear wall of the ACT (1).
3 Put a blanking cap on the plug 6083VC1 (196) in the ceiling panel.

(g)Disconnect the vent valve actuator 280273 (6) (Ref. Fig. 412).
1 Disconnect the electrical connector 6084VC1-A (198) from the plug 6084VC1 (199) in the ceiling panel.
2 Put the connector 6084VC1-A (198) in the stowage plug (200) on the rear wall of the ACT (1).
3 Remove the dummy plug from the stowage position in the ceiling panel.
4 Put the dummy plug in the plug 6084VC1 (199).

(h)Remove the panel section of the right sidewall lining (25) installed aft of FR54.3.

(i)Remove the fwd air hose (202) (Ref. Fig. 412).
1 Remove the screws (262) and the washers (261) from the split bracket (260) on the sidewall lining (25), fwd of FR54.3.
2 Remove the split bracket (260).
3 Put the split bracket (260), the washers (261) and the screws (262) in the stowage box.
4 Disconnect the union nut (201) of the air hose (202) from the T-piece (259) of the air pipe (19) behind the sidewall lining (25).
5 Disconnect the union nut (201) of the air hose (202) from the NRV (7) on the top surface of the ACT (1).
6 Move the air hose (202) away from the T-piece (259) and through the opening in the sidewall lining (25).
7 Remove the air hose (202).
8 Put blanking caps on the ends of the air hose (202).
9 Put the air hose (202) in the stowage box.
10 Get the two blanking caps PN MS21914-10D from the stowage box.
11 Put a blanking cap PN MS21914-10D on the NRV (7).
12 Put a blanking cap PN MS21914-10D on the T-piece (259).

(j)Remove the vent pipe (10) (Ref. Fig. 412).
1 Put the drainage containers in position at:
- the flange connection of the vent pipe (10) to the ACT (1),
- the flange connection of the vent pipe (10) to the vent pipe (222) behind the sidewall lining (25).
2 Loosen the clamp (209) which attaches the collar (208) to the collar support ring of the ACT flange (217).

3 Remove the bolts (211) and the washers (212) which connect the flange of the collar (208) to the rear face of the sidewall lining (25).
4 Put the bolts (211) and the washers (212) in the stowage box.
5 Move the collar (208) off the collar support ring and along the vent pipe (10) away from the sidewall lining (25).
CAUTION : REMOVE FUEL LEAKAGE IMMEDIATELY.
6 Remove the nuts (213) and the bolts (214) from the connection of the ventilation pipe (10) to the ACT flange (217).
7 Put the nuts (213) and the bolts (214) in the stowage box.
CAUTION : REMOVE FUEL LEAKAGE IMMEDIATELY.
8 Remove the nuts (225) and the bolts (223) from the flange connection of the vent pipes (10),(222).
9 Put the bolts (223) and the nuts (225) in the stowage box.
10 Move the flange (215) of the vent pipe (10) from the flange (217) of the ACT (1).
11 Move the flange (220) of the vent pipe (10) away from the flange of the vent pipe (222).
12 Hold the vent pipe (10) and move the flange (215) through the opening in the sidewall lining (25).
13 Remove the vent pipe (10) complete with:
- the collar (208),
- the clamp (209)
from behind the sidewall lining (25).
14 Remove and discard the O-rings (236) from both ends of the inner pipe of the vent pipe (10).
15 Remove and discard the O-rings (256) from both ends of the interface of the flange (215) of the ventilation pipe (10).
16 Put end caps on the open ends of the vent pipe (10).
17 Put the vent pipe (10) in the stowage box.
18 Remove the drainage containers.

**ON A/C 101-200,

Post SB 28-2105 For A/C 101-200,

Post SB 28-2108 For A/C 101-200,

(k)Install the blanking cap assembly (237) on the vent pipe (222) behind the sidewall lining (25) (Ref. Fig. 412).
1 Get the blanking cap assembly (237), the nuts (141), the washers (142) and the bolts (143) from the stowage box.
2 Remove the drain and bleed plug (241) from the inner cap (238).
3 Remove and discard the O-ring (240) from the drain and bleed plug (241).
4 Apply vaseline (Material No. 04-012) to the new O-rings (235),(236),(240),(242).
5 Install the O-ring (235) in the interface of the flange (221) of the vent pipe (222).

6 Install the O-ring (236) on the stub pipe of the inner cap (238).
7 Install the O-ring (240) on the drain and bleed plug (241).
8 Put the drain and bleed plug (241) in position at the inner cap (238).
9 Put the inner cap (238) in position at the flange (221) of the vent pipe (222).

CAUTION : MAKE SURE THAT THE DRAIN AND BLEED PLUG (241) IN THE INNER CAP (238) IS AT THE LOWEST POSITION.

10 Install the screws (239) and the nuts (141) and connect the inner cap (238) to the flange (221).

NOTE : Make sure that the O-rings (235),(236) are correctly installed.

11 Tighten the drain and bleed plug (241).

NOTE : Make sure that the O-ring (240) is correctly installed.

12 Safety the drain and bleed plug (241) with lockwire.
13 Install the O-ring (242) in the groove in the interface of the outer cap (243).
14 Put the outer cap (243) in position on the inner cap (238).
15 Install the bolts (143), the washers (142) and the nuts (141), at the connection of the outer cap (243) and the inner cap (238).

NOTE : Make sure that the O-ring (242) is correctly installed.

(l)Remove the fuel pipe (11) (Ref. Fig. 412).

1 Put the drainage containers in position at:
- the flange connection of the fuel pipe (11) to the ACT (1),
- the flange connection of the fuel pipe (11) to the fuel pipe (12) behind the sidewall lining (25).

2 Loosen the clamp (209) which attaches the collar (208) to the collar support ring at the ACT flange (210).
3 Remove the bolts (211) and the washers (212) which attach the flange of the collar (208) to the rear face of the sidewall lining (25).
4 Put the bolts (211) and the washers (212) in the stowage box.
5 Move the collar (208) off the collar support ring (210) and along the fuel pipe (11) away from the sidewall lining (25).

CAUTION : REMOVE FUEL LEAKAGE IMMEDIATELY.

6 Remove the nuts (213) and the bolts (214) from the connection of the fuel pipe (11) to the ACT flange (210).
7 Put the nuts (213) and the bolts (214) in the stowage box.

CAUTION : REMOVE FUEL LEAKAGE IMMEDIATELY.

8 Remove the nuts (232) and the bolts (230) from the flange connection of the fuel pipe (11) and the fuel pipe (12).
9 Move the flange (215) of the fuel pipe (11) from the flange (210) of the ACT (1).
10 Move the flange (227) of the fuel pipe (11) away from the flange of the fuel pipe (12).
11 Hold the fuel pipe (11) and move the flange (215) through the opening in the sidewall lining (25).
12 Remove the fuel pipe (11) complete with:
- the collar (208),
- the clamp (209)

from behind the sidewall lining (25).
13 Remove and discard the O-rings (245) from the interface of the

flange (215) from both ends of the fuel pipe (11).
14 Remove and discard the O-ring (246) from both ends of the inner pipe of the fuel pipe (11).
15 Put the end caps on the open ends of the fuel pipe (11).
16 Put the fuel pipe (11) in the stowage box.
17 Remove the drainage containers.

(m) Install the blanking cap assembly (247) on the fuel pipe (12) behind the sidewall lining (25) (Ref. Fig. 412).
1 Get the blanking cap assembly (247), the nuts (141), the washers (266) and the bolts (267) from the stowage box.
2 Remove the drain and bleed plug (251) from the inner cap (248).
3 Remove and discard the O-ring (250) from the drain and bleed plug (251).
4 Apply vaseline (Material No. 04-012) to the new O-rings (245),(246), (250),(252).
5 Install the O-ring (245) in the interface of the inner cap (248) of the fuel pipe (12).
6 Install the O-ring (246) on the stub pipe of the inner cap (248).
7 Install the O-ring (250) on the drain and bleed plug (251).
8 Put the drain and bleed plug (251) in position at the inner cap (248).
9 Put the inner cap (248) in position at the flange (228) of the fuel pipe (12).

CAUTION : MAKE SURE THAT THE DRAIN AND BLEED PLUG (251) IN THE INNER CAP (248) IS AT THE LOWEST POSITION.

10 Install the screws (249), the nuts (141) and connect the inner cap (248) to the flange (228).

NOTE : Make sure that the O-rings (245),(246) are correctly installed.

11 Tighten the drain and bleed plug (251).

NOTE : Make sure that the O-ring (250) is correctly installed.

12 Safety the drain and bleed plug (251) with lockwire.
13 Install the O-ring (252) in the groove in the interface of the outer cap (253).
14 Put the outer cap (253) in positon on the inner cap (248).
15 Install the bolts (267), the washers (266) and the nuts (141).

NOTE : Make sure that the O-ring (252) is correctly installed.

(n) Disconnect the cavity drain hose (35) from the ACT base plate (38).

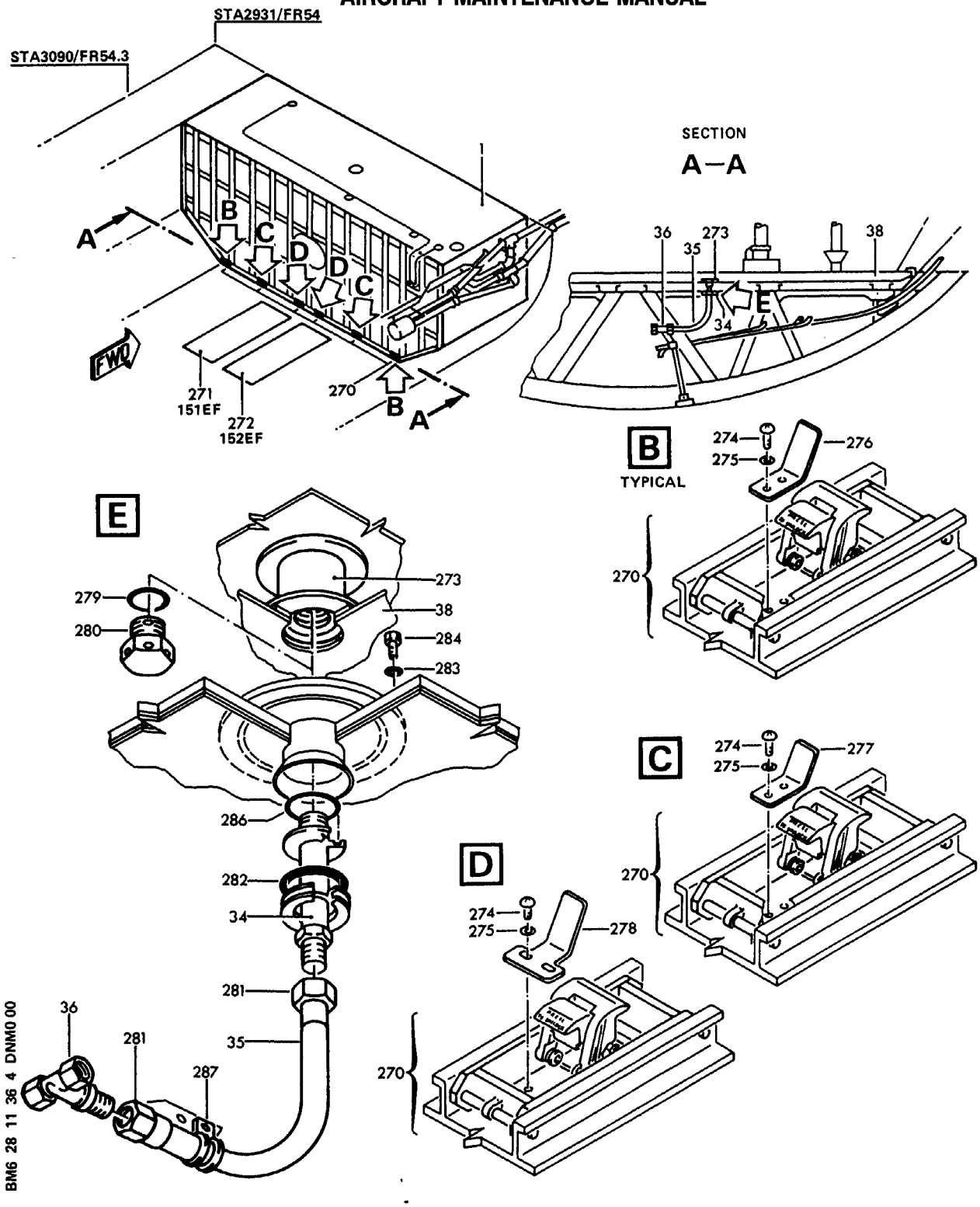
**ON A/C 101-200,

Post SB 28-2105 For A/C 101-200,

Post SB 28-2108 For A/C 101-200,

(Ref. Fig. 413)

**ON A/C 101-200,



Cavity Drain Connections and
Container Latch Locking Plates - Fwd ACT
Figure 413

Post SB 28-2105 For A/C 101-200,

Post SB 28-2108 For A/C 101-200,

1 Remove and retain the floor panels 151EF (271) and 152EF (272) of the AFT cargo compartment.

CAUTION : REMOVE FUEL LEAKAGE IMMEDIATELY.

2 Release the union nuts (281) and disconnect the drain hose (35) from the drain fitting (34) and from the T-piece (36).

3 Remove the clamp (287) with the bolt and the nut from the structure.

4 Temporarily install the bolt and the nut in the clamp (287) and put the clamp (287) in the stowage box.

5 Put the blanking caps on the open ends of the drain hose (35) and put the drain hose (35) in the stowage box.

6 Remove the drain fitting (34) from the ACT (1).

7 Remove and discard the O-rings (282),(286) from the drain fitting (34).

8 Put the blanking caps on the drain fitting (34) and put the drain fitting (34) in the stowage box.

9 Put the blanking cap on the T-piece (36).

10 Make sure that no tools or other items have been left in the under-floor area.

11 Install the floor panels 151EF (271) and 152EF (272).

(o)Lower the latches (270) which hold the ACT (1) at the base plate (38), at FR54.3 (Ref. Fig. 413).

1 Remove the screws (274), the washers (275) and the locking plates (276),(277),(278) from the roller tracks.

NOTE : Identify the locking plates (276),(277),(278) for installation in the same positions.

2 Put the locking plates (276),(277),(278) in the stowage box.

3 Install the screws (274) and the washers (275) in the roller tracks.

4 Lower the latches (270).

(p)Remove the ACT (1) from the AFT cargo compartment (Ref. 25-52-00, P. Block 1).

NOTE : Loosen or remove the YZ-latches at FR61 and FR62 if necessary (Ref. 25-52-44, P. Block 401).

1 Get the plug (280) from the stowage box.

2 Apply vaseline (Material No. 04-012) to the new O-ring (279).

3 Put the O-ring (279) in position at the interface of the plug (280).

4 Install the plug (280) in the cavity drain connection (273) of the ACT (1).

CAUTION : MAKE SURE THAT THE PLUG (280) IS WELL FITTED AND NOT PROTRUDING FROM THE ACT SKIN.

(q)Remove and discard the O-rings (64) from the water drain pipes in the base plate (38) of the ACT (1) (Ref. Fig. 404).

(r)Install the blank flanges (103),(113) at the vent pipe flange (217) and the fuel pipe flange (210) of the ACT (1) (Ref. Fig. 412).

1 Get the blank flanges (103),(113), the nuts (73) and the bolts (112) from the stowage box.

2 Apply vaseline (Material No. 04-012) to the new O-rings (104),(418).

3 Install the blank flange (113) at the vent pipe (upper) flange (217).
a Put the O-ring (418) in the groove in the insert of the blank flange (113).
b Get the blank flange (113) for the vent pipe flange (217).
NOTE : The blank flange (113) for the vent pipe flange (217) has:
- a drain and bleed plug (100),
- a O-ring (105)
installed at its center.
c Examine the drain and bleed plug (100).
d Install the drain and bleed plug (100) and the new O-ring (105) in the blank flange (113).
e Put the blank flange (113) on the vent pipe flange (217).
f Install the screws (112) and the nuts (73).
NOTE : Make sure that the O-rings (418),(105) are correctly installed.
g Safety the drain and bleed plug (100) with lockwire.
4 Install the blank flange (103) at the fuel pipe flange (210).
a Put the new O-ring (104) in the groove in the insert of the blank flange (103).
b Put the blank flange (103) on the fuel pipe flange (210).
c Install the bolts (112) and the nuts (73).
NOTE : Make sure that the O-ring (104) is correctly installed.

(s) Do this step if it is necessary to keep the ACT (1) off the aircraft for more than twenty days:
1 Remove the manhole cover (26) (Ref. 28-11-37, P. Block 401).
2 Examine:
- the vent pipe (27),
- the vent valve 280268 (28),
- the burst disc 280281,
- the fuel pipe assembly (30),
- the water drain valves 280241 and 280244 (31),
in the ACT (1) (Ref. 28-11-36, P. Block 601).
3 Examine the internal surfaces of the bladder tank 280262 (Ref. 28-11-38, P. Block 601).
4 Apply a light engine oil (Material No. 03-008) to the inner lining of the bladder tank 280262 to prevent cracks.
R 5 Make sure that there are no unwanted objects and materials, tools
R or other equipment in the tank.
R 6 Install the manhole cover (26) (Ref. 28-11-37, P. Block 401).
R 7 Attach a tag to the manhole cover (26) to tell persons:
- "Do a leak test of the manhole cover after installation of the ACT in the aircraft (Ref. 28-11-37, P. Block 401)."

NOTE : When the preservation procedure has been completed, it is possible to put the ACT into storage for a period of two years. If you store the ACT for a longer period you must follow the vendors instructions.

**ON A/C 101-200,

Post SB 28-2105 For A/C 101-200,

Post SB 28-2108 For A/C 101-200,

(5)Preparation for Operation After Removal of the Fwd and the Aft ACT (1),(2).
(a)Do the steps B(3)(a) thru (d), B(3)(f) and B(3)(j) thru (l) if necessary.
(b)Install the blanking plates (307) on the water drain flanges (32) in the cargo compartment floor, aft of FR54.

**ON A/C 101-200,

Post SB 28-2105 For A/C 101-200,

Post SB 28-2108 For A/C 101-200,

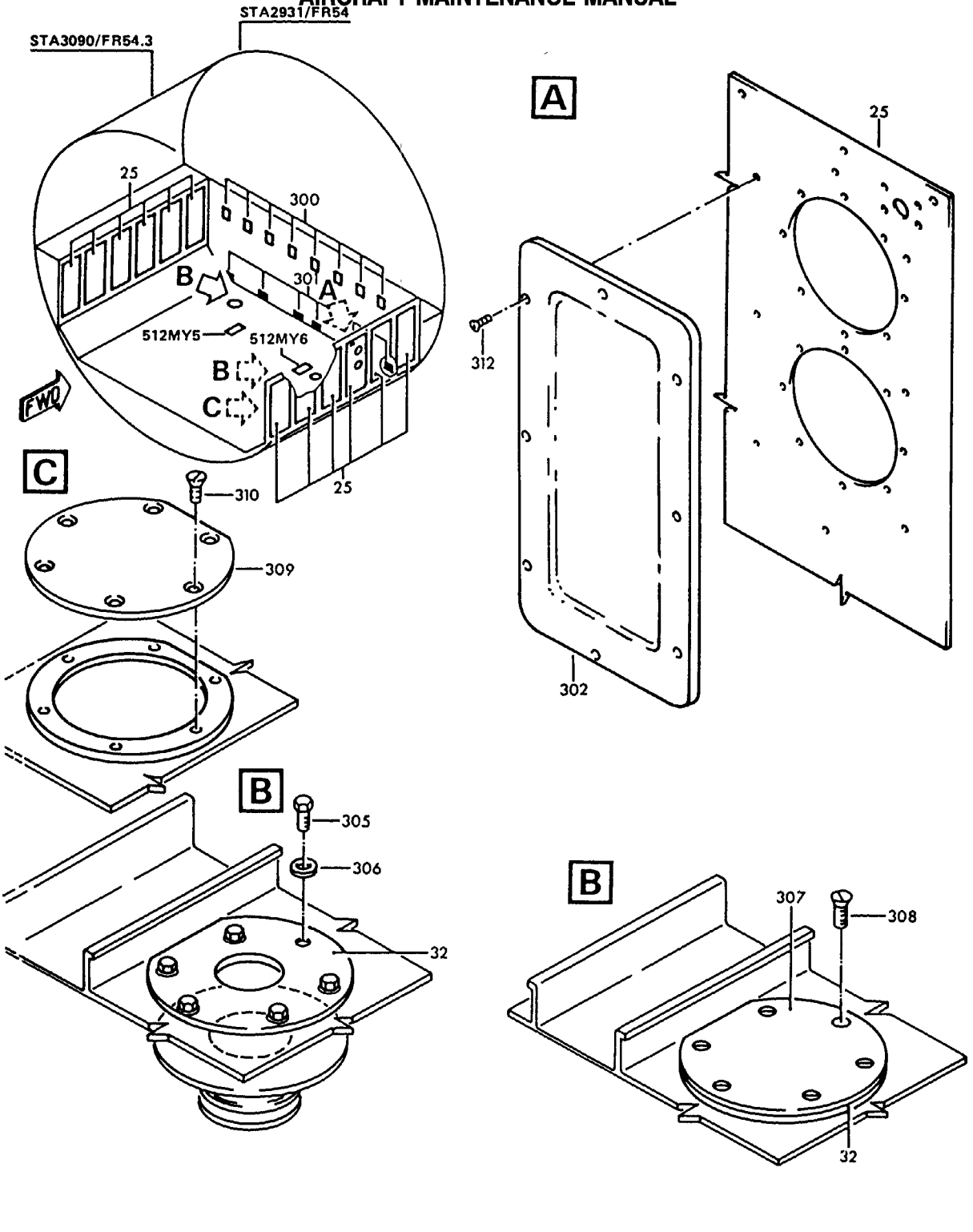
(Ref. Fig. 414)

**ON A/C 101-200,

Post SB 28-2105 For A/C 101-200,

Post SB 28-2108 For A/C 101-200,

1 Remove the bolts (305) and the washers (306) from the flanges (32).
2 Put the bolts (305) and the washers (306) in the stowage box.
3 Get the blanking plates (307) and the screws (308) from the stowage box.
4 Put the blanking plates (307) in position on the flanges (32).
NOTE : The blanking plates (307) are LH and RH and are not interchangeable.
5 Install the screws (308) and connect the blanking plates (307) to the flanges (32).
(c)Install the blanking plates (309) at the cavity drain locations in the cargo compartment floor, fwd of FR54.3 (Ref. Fig. 414).
1 Get the blanking plates (309) and the screws (310) from the stowage box.
2 Put the blanking plates (309) in position at the cavity drain locations.
3 Install the screws (310) and connect the blanking plates (309) to the cargo compartment floor.



Blanking Plates and Buffers -
Fwd ACT Position
Figure 414

(d)Install the blanking plate (302) at the opening in the sidewall lining (25), fwd of FR54.3 (Ref. Fig. 414).
1 Get the blanking plate (302) and the screws (312) from the stowage box.
2 Hold the blanking plate (302) in position at the sidewall lining (25).
3 Install the screws (312) and connect the blanking plate (302) to the sidewall lining (25).

**ON A/C 101-200,

(26)Do these steps if the ACT (1) is to stay off the aircraft during flight operations.
(a)Isolate the pushbutton switch 19QH (ACT AUTO) at the fuelling panel 430VU.
1 Release the panel 430VU.
2 Disconnect the wire 403 from the terminal C4 at the rear of the switch 19QH.
3 Put a safety cap on the end of the wire 403.
4 Disconnect the wire 406 from the terminal D4 at the rear of the switch 19QH.
5 Put a safety cap on the end of the wire 406.
6 Install the panel 430VU.

NOTE : Pin "T" on the plug "F" of the Reprogrammable Annunciator Light Test Unit (RALTU) must be "OPEN CIRCUIT" when the ACT is removed.

(b)Isolate the circuit breakers 3QH and 4QH at the distribution panel 132VU.
1 Release the panel 132VU.
2 Disconnect the wires 1448 and 1506 at the terminal 3 of the circuit breaker 3QH.
3 Put a safety cap on the connection at the ends of the wires 1448 and 1506.
4 Disconnect the wires 1504 and 1506 at the terminal 3 of the circuit breaker 4QH.
5 Put a safety cap on the connection at the ends of the wires 1504 and 1506.
6 Install the panel 132VU.
CAUTION : LEAVE THE CIRCUIT BREAKERS 1QH, 3QH, 4QH AND 5QH OPEN, SAFETIED AND TAGGED WHEN THE ACT (1) IS REMOVED.
(c)Remove the safety clips and tags and close the circuit breakers 1QJ, 2QJ, 1QT, 3QT, 4QT, 5QJ, 6QJ, 1QU and 2QU.
(d)Remove the warning notices from the refuel/defuel panel 110VU and the fuelling panel 430VU.
(e)Install the YZ-latches between FR58 and FR62 (Ref. 25-52-44, P. Block 401), if necessary.
(f)Do a functional check of the interspaces and the drain/vent system for free flow and leakage rate (Ref. 28-13-00, P. Block 501).

(g)Do a leak check of the installed system (Ref. Fig. 401, 405).
CAUTION : REMOVE ANY FUEL LEAKAGE IMMEDIATELY.
1 Open the refuel valve installed on the center tank (13).
2 Refuel the aircraft as required (Ref. 12-11-28, P. Block 301).
3 Make sure that there is no leakage from:
- the blanking cap assembly (86) on the vent pipe (9),
- the blanking cap assembly (96) on the fuel pipe (10),

4 Close the refuel valve.
(h)Make sure that the work area behind the sidewall lining (20) is clean and clear of tools and other items.
(i)Install the panel section of the sidewall lining (20) aft of FR54.3.
(j)Make sure that the work area is clean and clear of tools and other items.
(k)If the ACT (1) is to stay off the aircraft for more than twenty days, do this step.
1 Remove the manhole cover (21) (Ref. 28-11-37, P. Block 401).
2 Examine the components inside the ACT (1) (Ref. 28-11-36, P. Block 601).
3 Examine the internal surfaces of the bladder tank (Ref. 28-11-38, P. Block 601).
4 Apply a light engine oil (Material No. 03-008) to the inner lining of the bladder tank to prevent cracks.
R 5 Make sure that there are no unwanted objects and materials, tools
R or other equipment in the tank.
R 6 Install the manhole cover (21) (Ref. 28-11-37, P. Block 401).
R 7 Attach a tag to the manhole cover (21) to tell persons to do a leak check of the manhole cover (21) after installation of the ACT (1).
(l)Close the door of the AFT cargo compartment (Ref. 52-30-00, P. Block 1).
(m)Remove the access platform.

**ON A/C 101-200,

Post SB 28-2105 For A/C 101-200,

Post SB 28-2108 For A/C 101-200,

(f)Isolate the pushbutton switch 19QH (ACT AUTO) at the fuelling panel 430VU.
1 Release the panel 430VU.
2 Disconnect the wire 403 from the terminal C4 at the rear of the switch 19QH.
3 Put a safety cap on the end of the wire 403.
4 Disconnect the wire 406 from the terminal D4 at the rear of the switch 19QH.
5 Put a safety cap on the end of the wire 406.
6 Install the panel 430VU.

(g)Isolate the circuit breakers 3QH (FUEL ACT VENT AND PRESS VALVE) and 4QH (FUEL ACT XFR VALVE MOTOR 1) at the distribution panel 132VU.
1 Release the panel 132VU.
2 Disconnect the wires 1448 and 1506 at the terminal 3 of the circuit breaker 3QH.
3 Put a safety cap on the connection at the ends of the wires 1448 and 1506.
4 Disconnect the wires 1504 and 1506 at the terminal 3 of the circuit breaker 4QH.
5 Put a safety cap on the connection at the ends of the wires 1504 and 1506.
6 Install the panel 132VU.
CAUTION : KEEP THE CIRCUIT BREAKERS 1QH, 3QH, 4QH AND 5QH OPEN, SAFETIED AND TAGGED WHEN THE ACT ARE REMOVED.
(h)Remove the safety clips and tags and close the circuit breakers 1QJ, 2QJ, 1QT, 3QT, 4QT, 5QJ, 6QJ and 2QU.
(i)Do a functional check of the interspace and drain/vent system for free flow and leakage rate (Ref. 28-13-00, P. Block 501).
(j)Do a leak check of the installed system (Ref. Fig. 402, 412).
CAUTION : REMOVE FUEL LEAKAGE IMMEDIATELY.
1 Open the refuel valve on the center tank (15).
2 Refuel the aircraft as required (Ref. 12-11-28, P. Block 301).

3 Close the refuel valve on the center tank (15).
(k)Tighten or install the YZ-latches at FR61 and FR62, if necessary (Ref. 25-52-44, P. Block 401).
(l)Make sure that the work area behind the sidewall lining (25) is clean and clear of tools and other items.
(m)Install the panel section of the sidewall lining (25) aft of FR54.3.
(n)Remove the warning notices from the refuel/defuel panel 110VU and the fuelling panel 430VU.
(o)Make sure that the work area is clean and clear of tools and other items.
(p)Close the door of the AFT cargo compartment (Ref. 52-30-00, P. Block 1).
(q)Remove the access platform.

**ON A/C 101-200,

C. Preparation for Installation
(1)Do a visual check of the structure and the external components of the replacement ACT (1) (Ref. 28-11-36, P. Block 601) (Ref. Fig. 401).
(2)Do a visual check of all bonding straps of the ACT (Ref. 28-00-00, P. Block 601).
(3)Do a functional check of:
- the NRV 280266 (6),
- the vent valve 280268 (33),
- the fuel inlet valve 280288 (425)
of the ACT (1) (Ref. Fig. 401, 405).
(a)Disconnect the vent valve actuator (5) from the vent valve (33).
1 Disconnect the V-clamp at the connection of the actuator (5) and

the vent valve (33).
2 Remove the V-clamp.
3 Remove the actuator (5).
4 Remove and discard the O-ring from the interface of the vent valve (33).

(b)Make sure that the vent valve (33) is in the closed position.
NOTE : The slot in the input shaft of the vent valve (33) is fore and aft across the ACT (1). Manually turn the input shaft to the closed position, if necessary.

(c)Cut and remove the lockwire from the bleed plug (100) in the blank flange (113) at the vent pipe flange (75) on the sidewall of the ACT (1).

(d)Remove the blanking cap PN MS21914-10D from the NRV (6).

(e)Connect an air pressure supply with a gage to the NRV (6).

(f)Turn on the air supply to get a pressure of 5 psi (0.35 bar) on the gage.

(g)Shut off the air supply.

(h)Make sure that the pressure at the gage does not change.
NOTE : This checks the reverse leakage of the NRV (6).

(i)Release the bleed plug (100) in the blank flange (113).

(j)Make sure that there is no leakage from the bleed plug (100).

(k)Manually turn the input shaft of the vent valve (33) to the open position.
NOTE : The slot in the input shaft is lateral across the ACT (1).

(l)Make sure that there is leakage at the bleed plug (100).

(m)Manually turn the input shaft of the vent valve (33) to the closed position.
NOTE : The slot in the input shaft is fore and aft across the ACT (1).

(n)Make sure that there is no leakage at the bleed plug (100).

(o)Tighten the bleed plug (100) at the blank flange (113).
NOTE : Do not safety the bleed plug (100) with lockwire at this time.

(p)Disconnect the air supply from the NRV (6).

(q)Install the blanking cap PN MS21914-10D on the NRV (6).

(r)Connect the vent valve actuator (5) to the vent valve (33).
1 Apply vaseline (Material No. 04-012) to the new O-ring PN NSA8203-138.
2 Put the O-ring in the groove in the interface of the vent valve (33).
3 Put the flange of the actuator (5) in position on the flange of the vent valve (33).
NOTE : Make sure that:
- the slot in the input shaft of the vent valve (33) is aligned with the drive shaft spigot of the actuator (5),
- the pin on the input shaft of the vent valve (33) is correctly installed in the drive shaft of the actuator (5).
4 Put the V-clamp in position at the flange connection of the actuator (5) and the vent valve (33).
NOTE : Make sure that the O-ring PN NSA8203-138 is correctly installed.
5 Connect the V-clamp.

(4)Do a visual check of the heat shield (2) (Ref. 28-11-36, P. Block 601) (Ref. Fig. 401).
(5)Put the access platform in position, if necessary.
(6)Open the door of the AFT cargo compartment, if necessary (Ref. 52-30-00, P. Block 1).
(7)Examine the adjacent structure at the ACT (1) installation position in the AFT cargo compartment (Ref. Fig. 401), for:
- corrosion,
- damage.

(8)Examine the buffers (141) on the bulkhead at FR54 (Ref. Fig. 409), for:
- damage,
- correct installation.

(9)Examine the fixed container latches (140) at FR54 (Ref. Fig. 409), for:
- cracks,
- corrosion,
- wear,
- damage,
- correct installation.

(10)Examine the pallet latches (120) at FR54.3 (Ref. Fig. 407), for:
- cracks,
- corrosion,
- wear,
- damage to the springs,
- correct installation.

(11)Remove the panel section of the RH sidewall lining (20) installed aft of FR54.3, if necessary (Ref. Fig. 409).

(12)Examine the air pressurization system behind the sidewall lining (20) (Ref. Fig. 405).
(a)Remove and replace the cartridge of the air filter 280286 (17) (Ref. 28-28-24, P. Block 401), if necessary.
(b)Make sure that all the components of the system are correctly attached to the structure.
(c)Examine the air pipes (15),(16) and the datum pipe (19) for corrosion and damage.
(d)Make sure that:
- the NRVs,
- the T-pieces,
- the shut-off valve 280260,
- the pressure reducing valve 280261 (14),
- the air filter 280286 (17),
- the self-sealing couplings T1 (109) and T2 (110),

are correctly installed.

(13)Remove and retain the floor panels 151EF (121) and 152EF (122) of the AFT cargo compartment (Ref. Fig. 407).
(14)Examine the cavity drain pipes (18) behind the sidewall lining (20) and the cavity drain pipes below the cargo compartment floor (Ref. Fig. 401), for:
- corrosion,
- damage,
- correct installation.

(15)Examine the adjacent structure and the attachment brackets behind the sidewall lining (20) (Ref. Fig. 401) for corrosion and damage.

(16)Do these steps, if the aircraft has been operated with the ACT (1) removed.

(a)Make sure that the aircraft is statically grounded.

(b)Open, safety and tag the circuit breakers:

PANEL	SERVICE	IDENT.	LOCATION
22VU	FUEL TK LO LVL AND CAL L OUTER, R INNER AND CTR R	1QJ	208/B26
22VU	FUEL TK LO LVL AND CAL R OUTER, L INNER AND CTR L	2QJ	208/B27
132VU	FUEL FQI SUPPLY AND IND	1QT	321/P59
132VU	FUEL FQI CHAN SUPPLY 1	3QT	321/P60
132VU	FUEL FQI CHAN SUPPLY 2	4QT	321/P61
132VU	FUEL FUELLING OVERFLOW AND CAL	5QJ	321/P58
132VU	FUEL FUELLING HI LVL	6QJ	321/P57
132VU	FUEL FUELLING XFR VALVE	2QU	321/P55
132VU	FUEL FUELLING CTL ! REFUEL VALVE	1QU	321/P56

(c)Make sure these circuit breakers are open, safetied and tagged:

PANEL	SERVICE	IDENT.	LOCATION
101VU	FUEL CARGO TK L PUMP SUPPLY	1QH	GEN1/B02
132VU	FUEL ACT VENT AND PRESS VALVE	3QH	325/K57
132VU	FUEL ACT XFR VALVE MOTOR 1	4QH	325/K58
132VU	FUEL ACT PUMP CTL XFR VALVE MOTOR 2	5QH	325/K59

(d)Put the warning notices in position on:
- the refuel/defuel panel 110VU
- the fuelling panel 430VU,

to tell persons not to operate the MODE SELECTOR switch.

(17)Remove the plug (134) with the O-ring (135) from the drain fitting connection (123) in the base plate (25) of the ACT (1) (Ref. Fig. 407). Discard the O-ring (135).

(18)Put the plug (134) in the stowage box.

(19)Apply vaseline (Material No. 04-012) to the new O-rings (453) (Ref. Fig. 403).

(20)Put the O-rings (453) on the water drain pipes in the base plate (25) of the ACT (1) (Ref. Fig. 403).

(21)Remove the YZ-latches between FR58 and FR62 (Ref. 25-52-44, P. Block 401), if necessary.

**ON A/C 101-200,

Post SB 28-2105 For A/C 101-200,

C. Preparation for Installation
(1)Preparation for Installation of the Fwd ACT Only
(a)Do a visual check of the structure and the external components of the replacement ACT (Ref. 28-11-36, P. Block 601).
(b)Do a visual check of all bonding straps of the ACT (Ref. 28-00-00, P. Block 601).
(c)Do a functional check of:
- the NRV (7),
- the vent valve (28),
of the ACT (1),(2) (Ref. Fig. 402).
1 Disconnect the vent valve actuator (6) from the vent valve (28).
a Disconnect the V-clamp at the connection of the actuator (6) and the vent valve (28).
b Remove the V-clamp.
c Remove the actuator (6).
d Remove and discard the O-ring from the interface of the vent valve (28).
2 Make sure that the vent valve (28) is in the closed position.
NOTE : The slot in the input shaft of the vent valve (28) is fore and aft across the ACT (1). Manually turn the input shaft to the closed position , if necessary.
3 Cut and remove the lockwire from the bleed plug in the blanking plate at the vent pipe flange on the sidewall of the ACT (1),(2).
4 Remove the blanking cap PN MS21914-10D from the NRV (7).
5 Connect the air pressure supply with a gage to the NRV (7).
6 Turn on the air supply to get a pressure of 5 psi (0.35 bar) on the gage.
7 Shut off the air supply.
8 Make sure that the pressure at the gage does not change.
NOTE : This checks the reverse leakage of the NRV (7).
9 Release the bleed plug in the blanking plate at the vent pipe flange.
10 Make sure that there is no leakage at the bleed plug.
11 Manually turn the input shaft of the vent valve (28) to the open position.
NOTE : The slot in the input shaft is lateral across the ACT (1),(2).
12 Make sure that there is leakage at the bleed plug.
13 Manually turn the input shaft of the vent valve (28) to the closed position.
NOTE : The slot in the input shaft is fore and aft across the ACT (1),(2).
14 Make sure that there is no leakage at the bleed plug.
15 Tighten the bleed plug in the blanking plate at the vent pipe flange.
NOTE : Do not safety the bleed plug with lockwire at this time.
16 Disconnect the air supply from the NRV (7).
17 Install the blanking cap PN MS21914-10D on the NRV (7).
18 Connect the vent valve actuator (6) to the vent valve (28).
a Apply vaseline (Material No. 04-012) to the new O-ring

PN NSA8203-138.

b Put the O-ring in the groove in the interface of the vent valve (28).

c Put the flange of the actuator (6) in position on the flange of the vent valve (28).

NOTE : Make sure that:
- the slot in the input shaft of the vent valve (28) is aligned with the drive shaft spigot of the actuator (6).
- the pin on the input shaft of the vent valve (28) is correctly installed in the drive shaft of the actuator (6).

d Put the V-clamp in position at the flange connection of the actuator (6) and the vent valve (28).

NOTE : Make sure that the O-ring PN NSA8203-138 is correctly installed.

e Connect the V-clamp.

(d) Do a visual check of the heat shield (Ref. 28-11-36, P. Block 601).

(e) Make sure that the aircraft is statically grounded.

(f) Put the access platform in position, if necessary.

(g) Open the door of the AFT cargo compartment, if necessary (Ref. 52-30-00, P. Block 1).

(h) Examine the adjacent structure at the ACT installation position in the AFT cargo compartment, for:
- corrosion,
- damage.

(j) Examine the buffers (300) at the bulkhead at FR54 (Ref. Fig. 414), for:
- corrosion,
- damage,
- correct installation.

(k) Examine the fixed container latches (301) at FR54 (Ref. Fig. 414), for:
- cracks,
- corrosion,
- damage,
- wear,
- correct installation.

(l) Examine the latches (270) at FR54.3 (Ref. Fig. 413), for:
- cracks,
- corrosion,
- damage,
- wear,
- correct installation.

(m) Remove the panel section of the right sidewall lining (25) installed aft of FR54.3 (Ref. Fig. 414).

(n) Remove the panel section (177) of the sidewall at the cargo door position (Ref. Fig. 410), if installed.

(o) Examine the adjacent structure behind the sidewall lining, for:
- corrosion,
- damage,
- signs of leakage.

(p) Examine the air pressurization system behind the sidewall lining (25)

(Ref. Fig. 406, 412).

1 Remove and replace the cartridge of the air filter 280286 (20), if necessary (Ref. 28-28-24, P. Block 401).

2 Make sure that all the components of the system are correctly attached to the structure.

3 Examine the air pipes (18),(19),(205),(206),(207) and the datum pipe (22), for:
- corrosion,
- damage,
- correct installation.

4 Make sure that:
- the pressure reducing valve 280261 (16),
- the shut-off valve 280260 (17),
- the air filter 280286 (20),
- the self-sealing coupling T1 (93) and T2 (90),
- the NRV 280276 (263) and 280277 (264),

are correctly installed.

(q) Remove and retain the floor panels 151EF (271) and 152EF (272) of the AFT cargo-compartment (Ref. Fig. 413).

(r) Examine the cavity drain pipes (21) behind the sidewall lining (25) and the cavity drain pipes below the cargo-compartment floor (Ref. Fig. 402) for:
- corrosion,
- damage,
- correct installation.

(s) Remove the plug (280) with the O-ring (279) from the drain fitting connection (273) in the base plate (38) of the ACT (1). Discard the O-ring (279) (Ref. Fig. 413).

(t) Put the plug (280) in the stowage box.

(u) Apply vaseline (Material No. 04-012) to the new O-rings (64) (Ref. Fig. 404).

(v) Put the O-rings (64) on the water drain pipes in the base plate (38) of the ACT (1) (Ref. Fig. 404).

(w) Do these steps if the aircraft operated with the ACT removed.

1 Open, safety and tag the circuit breakers:

PANEL	SERVICE	IDENT.	LOCATION
22VU	FUEL TK LO LVL AND CAL - L OUTR, R INR AND CTR R	1QJ	208/B26
22VU	FUEL TK LO LVL AND CAL - R OUTR, L INR AND CTR L	2QJ	208/B27
132VU	FUEL FQI SUPPLY AND IND	1QT	321/P59
132VU	FUEL FQI CHAN SUPPLY 1	3QT	321/P60
132VU	FUEL FQI CHAN SUPPLY 2	4QT	321/P61
132VU	FUEL FUELLING OVERFLOW AND CALIBRATION	5QJ	321/P58
132VU	FUEL FUELLING HI LVL	6QJ	321/P57
132VU	FUEL FUELLING XFR VALVE	2QU	321/P55
132VU	FUEL FUELLING CTL ! REFUEL VALVE	1QU	321/P56

2 Make sure that these circuit breakers are open, safetied and

tagged:

PANEL	SERVICE	IDENT.	LOCATION
101VU	FUEL CARGO TK PUMP SUPPLY	1QH	GEN1/B02
132VU	FUEL ACT VENT AND PRESS VALVE	3QH	325/K57
132VU	FUEL ACT XFR VALVE MOTOR 1	4QH	325/K58
132VU	FUEL ACT PUMP CTL XFR VALVE MOTOR 2	5QH	325/K59

3 Put the warning notices in position on:
- the refuel panel 110VU,
- the fuelling panel 430VU,

to tell persons not to operate the MODE SELECTOR switch.

4 Loosen or remove the YZ-latches at FR61 and FR62, if necessary (Ref. 25-52-44, P. Block 401).

5 Remove the blanking plates (302) from the opening in the sidewall lining (25), fwd of FR54.3 (Ref. Fig. 414).

a Hold the blanking plate (302) at the opening and remove the screws (312).

b Remove the blanking plate (302).

c Put the blanking plate (302) and the screws (312) in the stowage box.

6 Remove the blanking plates (307) from the water drain flanges (32) in the cargo compartment floor, aft of FR54 (Ref. Fig. 414).

a Remove the screws (308) from the blanking plates (307).

b Remove the blanking plates (307) from the flanges (32).

c Put the blanking plates (307) and the screws (308) in the stowage box.

d Get the bolts (305) and the washers (306) from the stowage box.

e Install the bolts (305) and the washers (306) in the flanges (32).

7 Remove the blanking plates (309) from the cavity drain locations in the cargo compartment floor, fwd of FR54.3 (Ref. Fig. 414).

a Remove the screws (310) from the blanking plates (309).

b Remove the blanking plates (309).

c Put the blanking plates (309) and the screws (310) in the stowage box.

(2)Preparation for Installation of the Aft ACT, After Operation With the Fwd ACT Only

(a)Do the steps C.(1)(a) thru C.(1)(g).

(b)Remove the heat shield (3) from the rear wall of the ACT (1) (Ref. Fig. 402).

(c)Install the buffers (175) on the rear wall of the ACT (1) (Ref. Fig. 410).

1 Get the buffers (175), the screws (186) and the washers (187) from the stowage box.

2 Put the buffer (175) in position on the rear wall of the ACT (1).

NOTE : The end buffers (175) and the single buffers (175) are LH and RH and are not interchangeable.

3 Install the screws (186) and the washers (187).

4 Do the steps 2 and 3 again and install the other buffers (175).

(d)Remove the XY-guide (178) and the door sill roller (179) from the

door sill position (Ref. 25-52-48, P. Block 401) (Ref. Fig. 410, 411).

1 Get the pallet latch 42 (150) and the bracket (369) from the stowage box.

WARNING : METHYLETHYLKETONE (MATERIAL NO. 11-003) IS DANGEROUS, HIGHLY FLAMMABLE AND A SKIN IRRITANT. WEAR PROTECTIVE GLOVES OR USE A BARRIER CREAM. WASH IMMEDIATELY WITH CLEAN WATER IF SKIN IS SPLASHED WITH SOLVENT. AVOID INHALING FUMES.

2 Remove the old sealant from the contact surface of XY-guide and door sill roller and from the structure with cleaning agent (Material No. 11-003) and a wooden or plastic scraper.

3 Clean and check the work area before installation of the bracket (369).

4 Apply a thin coat of sealants (Material No. 09-016) to the contact surfaces of the bracket (369).

(e)Installation

1 Apply anti-corrosion compound (Material No. 05-002) to the threads and shafts of bolts (361),(364),(367) and (368).

2 Position the bracket (369) and install the bolts (361),(364),(367), (368) with the washers (366),(363) and the nuts (362),(365).

3 Apply corrosion preventive lubricant (Material No. 05-027) to the attachment elements.

4 Apply corrosion preventive (Material No. 05-005) to the material applied to the attachment elements and to the edges of the bracket (369).

(f)Install the latch (150) at the door sill position (Ref. 25-52-33, P. Block 401) (Ref. Fig. 410).

(g)Examine the latches (150) at FR60 (Ref. Fig. 408), for:

- cracks,
- corrosion,
- damage,
- wear,
- correct installation.

(h)Remove the blanking plates (182) from the water drain flanges (32) in the cargo compartment floor, aft of FR54.3 (Ref. Fig. 410).

1 Remove the screws (183) from the blanking plates (182).

2 Remove the blanking plates (182) from the flanges (32).

3 Put the blanking plates (182) and the screws (183) in the stowage box.

4 Get the bolts (180) and the washers (181) from the stowage box.

5 Install the bolts (180) and the washers (181) in the flanges (32).

(i)Remove the blanking plates (184) from the cavity drain locations in the cargo compartment floor aft of FR59 (Ref. Fig. 410).

1 Remove the screws (185) from the blanking plates (184).

2 Remove the blanking plates (184).

3 Put the blanking plates (184) and the screws (185) in the stowage box.

(j)Remove the panel section (177) at the cargo door position, fwd of FR60 (Ref. Fig. 410).

1 Disconnect the quick-release fasteners and remove the panel

section (177) from the sidewall lining (25).
2 Put the panel section (177) in the stowage box.
(k)Install the panel section (24) of the sidewall lining (25) at the cargo door position, fwd of FR60 (Ref. Fig. 410).
1 Get the panel section (24) from the stowage box.
2 Put the panel section (24) in position at the sidewall lining (25).
3 Connect the panel section (24) to the sidewall lining (25) with the quick-release fasteners.
(l)Remove and retain the floor panels 151GF (151) and 152GF (152) of the AFT cargo compartment (Ref. Fig. 408).
(m)Remove the panel section of the right sidewall lining (25) aft of FR54.3 (Ref. Fig. 414).
(n)Do the steps C.(1)(m) thru C.(1)(q).
(o)Remove the blanking caps (159), complete with the O-rings (158), from the base plate connections (153) of the ACT (2) (Ref. Fig. 408).
(p)Put the blanking caps (159) and the O-rings (158) in the stowage box.
(q)Apply vaseline (Material No. 04-012) to the new O-rings (64) (Ref. Fig. 404).
(r)Put the O-rings (64) on the water drain pipes in the base plate (38) of the ACT (2) (Ref. Fig. 404).
(s)Do the steps C.(1)(v)1 thru C.(1)(v)4.
(3)Preparation for Installation of the Fwd ACT and the Aft ACT
(a)Do the steps C.(1)(a) thru C.(1)(u).
(b)Do this step if the aircraft operated with the ACT removed.
1 Do the steps C.(2)(c) thru C.(2)(e).
2 Do the steps C.(2)(g) thru (2)(l).
(c)Do the step C.(2)(f).
(d)Do the steps C.(2)(n) thru C.(2)(s).

**ON A/C 101-200,

D. Installation (Ref. Fig. 401, 403, 405)
(Ref. Fig. 407, 409)

**ON A/C 101-200,

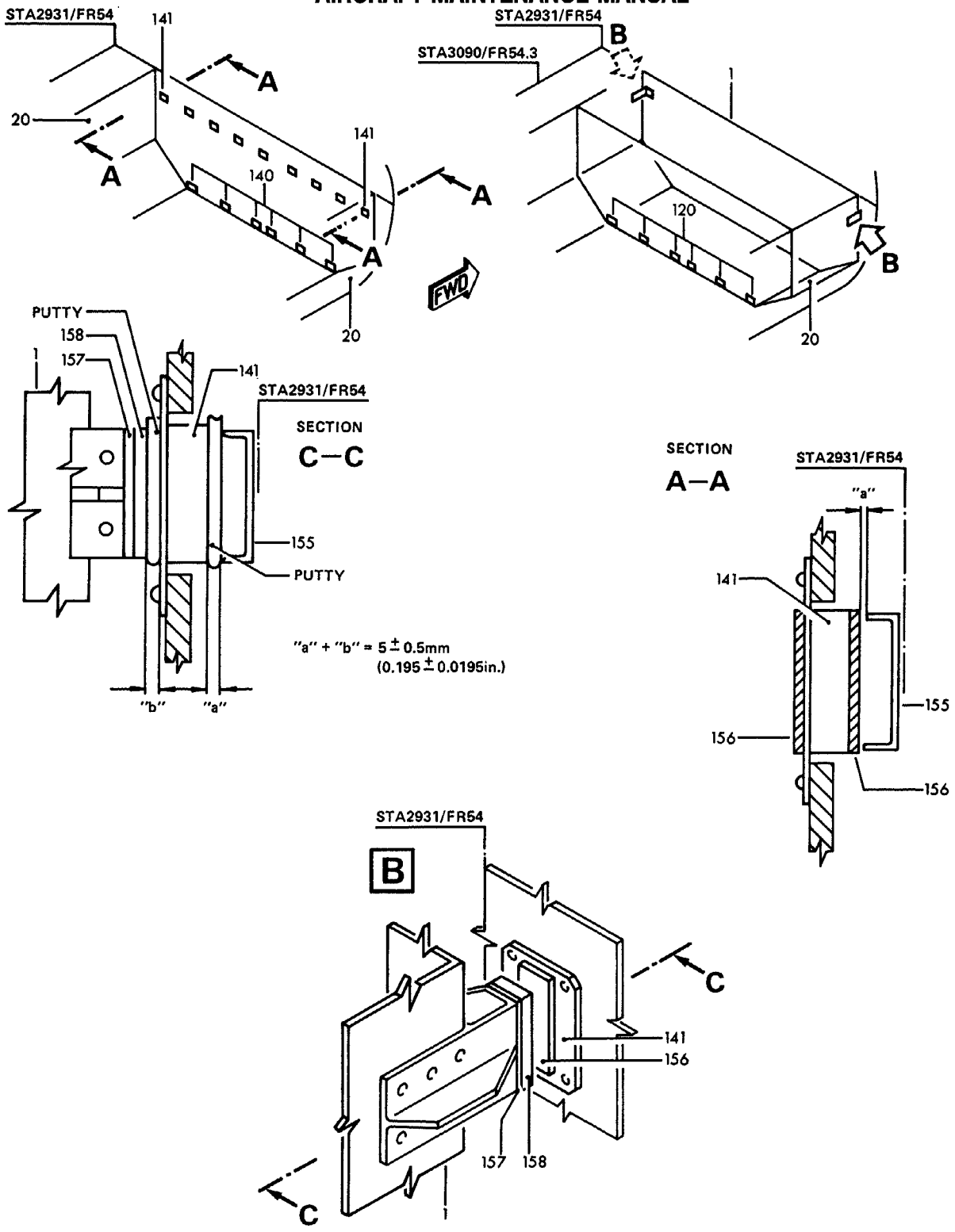
Post SB 28-2105 For A/C 101-200,

Post SB 28-2108 For A/C 101-200,

D. Installation (Ref. Fig. 402, 404, 406)
(Ref. Fig. 408, 412, 410)
(Ref. Fig. 414)

**ON A/C 101-200,

(Ref. Fig. 415)



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Installation of the ACT
Figure 415

**ON A/C 101-200,

Post SB 28-2105 For A/C 101-200,

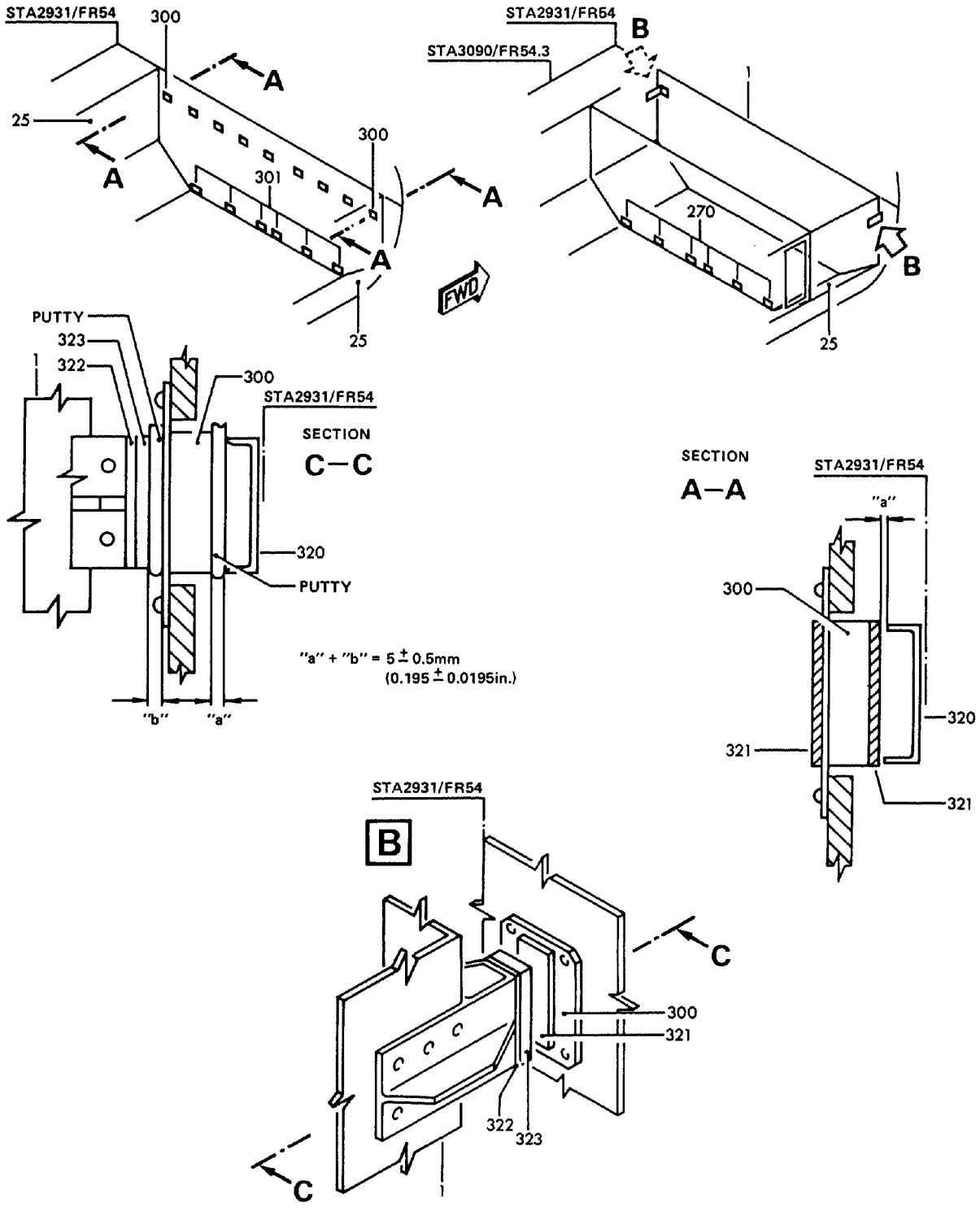
Post SB 28-2108 For A/C 101-200,

(Ref. Fig. 416)

**ON A/C 101-200,

(1)Remove the blanking plate (142) from the sidewall lining (20) fwd of FR54.3 (Ref. Fig. 409).
(a)Remove the screws (106) from the blanking plate (142).
(b)Remove the blanking plate (142) from the opening in the sidewall lining (20).
(c)Put the blanking plate (142) and the screws (106) in the stowage box.

(2)Remove the blanking plates (146),(149) from the floor of the AFT cargo cargo compartment (Ref. Fig. 409).
(a)Remove the screws (147) from the connection of the blanking plates (146) and the water drain plates (27) aft of FR.54.
(b)Remove the blanking plates (146) from the plates (27).
(c)Put the blanking plates (146) and the screws (147) in the stowage box.
(d)Remove the screws (145) and the washers (148) from the stowage box.
(e)Install the screws (145) with the washers (148) through the plates (27) into the floor of the AFT cargo compartment.
(f)Remove the screws (150) from the connection of the cover (149) and the floor of the AFT cargo compartment fwd of FR54.3.
(g)Remove the cover.
(h)Put the cover (149) and the screws (150) in the stowage box.
(i)Remove the screws (130) with the washers (131) from the stowage box.
(j)Install the screws (130) with the washers (131) through the drain fitting funnel into the floor (25) of the cargo compartment.
(3)Do a check of the ACT (1) installation position in the AFT cargo compartment (Ref. Fig. 415).
(a)Measure the distance between the fwd face of the end buffers (141) and the structure (155) and get the dimension "a".
NOTE : Do this step to get the dimension "a" only on:
- the initial installation of the ACT (1), or
- the installation of the ACT (1) after repair to FR54 or replacement of the end buffers (141).
NOTE : Dimension "a" is the distance between the fwd face of the end buffers (141) and the structure (155) without the safety strips (156).
1 Remove the end buffers (141) from FR54.
2 Apply putty to the face of the structure (155) at the end buffer (141) positions.



BM3 28 11 36 4 BSM0 00

Installation of Fwd ACT
Figure 416

3 Temporarily install the end buffers (141).
4 Remove the end buffers (141) and measure the thickness of the putty to get the dimension "a".
5 Make a note of the dimension "a".
NOTE : Make a permanent note of the dimension "a" for reference during future installation of the ACT (1).
6 Remove the putty from the face of the structure (155).
7 Install the end buffers (141).
(b)Apply putty to the fwd face of the crash-stoppers (158).
(c)Put the ACT (1) in the AFT cargo compartment (Ref. 25-52-00, P. Block 1).
(d)Move the ACT (1) fully fwd, so that the ACT base plate (25) is engaged with the six fixed container latches (140) at FR54.
(e)Lift the latches (120) at FR54.3 to hold the ACT (1) at the base plate (25).
(f)Lower the pallet latches (120) at FR54.3.
(g)Move the ACT (1) away from FR54.
(h)Measure the thickness of the putty and get the dimension "b".
NOTE : The dimension "b" is the distance between the rear face of the of the end buffers (141) and the crash-stoppers (158) without the safety strips (156).
(i)Add the dimension "a"+"b".
NOTE : Dimension "a"+"b" must be 5 ± 0.5 mm (0.195 ± 0.0195 in.).
(j)Do this step if the dimension "a"+"b" is not correct.
1 Remove the end of the crash-stoppers (158).
2 Adjust or replace the shim pack (157) to get the required dimension "a"+"b".
3 Install the end of the crash-stoppers (158).
4 Move the ACT (1) fully fwd, so that the ACT base plate (25) is engaged with the latches (140).
5 Do the steps (g) thru (i) again.
(k)Remove the putty from the fwd face of the crash-stoppers (158).

**ON A/C 101-200,

Post SB 28-2105 For A/C 101-200,

Post SB 28-2108 For A/C 101-200,

(1)Installation of the Fwd ACT (1)
(a)Do a check of the installation position of the ACT (1) in the AFT cargo compartment (Ref. Fig. 416).
1 Measure the distance between the fwd face of the end buffers (300) and the structure (320) and get the dimension "a".
NOTE : Do this step to get the dimension "a" only:
- on the initial installation of the ACT (1), or
- on the installation of the ACT (1) after repair to FR54 or replacement of the end buffers (300).
NOTE : The dimension "a" is the distance between the fwd face of

the end buffers (300) and the structure (320) without the safety strips (321).

a Remove the end buffers (300) from FR54.
b Apply putty to the face of the structure (320) at the end buffer (300) positions.
c Temporarily install the end buffers (300).
d Remove the end buffers (300).
e Measure the thickness of the putty to get the dimension "a".
f Make a note of the dimension "a".
g Remove the putty from the face of the structure (320).
h Install the end buffers (300).
NOTE : Make a permanent note of the dimension "a" for reference during future installation of the ACT (1).

2 Apply putty to the fwd face of the crash-stoppers (323).
3 Put the ACT (1) in the AFT cargo compartment (Ref. 25-52-00, P. Block 1).
4 Move the ACT (1) fully forward, so that the base plate (38) is engaged with the latches (301) at FR54.
5 Lift the latches (270) at FR54.3 and hold the ACT (1) at the base plate (38).
6 Lower the latches (270) at FR54.3.
7 Move the ACT (1) away from FR54.
8 Measure the thickness of the putty on the crash-stoppers (323) and get the dimension "b".
NOTE : The dimension "b" is the distance between the rear face of the end buffers (300) and the crash-stoppers (323), without the safety strips (321).
9 Add the dimensions "a" and "b".
NOTE : The dimension "a"+"b" must be 5 ±0.5 mm (0.195 ±0.0195 in.).
10 Do this step if the dimension "a"+"b" is not correct.
a Remove the ends of the crash-stoppers (323).
b Adjust or replace the shim pack (322) to get the necessary dimension "a"+"b".
c Install the ends of the crash-stoppers (323).
11 Remove the putty from the fwd face of the crash-stoppers (323).

**ON A/C 101-200,

(4)Remove the blanking plates (103),(113) on the vent pipe flange (75) and the fuel pipe flange (70) of the ACT (1) (Ref. Fig. 405).
(a)Loosen the bleed plug (100) in the blank flange(113) at the vent pipe (upper) flange (75) and release the pressure from the ACT (1).
(b)Tighten the bleed plug (100) by hand.
NOTE : Do not remove the bleed plug (100) and the O-ring (105) unless a repair or a new installation is necessary.
(c)Remove and retain the nuts (73) and the bolts (112) from the blank flange (113).
(d)Remove the blank flange (113) from the vent pipe flange (75) of the

ACT (1).
(e)Remove and discard the O-ring (418).
(f)Put the blank flange (113) in the stowage box.
(g)Remove and retain the nuts (73) and the bolts (112) from the blank flange (103).
(h)Remove the blank flange (103) from the fuel pipe flange (70) of the ACT (1).
(i)Remove and discard the O-ring (104).
(j)Put the blank flange (103) in the stowage box.
(5)Move the ACT (1) fully fwd, so that the ACT base plate (25) engages with the latches (140) at FR54.
(6)Lift the latches (120) at FR54.3 to hold the ACT (1) at the base plate (25).
NOTE : This will de-activate the power drive units (PDU) 512MY5 and 512MY6 below the ACT (1).
(7)Safety the latches (120) (Ref. Fig. 407).
(a)Remove the screws (124) and the washers (125) from the roller tracks at the latches (120).
(b)Remove the locking plates (126),(127) from the stowage box.
(c)Put the locking plates (127) in position at the two center latches (120).
(d)Put the locking plates (126) in position at the four outer latches (120) identified during REMOVAL.
(e)Install the washers (125) and the screws (124) at the locking plates (126),(127).
(8)Install the YZ-latches between FR58 and FR62 (Ref. 25-52-44, P. Block 401), if necessary.
(9)Connect the cavity drain system to the ACT (1) (Ref. Fig. 407).
(a)Remove the plug (134) with the O-ring (135) from the cavity drain connection (123) of the ACT (1). Discard the O-ring (135).
(b)Put the plug (134) in the stowage box.
(c)Remove the drain fitting (132) and the drain hose (28) from the stowage box.
(d)Remove the blanking caps from the drain hose (28) and from the drain fitting (132) and put them in the stowage box.
(e)Examine the drain hose (28) and the drain fitting (132) for:
- corrosion,
- damage.
(f)Apply vaseline (Material No. 04-012) to the new O-rings (128),(129).
(g)Put the O-rings (128),(129) on the drain fitting (132).
(h)Install the drain fitting (132) in the drain fitting connection (123) of the ACT (1).
(i)Install the union nuts (133) of the drain hose (28) to the drain fitting (132) and to the T-piece (29).
(j)Remove the bolt and the nut from the clamp (136) and install the clamp (136) to the structure.
(k)Make sure that no tools or other items have been left in the underfloor area.
NOTE : Do not install the floor panels 151EF (121) and 152EF (122) at this time.
(10)Put the drainage containers in position behind the sidewall lining (20)

at the blanking cap assemblies (86),(96) (Ref. Fig. 405).

**ON A/C 101-200,

Post SB 28-2105 For A/C 101-200,

Post SB 28-2108 For A/C 101-200,

(b)Remove the blank flanges (113),(103) from the vent pipe flange (217) and the fuel pipe flange (210) of the ACT (1) (Ref. Fig. 412).
1 Remove the blank flange (113) from the vent pipe flange (217).
a Release the drain and bleed plug (100) in the blank flange (113).
b Let the pressure be released from the ACT (1) through the drain and bleed plug (100).
c Tighten the drain and bleed plug (100) by hand.
NOTE : Do not remove the drain and bleed plug (100) and the O-ring (105) unless a repair or a new installation is necessary.
d Remove the nuts (73) and the bolts (112) from the ventilation pipe flange (217).
e Remove the blank flange (113) from the vent pipe flange (217).
f Put the blank flange (113), complete with the drain and bleed plug (100), the nuts (73) and the bolts (112) in the stowage box.
2 Remove the blank flange (103) from the fuel pipe (lower) flange (210).
a Remove the nuts (73) and the bolts (112) from the fuel pipe flange (210).
b Remove the blank flange (103) from the fuel pipe flange (210).
c Put the blank flange (103), the nuts (73) and the bolts (112) in the stowage box.
(c)Move the ACT (1) forward, so that the base plate (38) engages with the latches (301) at FR54.
(d)Lift the latches (270) at FR54.3 to hold the ACT (1) at the base plate (38).
NOTE : This will de-activate the PDU 512MY3 and 512MY4 below the ACT (1).
(e)Safety the latches (270) (Ref. Fig. 413).
1 Remove the screws (274) and the washers (275) from the roller tracks.
2 Get the locking plates (276),(277),(278) from the stowage box.
3 Put the locking plates (276),(277),(278) in the roller tracks at the positions identified during the removal.
4 Install the screws (274) and the washers (275) in the locking plates (276),(277),(278).
(f)Connect the cavity drain hose (35) to the ACT base plate (38) (Ref. Fig. 413).
1 Examine the underfloor area at the open floor panel positions,for:
- corrosion,
- damage,
- fuel contamination.

2 Make sure that the plug (280) has been removed from the base plate connection (273).
3 Get the drain hose (35) complete with:
- the drain fitting (34),
- the clamp (287)
from the stowage box.
4 Remove the blanking caps from the drain hose (35).
5 Examine the drain hose(35) for:
- corrosion,
- damage.
6 Apply vaseline (Material No. 04-012) to the new O-rings (282),(286).
7 Put the O-rings (282),(286) on the drain fitting (34).
8 Install the drain fitting (34) in the drain fitting connection (273) of the ACT (1).
9 Install the union nut (281) of the drain hose (35) to the drain fitting (34) and to the T-piece (36).
10 Remove the bolt and the nut from the clamp (287) and install the clamp (287) to the structure.

**ON A/C 101-200,

(11)Remove the blanking cap assembly (86) from the vent pipe (9) (Ref. Fig. 405).
CAUTION : REMOVE FUEL LEAKAGE IMMEDIATELY.
(a)Remove and retain the bolts (78), the washers (77) and the nuts (76) from the blanking cap assembly (86) on the vent pipe (9).
(b)Remove the outer cap (92) complete with the O-ring (91).
(c)Cut and remove the lockwire which safeties the drain and bleed plug (90) to the inner cap (87).
(d)Release the drain and bleed plug (90).
(e)Drain the fluid from the vent pipe (9) into the drainage container.
(f)Tighten the drain and bleed plug (90) to the inner cap (87).
NOTE : Do not wirelock the drain and bleed plug (90) at this time.
(g)Remove the screws (88) from the connection of the inner cap (87) and the flange (83).
(h)Remove the inner cap (87) complete with the drain and bleed plug (90) from the flange (83).
(i)Put the blanking cap assembly (86) in the stowage box.
(12)Remove the blanking cap assembly (96) from the fuel pipe (10) (Ref. Fig. 405).
CAUTION : REMOVE FUEL LEAKAGE IMMEDIATELY.
(a)Remove and retain the bolts (82), the washers (81) and the nuts (80) from the blanking cap assembly (96) on the fuel pipe (10).
(b)Remove the outer cap (102) complete with the O-ring (101).
(c)Cut and remove the lockwire which safeties the drain and bleed plug (100) to the inner cap (97).
(d)Release the drain and bleed plug (100).
(e)Drain the fluid from the fuel pipe (10) into the drainage container.
(f)Tighten the drain and bleed plug (100) to the inner cap (97).
NOTE : Do not wirelock the drain and bleed plug (100) at this time.
(g)Remove the screws (98) from the connection of the inner cap (97)

and the flange (93).
(h)Remove the inner cap (97) complete with the drain and bleed plug (100) from the flange (93).
(i)Put the blanking cap assembly (96) in the stowage box.
(13)Remove and discard the O-rings (84),(94) from the flanges (83),(93).
(14)Remove the drainage containers from behind the sidewall lining (20).
(15)Install the fuel pipe (8) (Ref. Fig. 405).
(a)Remove the fuel pipe (8), complete with the bellows (69) and the bellows attachment ring (372) from the stowage box.
(b)Remove the end caps from the fuel pipe (8).
(c)Examine the fuel pipe (8) and make sure that:
- the flanges,
- the bellows (69)
are clean and not damaged.
(d)Check that the O-ring and O-ring sliding surfaces and grooves are free of drips and pollution from foreign objects (rough surface). Repair if necessary (Ref. 28-26-15, P. Block 801).
(e)Apply vaseline (Material No. 04-012) to the new O-rings (420),(421).
(f)Install the O-rings (421) in the groove in the interface of the flange at both ends of the fuel pipe (8).
(g)Install the O-rings (420) on the inner pipe at both ends of the fuel pipe (8)
(h)Put the bellows attachment ring (372) on the fuel pipe (8).
(i)Put the fuel pipe (8) behind the sidewall lining (20).
(j)Put the flange of the fuel pipe (8) through the opening in the sidewall lining (20) in position at the flange (70) of the ACT (1).
(k)Put the flange of the fuel pipe (8) in position at the flange (93) of the fuel pipe (10).
(l)Remove the bolts (82) and the nuts (80) from the stowage box.
(m)Install the bolts (82) and the nuts (80) at the connection of the fuel pipe (8) and the fuel pipe (10).
(n)Install the bolts (74) and the nuts (73) and connect the fuel pipe (8) to the flange (70) of the ACT (1).
(o)Move the bellows (69) along the fuel pipe (8).
(p)Put the flange of the bellows (69) in position at the rear face of the sidewall lining (20).
(q)Remove the bolts (71) and the washers (72) from the stowage box.
(r)Install the bolts (71) and the washers (72) and connect the flange of the bellows (69)with the bellows attachment ring (372) to the sidewall lining (20).
(s)Put the bellows (69) on the bellows support ring of the flange (70).
(t)Tighten the clamp (68) to attach the bellows (69) to the bellows support ring of the flange (70).
(16)Install the vent pipe (7) (Ref. Fig. 405).
(a)Remove the vent pipe (7), complete with the bellows (69) and the bellows attachment ring (372) from the stowage box.
(b)Remove the end caps from the vent pipe (7).
(c)Examine the vent pipe (7) and make sure that:
- the flanges,
- the bellows (69)
are clean and not damaged.

(d)Apply vaseline (Material No. 04-012) to the new O-rings (422),(423).
(e)Install the O-rings (423) in the groove in the interface of the flange at both ends of the vent pipe (9).
(f)Install the O-rings (422) on the inner pipe at both ends of the vent pipe (7)
(g)Put the vent pipe (7) behind the sidewall lining (20).
(h)Put the flange of the vent pipe (7) through the opening in the sidewall lining (20) in position at the flange (75) of the ACT (1).
(i)Put the flange of the vent pipe (7) in position at the flange of the vent pipe (9).
(j)Remove the bolts (78) and the nuts (76) from the stowage box.
(k)Install the bolts (78) and the nuts (76), retained in step D.(11), at the connection of the vent pipe (7) and the vent pipe (9).
(l)Remove the bolts (74) and the nuts (73) from the stowage box.
(m)Install the bolts (74) and the nuts (73) and connect the vent pipe (7) to the flange (75) of the ACT (1).
(n)Move the bellows (69) along the vent pipe (7).
(o)Put the flange of the bellows (69) in position at the rear face of the sidewall lining (20).
(p)Remove the bolts (71) and the washers (72) from the stowage box.
(q)Install the bolts (71) and the washers (72) and connect the flange of the bellows (69) to the sidewall lining (20).
(r)Put the bellows (69) on the bellows support ring of the flange (75).
(s)Tighten the clamp (68) to attach the bellows (69) to the bellows support ring of the flange (75).

**ON A/C 101-200,

Post SB 28-2105 For A/C 101-200,

Post SB 28-2108 For A/C 101-200,

(g)Remove the blanking cap assembly (237) from the vent pipe (222) behind the sidewall lining (25) (Ref. Fig. 412).
1 Put the drainage container in position at the blanking cap assembly (237).
2 Remove the nuts (141), the washers (142) and the bolts (143) from the blanking cap assembly (237).
3 Remove the outer cap (243) from the inner cap (238).
4 Remove and discard the O-ring (242) from the interface of the outer cap (243).
5 Cut and remove the lockwire which safeties the drain and bleed plug (241) to the inner cap (238).
CAUTION : REMOVE FUEL LEAKAGE IMMEDIATELY.
6 Release the drain and bleed plug (241) and drain the fluid from the vent pipe (222) into the drainage container.
7 Tighten the drain and bleed plug (241).
NOTE : Do not wirelock the drain and bleed plug (241) at this time.
8 Remove the screws (239) from the connection of the inner cap (238)

and the flange (221) of the vent pipe (222).
9 Remove the inner cap (238) complete with the drain and bleed plug (241).
10 Remove and discard the O-ring (236) from the stub pipe of the inner cap (238).
11 Put the blanking cap assembly (237), the nuts (141), the washers (142) and the bolts (143) in the stowage box.
12 Remove and discard the O-ring (235) from the interface of the flange (221).
13 Remove the drainage container.

(h) Remove the blanking cap assembly (247) from the fuel pipe (12) behind the sidewall lining (25) (Ref. Fig. 412).
1 Put the drainage container in position at the blanking cap assembly (247).
2 Remove the nuts (265), the washers (266) and the bolts (267) from the blanking cap assembly (247).
3 Remove the outer cap (253) from the inner cap (248).
4 Remove and discard the O-ring (252) from the interface of the outer cap (253).
5 Cut and remove the lockwire which safeties the drain and bleed plug (251) to the inner cap (248).
CAUTION : REMOVE FUEL LEAKAGE IMMEDIATELY.
6 Release the drain and bleed plug (251) and drain the fluid from the fuel pipe (12) into the drainage container.
7 Tighten the drain and bleed plug (251).
NOTE : Do not wirelock the drain and bleed plug (251) at this time.
8 Remove the screws (249) from the connection of the inner cap (248) to the flange (228).
9 Remove and retain the screws (249) and the nuts (141).
10 Remove the inner cap (248) complete with the drain and bleed plug (251).
11 Remove and discard the O-ring (246) from the stub pipe of the inner cap (248).
12 Put the blanking cap assembly (247), the nuts (141), the washers (266), the bolts (267) and the screws (249) in the stowage box.
13 Remove and discard the O-ring (245) from the interface of the flange (228).
14 Remove the drainage container.

(i) Install the fuel pipe (11) (Ref. Fig. 412).
1 Get the fuel pipe (11) complete with:
- the bellows (208),
- the bellows attachment ring (372),
- the clamp (209),
from the stowage box.
2 Remove the blanking caps from the fuel pipe (11).
3 Examine the fuel pipe (11).
a Make sure that:
- the bellows (208),
- the bellows attachment ring (372),
- the clamp (209),

- the flanges (215),(227),
are clean and not damaged.

4 Check that the O-ring and O-ring sliding surfaces and grooves are free of drips and pollution from foreign objects (rough surface). Repair if necessary (Ref. 28-26-15, P. Block 801).

5 Apply vaseline (Material No. 04-012) to the new O-rings (245),(246).

6 Install the O-ring (245) in the groove in the interface on both ends of the fuel pipe (11).

7 Install the O-ring (246) on the inner pipe on both ends of the fuel pipe (11).

8 Put the bellows attachment ring (372) on the fuel pipe (11).

9 Put the fuel pipe (11) in position behind the sidewall lining (25).

10 Hold the fuel pipe (11) and put the flange (215) through the opening in the sidewall lining (25).

11 Put the flange (215) on the fuel pipe flange (210).

12 Get the bolts (214) and the nuts (213) from the stowage box.

13 Hold the fuel pipe (11) and put the flange (227) in position at the flange (228) of the fuel pipe (12).

14 Install the bolts (230) and the nuts (232) at the connection of the flanges (227),(228).

NOTE : Make sure that the O-rings (245),(246) are correctly installed.

15 Install the bolts (214) and the nuts (213) in the fuel pipe flange (210).

NOTE : Make sure that the O-rings (245),(246) are correctly installed.

16 Move the bellows (208) along the fuel pipe (11) to the sidewall lining (25).

17 Put the flange of the bellows (208) in position at the rear face of the sidewall lining (25).

18 Get the bolts (211) and the washers (212) from the stowage box.

19 Install the bolts (211) and the washers (212) and connect the bellows (208) with the bellows attachment ring (372) to the sidewall lining (25).

20 Put the bellows (208) in position on the bellows support ring of the fuel pipe flange (210).

21 Tighten the clamp (209) and attach the bellows (208) to the bellows support ring of the fuel pipe flange (210).

(j)Install the vent pipe (10) (Ref. Fig. 412).

1 Get the vent pipe (10) complete with:
- the bellows (208),
- the bellows attachment ring (372),
- the clamp (209),
from the stowage box.

2 Remove the blanking caps from the vent pipe (10).

3 Examine the vent pipe (10).

a Make sure that:
- the bellows (208),
- the bellows attachment ring (372),
- the clamp (209),
- the flanges (215),(220),

are clean and not damaged.
4 Apply vaseline (Material No. 04-012) to the new O-rings (236),(256).
5 Install the O-ring (256) in the groove in the interface of the flange (215) on both ends of the vent pipe (10).
6 Install the O-ring (236) on the inner pipe on both ends of the vent pipe (10).
7 Put the bellows attachment ring (372) on the vent pipe (10).
8 Put the vent pipe (10) in position behind the sidewall lining (25).
9 Hold the vent pipe (10) and put the flange (215) through the opening in the sidewall lining (25).
10 Put the flange (215) in position on the vent pipe flange (217).
11 Get the bolts (223) and the nuts (225) from the stowage box.
12 Hold the vent pipe (10) and put the flange (220) in position at the flange (221) of the vent pipe (222).
13 Install the bolts (223) and the nuts (225) at the connection of the flanges (220),(221).
NOTE : Make sure that the O-rings (256),(236) are correctly installed.
14 Get the nuts (213) and the bolts (214) from the stowage box.
15 Install the bolts (214) and the nuts (213) on the connection of the flanges (217),(215).
NOTE : Make sure that the O-rings (236),(256) are correctly installed.
16 Move the bellows (208) along the vent pipe (10) to the sidewall lining (25).
17 Put the flange of the bellows (208) in position at the rear face of the sidewall lining (25).
18 Get the bolts (211) and the washers (212) from the stowage box.
19 Install the bolts (211) and the washers (212) and connect the bellows (208) with the bellows attachment ring (372) to the sidewall lining (25).
20 Put the bellows (208) in position on the bellows support ring of the vent pipe flange (217).
21 Tighten the clamp (209) and attach the bellows (208) to the bellows support ring.

**ON A/C 101-200,

(17)Install the air hose (64) (Ref. Fig. 405).
(a)Remove the air hose (64) from the stowage box.
(b)Remove the blanking caps from the ends of the air hose (64).
(c)Examine the air hose (64) for corrosion and damage.
(d)Remove the blanking cap PN MS21914-10D from the T-piece (108) of the air pipe (15) behind the sidewall lining (20).
(e)Remove the blanking cap PN MS21914-10D from the NRV 280266 (6) on the top surface of the ACT (1).
(f)Put the blanking caps PN MS21914-10D in the stowage box.
(g)Put the end of the air hose (64) through the opening, above the vent pipe (7), in the sidewall lining (20).
(h)Connect the air hose (64) to the T-piece (108).
(i)Connect the air hose (64) to the NRV 280266 (6).
NOTE : Make sure that the air hose (64) is not twisted.
(j)Remove the split bracket (107) from the stowage box.

(k)Put the split bracket (107) on the air hose (64) at the front face of the sidewall lining (20).
(l)Install the screws (106), and the washers (111) retained in step D.(1), through the split bracket (107) and into the sidewall lining (20).

(18)Connect the vent valve actuator 280273 (5) (Ref. Fig. 405).
(a)Remove the blanking cap from the plug 6084VC1 (62) in the ceiling panel.
(b)Remove the electrical connector 6084VC1-A (63) from the stowage plug (67) on the rear wall of the ACT (1).
(c)Connect the electrical connector 6084VC1-A (63) to the plug 6084VC1 (62) in the ceiling panel.

(19)Connect the FQI probes 280253 and 280255 (4) (Ref. Fig. 405).
(a)Remove the dummy plug from the plug 6083VC1 (60) in the ceiling panel.
(b)Put the dummy plug in the stowage position in the ceiling panel.
(c)Remove the electrical connector 6083VC1-A (61) from the stowage plug (66) on the rear wall of the ACT (1).
(d)Connect the electrical connector 6083VC1-A (61) to the plug 6083VC1 (60) in the ceiling panel.

(20)Connect the bonding straps (65) to the aircraft structure connections at the LH and the RH sides of the AFT cargo compartment.
(a)Remove the adhesive tape which safeties the bonding straps (65) to the top surface of the ACT (1).
(b)Connect the bonding straps (65) to the structure connections (Ref. 20-28-11, P. Block 1).

(21)Remove the water drain plugs (48) (Ref. Fig. 403).
(a)Disconnect the screws (35) at the access panel 153DL (154DR) (36) installed in the aircraft skin aft of FR54.
(b)Disconnect the safety cord (37) from the bracket (50) of the drain plug (48).
(c)Remove and retain the access panel 153DL (154DR) (36) complete with the safety cord (37).
(d)Remove and retain the screw (38) and the washer (39) and disconnect the bonding strap (452) from the sidewall of the water drain opening.
NOTE : Do not disconnect the bonding strap (40) from the bracket (51) of the drain plug (48) unless a repair or a new installation is necessary.
(e)Remove and retain the lockring (41).
(f)Remove the drain plug (48) complete with the bonding strap (40).
(g)Remove and discard the O-ring (49) from the body of the drain plug (48).
(h)Put the drain plug (48) in the stowage box.
(i)Do the steps (a) thru (h) again and remove the other drain plug (48).

(22)Install the water drain mechanisms (26) (Ref. Fig. 403).
(a)Remove the spring support (42), the spring (43) and the drain tube (44) from the stowage box.
(b)Apply vaseline (Material No. 04-012) to the new O-rings (45),(46).
(c)Put the O-ring (45) in the lower groove of the drain tube (44).
(d)Put the O-ring (46) in the upper groove of the drain tube (44).
(e)Make sure that the O-ring (453) is correctly installed on the water drain pipe.
(f)Use the thrust rod (47) of the water drain adaptor PN 98A28108001000

and install the drain tube (44) complete with the bonding strap (40).

(g)Install the spring (43) and the spring support (42).

(h)Install the lockring (41) and safety the spring support (42).

(i)Connect the bonding strap (40) to the sidewall of the water drain opening with the screw (38) and the washer (39) (Ref. 20-28-11, P. Block 1).

(j)Put the access panel 153DL (154DR) (36) in position at the opening for the water drain.

(k)Connect the safety cord (37) from the access panel 153DL (154DR) (36) to the spring support (42).

(l)Use the thrust rod (47) and check the operation of the water drain valve 280241 (280244) (32).

(m)Do the steps (b) thru (l) again and install the other water drain mechanism.

NOTE : Do not safety the access panel 153DL (154DR) (36) with the screws (35) at this time.

**ON A/C 101-200,

Post SB 28-2105 For A/C 101-200,

Post SB 28-2108 For A/C 101-200,

(k)Install the fwd air hose (202) (Ref. Fig. 412).

1 Get the air hose (202) from the stowage box.

2 Remove the blanking caps from the air hose (202).

3 Examine the air hose, for:
- corrosion,
- damage.

4 Remove the blanking cap PN MS21914-10D from the T-piece (259) behind the sidewall lining (25).

5 Remove the blanking cap PN MS21914-10D from the NRV (7) on the top surface of the ACT (1).

6 Put the blanking caps PN MS21914-10D in the stowage box.

7 Put the end of the air hose (202) through the opening in the sidewall lining (25), above the vent pipe (10).

8 Connect the air hose (202) to the T-piece (259).

a Put the union nut (201) of the air hose (202) on the T-piece (259).

b Tighten the union nut (201) by hand.

9 Connect the union nut (201) to the NRV (7).

a Put the union nut (201) of the air hose (202) on the NRV (7).

b Tighten the union nut (201).

NOTE : Make sure that the air hose (202) is not twisted.

10 Fully tighten the union nut (201) at the T-piece (259).

11 Get the split bracket (260), the washers (261) and the screws (262) from the stowage box.

12 Put the split bracket (260) in position on the air hose (202) at the front face of the sidewall lining (25).

13 Install the screws (262) and the washers (261) and attach the

split bracket (260) to the sidewall lining (25).

(l)Connect the vent valve actuator 280273 (6) (Ref. Fig. 412).

1 Remove the dummy plug from the plug 6084VC1 (199) in the ceiling panel.

2 Put the dummy plug in the stowage position in the ceiling panel.

3 Remove the electrical connector 6084VC1-A (198) from the stowage plug (200) on the rear wall of the ACT (1).

4 Make sure that the electrical harness is not damaged.

5 Connect the electrical connector 6084VC1-A (198) to the plug 6084VC1 (199).

(m)Connect the FQI probes 280253 and 280255 (5) (Ref. Fig. 412).

1 Remove the blanking cap from the plug 6083VC1 (196) in the ceiling panel.

2 Remove the electrical connector 6083VC1-A (195) from the stowage plug (197) on the rear wall of the ACT (1).

3 Make sure that the electrical harness is not damaged.

4 Connect the electrical connector 6083VC1-A (195) to the plug 6083VC1 (196).

(n)Connect the bonding straps (203) of the ACT (1) (Ref. Fig. 412).

1 Release the bonding straps (203) which are safetied to the top surface of the ACT (1).

2 Make sure that the bonding straps (203) are correctly connected to the brackets (204) on the ACT (1) (Ref. 20-28-11, P. Block 1).

3 Connect the bonding straps (203) to the structure connections at the left and right sides of the AFT cargo compartment (Ref. 20-28-11, P. Block 1).

(o)Remove the water drain plugs (60) (Ref. Fig. 404).

1 Disconnect the screws (45) at the access panels 153DL (46) and 154DR (46), aft of FR54.

2 Remove the water drain plug (60).

a Hold the access panel 153DL (154DR) (46) and disconnect the safety cord (47) from the bracket (62) of the drain plug (60).

b Remove and retain the access panel 153DL (154DR) (46), complete with the safety cord (47).

c Remove and retain the screw (48) and the washer (49) and disconnect the bonding strap (63) from the sidewall of the water drain opening.

NOTE : Do not disconnect the bonding strap (63) from the drain plug (60) unless a repair or a new installation is necessary.

d Remove and retain the lockring (51).

e Remove the drain plug (60), complete with the bonding strap (63).

f Remove and discard the O-ring (61) from the body of the drain plug (60).

g Do the steps a thru f again and remove the other drain plug (60).

3 Put the drain plugs (60) in the stowage box.

(p)Install the water drain mechanism (33) (Ref. Fig. 404).

1 Remove the spring supports (52), the springs (53) and the drain tubes (56) from the stowage box.

2 Examine the spring supports (52), the springs (53) and the drain tubes (56), for:

- corrosion,
- damage.

3 Examine the water drain openings, for:
- corrosion,
- damage.

NOTE : Make sure that the O-rings (64) are correctly installed on the water drain pipes of the ACT (1).

4 Apply vaseline (Material No. 04-012) to the new O-rings (54),(55).

5 Put the O-rings (54) in the lower grooves of the drain tubes (56).

6 Put the O-rings (55) in the upper grooves of the drain tubes (56).

7 Install the water drain mechanism (33).

a Use the thrust rod (57) of the water drain adapter PN 98A28108001000 and install the drain tube (56).

b Remove the thrust rod (57).

c Install the spring (53) and the spring support (52).

d Safety the spring support (52) with the lockring (51).

e Use the screw (48) and the washer (49) and connect the bonding strap (50) from the drain tube (56) to the side wall (Ref. 20-28-11, P. Block 1).

f Hold the access panel 153DL (154DR) (46) in position at the water drain opening.

g Connect the safety cord (47) from the access panel 153DL (154DR) (46) to the spring support (52).

h Use the thrust rod (57) and check the operation of the drain valve 280241 (280244) (31).

i Do the steps a thru h again and install the other water drain mechanism (33).

NOTE : Do not safety the access panels 153DL (46) and 154DR (46) with the screws (45) to the aircraft skin at this time.

**ON A/C 101-200,

(23)Do these steps if the aircraft has been operated with the ACT (1) removed.

(a)Connect the pushbutton switch 19QH (ACT AUTO) at the fuelling panel 430VU.

1 Release the panel 430VU.

2 Remove the safety caps from the wires 403 and 406 behind the panel 430VU.

3 Connect the wire 403 to the terminal C4 at the rear of the switch 19QH.

4 Connect the wire 406 to the terminal D4 at the rear of the switch 19QH.

5 Install the panel 430VU.

(b)Connect the circuit breakers 3QH and 4QH at the distribution panel 132VU.

1 Release the panel 132VU.

2 Remove the safety cap from the connection of the wires 1504 and 1506.

3 Connect the wires 1504 and 1506 to the terminal 3 of the circuit breaker 4QH.

4 Remove the safety cap from the connection of the wires 1448

and 1506.
5 Connect the wires 1448 and 1506 to the terminal 3 of the circuit breaker 3QH.
6 Install the panel 132VU.
(24)Remove the safety clips and tags and close the circuit breakers 1QH, 3QH, 4QH, 5QH, 1QJ, 2QJ, 5QJ, 6QJ, 1QT, 3QT, 4QT and 2QU.
(25)Remove the warning notices from the refuel/defuel panel 110VU and the fuelling panel 430VU.

**ON A/C 101-200,

Post SB 28-2105 For A/C 101-200,

Post SB 28-2108 For A/C 101-200,

(q)Do these steps if it is necessary to operate the aircraft with the fwd ACT (1) only installed.
1 Tighten or install the YZ-latches between FR61 and FR62, if necessary (Ref. 25-52-44, P. Block 401).
2 Make sure that the buffers (175) are removed from the rear wall of the ACT (1) (Ref. Fig. 410).
3 Make sure that the the dummy plug is installed in the plug 6084VC2 (113) in the ceiling panel at FR59 (Ref. Fig. 406).
4 Do the tests which are given in Section E (TEST).
(r)Do this step if the aft ACT (2) is to be installed (Ref. Fig. 413).
1 Make sure that the work area below the ACT cargo-compartment floor is clean and clear of tools and other items.
2 Install the floor panels 151EF (271) and 152EF (272).
(2)Installation of the Aft ACT (2)
(a)Make sure that the work area behind the sidewall linings (25) at FR54.3 is clean and clear of tools and other items.
(b)Install the panel section of the right sidewall lining (25) aft of FR54.3.
(c)Do a check of the installation position of the ACT (2) in the AFT cargo compartment.

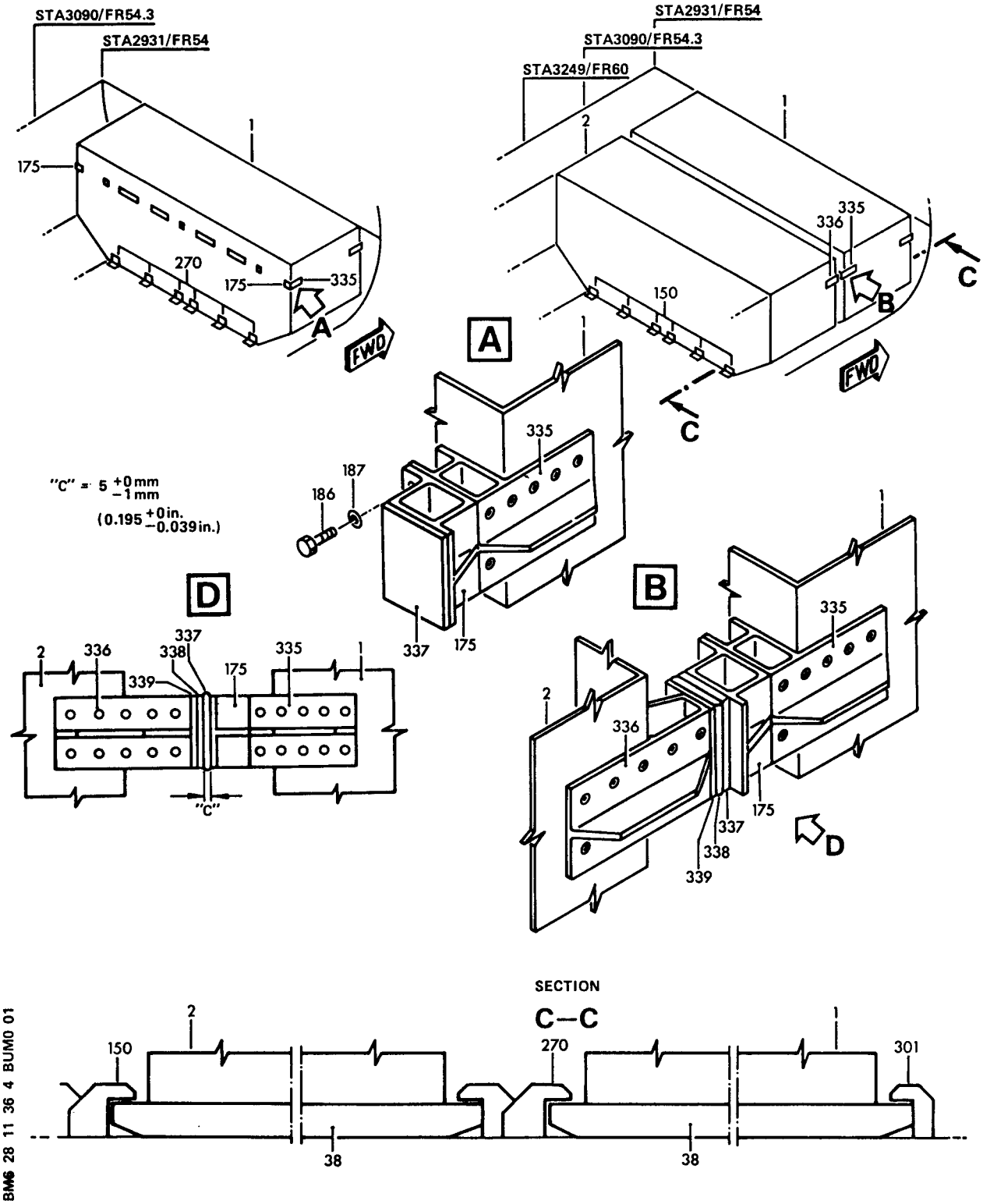
**ON A/C 101-200,

Post SB 28-2105 For A/C 101-200,

Post SB 28-2108 For A/C 101-200,

(Ref. Fig. 417)

**ON A/C 101-200,



BM6 28 11 36 4 BUM0 01

Installation of the Aft ACT
Figure 417

Post SB 28-2105 For A/C 101-200,

Post SB 28-2108 For A/C 101-200,

NOTE : Make sure that the ACT (1) is fully forward so that the base plate (38) is engaged with the latches (301) at FR54.

1 Apply putty (337) to the interface of the end buffers (175) on the rear wall of the ACT (1).

2 Put the ACT (2) in the AFT cargo compartment (Ref. 25-52-00, P. Block 1).

3 Move the ACT (2) fully forward, so that the base plate (38) is engaged with the latches (270) at FR54.3.

4 Lift the latches (150) at FR60 and hold the ACT (2) at the base plate (38).

5 Lower the latches (150) at FR60.

6 Move the ACT (2) away from the ACT (1).

7 Measure the thickness of the putty (337) on the end buffers (175) to get the dimension "c".

NOTE : The dimension "c" is the distance between the ACT brackets (336) and the end buffers (175) when the ACT is installed.

NOTE : The dimension "c" must be 5 -1 mm (0.195 -0.039 in.).

8 Do this step if the dimension "c" is not correct:

a Remove the ends of the crash-stoppers (338) from the ACT brackets (336).

b Adjust or replace the shim packs (339) on the ACT brackets (336).

c Install the ends of the crash-stoppers (338).

9 Remove the putty (337) from the end buffers (175).

(d)Remove the blank flanges(137),(81) from the vent pipe flange (86) and from the fuel pipe flange (85) of the ACT (2) (Ref. Fig. 406).

1 Remove the blank flange (137) from the vent pipe flange (86).

a Release the drain and bleed plug (139) in the blanking plate (137).

b Release the pressure from the ACT (2) through the drain and bleed plug (139).

c Tighten the drain and bleed plug (139) by hand.

NOTE : Do not remove the drain and bleed plug (139) and the O-ring (140) unless a repair or a new installation is necessary.

d Remove the nuts (147) and the bolts (148) from the vent pipe flange (86) of the ACT (2).

e Remove the blank flange (137), discard the O-ring (138).

f Put the blank flange (137), complete with the drain and bleed plug (139), the nuts (147) and the bolts (148) in the stowage box.

2 Remove the blank flange (81) from the fuel pipe (lower) flange (85).

a Remove the nuts (147) and the bolts (148) from the fuel pipe flange of the ACT (2).

b Remove the blank flange (81) from the fuel pipe flange (85). Discard the O-ring (136).

c Put the blank flange (81), the nuts (147) and the bolts (148) in the stowage box.

(e)Move the ACT (2) forward and engage the base plate (38) with the

latches (270) at FR54.3 (Ref. Fig. 417).

(f)Lift the latches (150) at FR60 to hold the ACT (2) at the base plate (38).

(g)Safety the latches (150) (Ref. Fig. 408).

1 Remove the screws (154) and the washers (155) from the roller tracks.

2 Get the locking plates (156),(157) from the stowage box.

3 Put the locking plates (156),(157) at the roller tracks at the positions identified during the removal.

4 Install the screws (154) and the washers (155) through the locking plates (156),(157) in the roller tracks.

(h)Connect the cavity drain hoses (35) to the ACT base plate (38) (Ref. Fig. 408).

1 Examine the underfloor area at the open floor panel positions, for:
- corrosion,
- damage,
- fuel contamination.

2 Make sure that the plug (159) complete with the O-ring (158) have been removed from the drain fitting connection (153).

3 Get the drain hose (35) complete with:
- the P-clip (166)
from the stowage box.

4 Remove the blanking caps from the drain hose (35).

5 Examine the drain hose (35), for:
- corrosion,
- damage.

6 Remove the blanking caps PN MS21914-8D from the T-piece (36) and put them in the stowage box.

7 Put the drain hose (35) in position in the underfloor area.

8 Apply vaseline (Material No. 04-012) to the new O-rings (34),(161).

9 Put the O-rings (34),(161) on the drain fitting (164).

10 Install the drain fitting (164) in the drain fitting connection (153) of the ACT (2).

11 Install the union nuts (160) of the drain hose (35) to the drain fitting (164) and to the T-piece (36).

12 Remove the bolt and the nut from the clamp (166) and install the clamp (166) to the structure.

13 Make sure that no tools or other items have been left in the underfloor area.

NOTE : Do not install the floor panels 151GF (151) and 152GF (152) at this time

**ON A/C 101-200,

Post SB 28-2105 For A/C 101-200,

Post SB 28-2108 For A/C 101-200,

(i)Remove the blanking cap assembly (120) from the vent pipe (97) behind the sidewall lining (25) (Ref. Fig. 406).

1 Put the drainage container in position at the blanking cap assembly (120).
2 Remove the nuts (141), the washers (142) and the bolts (143) from the blanking cap assembly (120).
3 Remove the outer cap (126) from the inner cap (121).
4 Remove and discard the O-ring (125) from the interface of the outer cap (126).
5 Cut and remove the lockwire which safeties the drain and bleed plug (124) to the inner cap (121).

CAUTION : REMOVE FUEL LEAKAGE IMMEDIATELY.

6 Release the drain and bleed plug (124) and drain the fluid from the vent pipe (97) into the drainage container.
7 Tighten the drain and bleed plug (124).

NOTE : Do not safety the drain and bleed plug (124) with lockwire at this time.

8 Remove the screws (122) from the connection of the inner cap (121) and the flange (96) of the vent pipe (97).
9 Remove the inner cap (121) complete with the drain and bleed plug (124).
10 Remove and discard the O-ring (119) from the stub pipe of the inner cap (121).
11 Put the blanking cap assembly (120), the nuts (141), the washers (142) and the bolts (143) in the stowage box.
12 Remove and discard the O-ring (118) from the interface of the flange (96).
13 Remove the drainage container.

(j) Remove the blanking cap assembly (129) from the fuel pipe (104) behind the sidewall lining (25) (Ref. Fig. 406).

1 Put the drainage container in position at the blanking cap assembly (129).
2 Remove the nuts (144), the washers (145) and the bolts (146) from the blanking cap assembly (129).
3 Remove the outer cap (135) from the inner cap (130).
4 Remove and discard the O-ring (134) from the interface of the outer cap (135).
5 Cut and remove the lockwire which safeties the drain and bleed plug (133) to the inner cap (130).

CAUTION : REMOVE FUEL LEAKAGE IMMEDIATELY.

6 Release the drain and bleed plug (133) and drain the fluid from the fuel pipe (104) into the drainage container.
7 Tighten the drain and bleed plug (133).

NOTE : Do not safety the drain and bleed plug (133) with lockwire at this time.

8 Remove the screws (131) from the connection of the inner cap (130) and the flange (103) of the fuel pipe (104).
9 Remove the inner cap (130) complete with the drain and bleed plug (133).
10 Remove and discard the O-ring (128) from the stub pipe of the inner cap (130).
11 Put the blanking cap assembly (129), the nuts (144), the washers (145) and the bolts (146) in the stowage box.

12 Remove and discard the O-ring (127) from the interface of the flange (103).
13 Remove the drainage container.

(k) Install the fuel pipe (9) (Ref. Fig. 406).

1 Get the fuel pipe (9) complete with:
- the bellows (75),
- the bellows attachment ring (372),
- the clamp (80),
from the stowage box.
2 Remove the blanking caps from the fuel pipe (9).
3 Examine the fuel pipe (9).
a Make sure that:
- the bellows (75),
- the bellows attachment ring (372),
- the clamp (80),
- the flanges (84),(102)
are clean and not damaged.
4 Check that the O-ring and O-ring sliding surfaces and grooves are free of drips and pollution from foreign objects (rough surface). Repair if necessary (Ref. 28-26-15, P. Block 801).
5 Apply vaseline (Material No. 04-012) to the new O-rings (127),(128).
6 Install the O-rings (127) in the groove in the interface of the flange (103) on both ends of the fuel pipe (9).
7 Install the O-rings (128) on the inner pipe on both ends of the fuel pipe (9).
8 Put the bellows attachment ring (372) on the fuel pipe (9).
9 Put the fuel pipe (9) in position behind the sidewall lining (25).
10 Hold the fuel pipe (9) and put the flange (84) through the opening in the panel section in position at the flange (85) of the ACT (2).
11 Get the bolts (105) and the nuts (107) from the stowage box.
12 Hold the fuel pipe (9) and put the flange (102) in position at the flange (103) of the fuel pipe (104).
13 Install the bolts (105) and the nuts (107) at the connection of the flanges (102),(103).
NOTE : Make sure that the O-rings (127),(128) are correctly installed.
14 Get the nuts (82) and the bolts (83) from the stowage box.
15 Install the bolts (83) and the nuts (82) and connect the fuel pipe flange (84) to the fuel pipe flange (85) of the ACT (2).
NOTE : Make sure that the O-rings (127),(128) are correctly installed.
16 Move the bellows (75) along the fuel pipe (9) to the panel section.
17 Put the flange of the bellows (75) in position at the rear face of the panel section.
18 Get the bolts (78) and the washers (79) from the stowage box.
19 Install the bolts (78) and the washers (79) and connect the bellows (75) with the bellows attachment ring (372) to the panel section.
20 Put the bellows (75) in position on the bellows support ring at the fuel pipe flange (85) of the ACT (2).

21 Tighten the clamp (80) and attach the bellows (75) to the bellows support ring at the fuel pipe flange (85) of the ACT (2).

(l) Install the vent pipe (8) (Ref. Fig. 406).

1 Get the vent pipe (8) complete with:
- the bellows (75),
- the bellows attachment ring (372),
- the clamp (80),

from the stowage box.

2 Remove the blanking caps from the vent pipe (8).

3 Examine the vent pipe (8).

a Make sure that:
- the bellows (75),
- the bellows attachment ring (372),
- the clamp (80),
- the flanges (96),(95),

are clean and not damaged.

4 Apply vaseline (Material No. 04-012) to the new O-rings (118),(119).

5 Install the O-rings (118) in the groove in the interface of the flange (96) on both ends of the vent pipe (8).

6 Install the O-ring (119) on the inner pipe on both ends of the vent pipe (8).

7 Put the bellows attachment ring (372) on the vent pipe (8).

8 Put the vent pipe (8) in position behind the sidewall lining (25).

9 Hold the vent pipe (8) and put the flange (96) through the opening in the panel section in position at the flange (86) of the ACT (2).

10 Get the bolts (98) and the nuts (100) from the stowage box.

11 Hold the vent pipe (8) and put the flange (95) in position at the flange (371) of the vent pipe (97).

12 Install the bolts (98) and the nuts (100) at the connection of the flanges (95),(371).

NOTE : Make sure that the O-rings (118),(119) are correctly installed.

13 Get the nuts (82) and the bolts (83) from the stowage box.

14 Install the bolts (83) and the nuts (82) and connect the flange (96) to the flange (86) of the ACT (2).

NOTE : Make sure that the O-rings (118),(119) are correctly installed.

15 Move the bellows (75) along the vent pipe (8) to the panel section.

16 Put the flange of the bellows (75) in position at the rear face of the panel section.

17 Get the bolts (78) and the washers (79) from the stowage box.

18 Install the bolts (78) and the washers (79) and connect the bellows (75) with the bellows attachment ring (372) to the panel section.

19 Put the bellows (75) in position on the bellows support ring at the vent pipe flange (86) of the ACT (2).

20 Tighten the clamp (80) and attach the bellows (75) to the bellows support ring at the vent pipe flange (86).

**ON A/C 101-200,

Post SB 28-2105 For A/C 101-200,

Post SB 28-2108 For A/C 101-200,

(m)Install the aft air hose (72) (Ref. Fig. 406).
1 Get the air hose (72) from the stowage box.
2 Remove the blanking caps from the air hose (72).
3 Examine the air hose (72), for:
- corrosion,
- damage.
4 Remove the blanking cap PN MS21914-10D from the T-piece (88) behind the sidewall lining (25).
5 Remove the blanking cap PN MS21914-10D from the NRV (7) on the top surface of the ACT (2).
6 Put the blanking caps PN MS21914-10D in the stowage box.
7 Put the end of the air hose (72) through the opening in the panel section, above the vent pipe (8).
8 Connect the air hose (72) to the T-piece (88).
a Put the union nut (87) of the air hose (72) on the T-piece (88).
b Tighten the union nut (87) by hand.
9 Connect the air hose (72) to the NRV (7).
a Put the union nut (71) of the air hose (72) on the NRV (7).
b Tighten the union nut (71).
NOTE : Make sure that the air hose (72) is not twisted.
10 Fully tighten the union nut (87) at the T-piece (88).
11 Get the screws (115), the washers (116) and the split bracket (117) from the stowage box.
12 Put the split bracket (117) in position on the air hose (72) at the front face of the panel section.
13 Install the screws (115) and the washers (116) and attach the split bracket (117) to the panel section.
(n)Connect the vent valve actuator 280274 (6) and the fuel inlet valve actuator 280298 (417) (Ref. Fig. 406).
1 Remove the dummy plug from the plug 6084VC2 (113) in the ceiling panel.
2 Put the dummy plug in the stowage position in the ceiling panel.
3 Remove the electrical connector 6084VC2-A (112) from the stowage plug (114) on the rear wall of the ACT (2).
4 Make sure that the electrical harness is not damaged.
5 Connect the electrical connector 6084VC2-A (112) to the plug 6084VC2 (113).
(o)Connect the FQI probes 280254 and 280256 (5) (Ref. Fig. 406).
1 Remove the dummy plug from the plug 6083VC2 (110) in the ceiling panel.
2 Remove the electrical connector 6083VC2-A (109) from the stowage plug (111) on the rear wall of the ACT (2).
3 Make sure that the electrical harness is not damaged.
4 Connect the electrical connector 6083VC2-A (109) to the plug 6083VC2 (110).
(p)Connect the bonding straps (73) of the ACT (2) (Ref. Fig. 406).

1 Release the bonding straps (73) which are safetied to the top surface of the ACT (2).
2 Make sure that the bonding straps (73) are correctly connected to the brackets (74) on the ACT (2) (Ref. 20-28-11, P. Block 1).
3 Connect the bonding straps (73) to the structure connections at the left and right sides of the AFT cargo compartment (Ref. 20-28-11, P. Block 1).

(q)Remove the water drain plugs (60) (Ref. Fig. 404).
1 Disconnect the screws (45) at the access panels 153EL (46) and 154ER (46), aft of FR54.3.
2 Remove the water drain plugs (60).
a Hold the access panel 153EL (154ER) (46) and disconnect the safety cord (47) from the bracket (62) of the drain plug (60).
b Remove and retain the access panel 153EL (154ER) (46), complete with the safety cord (47).
c Remove and retain the screw (48) and the washer (49) and disconnect the bonding strap (63) from the side wall of the water drain opening.
NOTE : Do not disconnect the bonding strap (63) from the drain plug (60) unless a repair or a new installation is necessary.
d Remove and retain the lockring (51).
e Remove the drain plug (60) complete with the bonding strap (63).
f Remove and discard the O-ring (61) from the body of the drain plug (60).
g Do the steps a thru f again and remove the other drain plug (60).
3 Put the drain plugs (60) in the stowage box.

(r)Install the water drain mechanism (33) (Ref. Fig. 404).
1 Remove the spring support (52), the springs (53) and the drain tubes (56) from the stowage box.
2 Examine the spring supports (52), the springs (53) and the drain tubes (56), for:
- corrosion,
- damage.
3 Examine the water drain openings, for:
- corrosion,
- damage.
NOTE : Make sure that the O-rings (64) are correctly installed on the water drain pipes of the ACT (2).
4 Apply vaseline (Material No. 04-012) to the new O-rings (54),(55).
5 Put the O-rings (54) in the lower grooves of the drain tubes (56).
6 Put the O-rings (56) in the upper grooves of the drain tubes (56).
7 Install the water drain mechanims (33).
a Use the thrust rod (57) of the water drain adapter PN 98A28108001000 and install the drain tube (56).
b Remove the thrust rod (57).
c Install the spring (53) and the spring support (52).
d Safety the spring support (52) with the lockring (51).
e Use the screw (48) and the washer (49) and connect the bonding strap (50) from the drain tube (56) to the side wall (Ref. 20-28-11, P. Block 1).
f Hold the access panel 153EL (154ER) (46) in position at the water

drain opening.
g Connect the safety cord (47) from the access panel 153EL (154ER) (46) to the spring support (52).
h Use the thrust rod (57) and check the operation of the drain valve 280242 (280243) (31).
i Do the steps a thru h again and install the other water drain mechanism (33).
NOTE : Do not safety the access panels 153EL (46) and 154ER (46) with the screws (45) to the aircraft skin at this time.

(s)Tighten or install the YZ-latches between FR61 and FR62, if necessary (Ref. 25-52-44, P. Block 401).
(t)Do this step if the aircraft operated with the two ACT removed.
1 Connect the pushbutton switch 19QH (ACT AUTO) at the fuelling panel 430VU.
a Release the panel 430VU.
b Remove the safety caps from the wires 403 and 406 behind the panel 430VU.
c Connect the wire 403 to the terminal C4 at the rear of the switch 19QH.
d Connect the wire 406 to the terminal D4 at the rear of the switch 19QH.
e Install the panel 430VU.
2 Connect the circuit breakers 3QH (ACT VENT AND PRESS VALVE) and 4QH (ACT XFR VALVE MOTOR 1) at the distribution panel 132VU.
a Release the panel 132VU.
b Remove the safety cap from the connection of the wires 1504 and 1506.
c Connect the wires 1504 to the terminal 3 of the circuit breaker 4QH.
d Remove the safety cap from the connection of the wires 1448 and 1506.
e Connect the wires 1448 and 1506 to the terminal 3 of the circuit breaker 3QH.
f Install the panel 132VU.
(u)Remove the safety clips and tags and close the circuit breakers 1QH, 3QH, 4QH, 5QH, 1QJ, 2QJ, 5QJ, 6QJ, 1QT, 3QT, 4QT and 2QU. (Ref. 25-52-44, P. Block 401).
(v)Remove the warning notices from the refuel/defuel panel 110VU and the fuelling panel 430VU.

**ON A/C 101-200,

E. Test (Ref. Fig. 401, 403, 405)
(Ref. Fig. 407, 409)
(1)Do an operational test of the ACT FAULT light on the fuelling panel 430VU.
(a)Operate the LO LEVEL TEST switch on the maintenance panel 472VU and make sure that the ACT FAULT light comes on.
(2)Do the functional test of the ACT(s) system (with ACT(s) installed) (Ref. 28-13-00, P. Block 501, Para. 3).

(3)Do a leak check of the ACT refuel/transfer line (Ref. Fig. 401).
CAUTION : REMOVE FUEL LEAKAGE IMMEDIATELY.
(a)Refuel the ACT with approx. 500 litres (132 U.S.gal.) of fuel (Ref. 12-11-28, P. Block 301).
(b)Examine the area behind the sidewall lining (20) for signs of fuel leakage.
1 Make sure that there are no signs of fuel leaks from:
- the flange connections of the vent pipes (7),(9) and (11),
- the flange connections of the fuel pipes (8),(10) and (12),
- the connection of the cavity drain pipe (18) to the vent pipe (9),
- the connection of the cavity drain pipe (18) to the T-assy (417).
(c)Examine the drain mast for signs of fuel leakage.
(d)Do a check of the drain monitor (30).
(4)Do the operational test of the transfer system in manual (fwd) transfer and automatic transfer mode (Ref. 28-28-00, P. Block 501, Para. 1).
(a)Select FWD with the ACT pushbutton on the fuelling panel 430VU.
1 Transfer approx. 100 litres (26.5 U.S.gal.) of fuel from the ACT to the center tank.
NOTE : This is to make sure that the manual transfer system is functional for the first flight after the installation of the ACT.
(5)Do a BITE check of the FQI signal conditioning stages and the indicator displays (Ref. 28-42-00, P. Block 501).
(6)Do a functional check of the water drain valves 280241, 280244 (32). (Ref. Fig. 403).
(a)Put drainage containers in position below the water drain openings.
CAUTION : REMOVE FUEL LEAKAGE IMMEDIATELY.
(b)Put the flange (52) in position at one of the water drain openings.
(c)Connect the flange (52) to the aircraft skin with the quick-release fasteners.
(d)Put the thrust rod (47) in the drain tube (44) of the water drain valve 280241 (280244) (32).
(e)Use the thrust rod (47) to operate the water drain valve 280241 (280244) (32).
(f)Let the fuel drain from the ACT (1).
(g)Remove the thrust rod (47) and release the water drain valve 280241 (280244) (32).
(h)Make sure that no fuel leaks from the water drain valve 280241 (280244) (32) in a time of fifteen minutes.
(i)Disconnect the quick-release fasteners and remove the flange (52).
(j)Do the steps (b) thru (i) again at the other water drain valve 280244 (280241) (32).
(k)Remove the drainage containers.

F. Close-Up (Ref. Fig. 401, 407)
(1)Safety the access panels 153DL, 154DR (36).
(a)Put the access panel 153DL (154DR) (36) in position at the opening for the water drain.
(b)Safety the access panel 153DL (154DR) (36) with the screws (35).
(c)Do the steps (a) and (b) again safety the other access panel 154DR (153DL) (36).

(2)Make sure that the work area below the AFT cargo-compartment floor is clean and clear of tools and other items.
(3)Install the floor panels 151EF (121) and 152EF (122) in the cargo-compartment floor.
(4)Make sure that the work area behind the sidewall lining (20) is clean and clear of tools and other items.
(5)Install the panel section of the sidewall lining (20) aft of FR54.3.
(6)Install the heat shield (2) on the rear wall of the ACT (1).
CAUTION : DO NOT PULL ON THE HEAT SHIELD.
(a)Put the three sections of the heat shield (2) in position on the rear wall of the ACT (1).
(b)Connect the three sections of the heat shield (2) to the ACT (1) with the quick-release fasteners.
(7)Make sure that the work area is clean and clear of tools and other items.
NOTE : To prevent cracking or drying out of the inner lining of the bladder tank, refuel the ACT to a minimum of 50 litres (13.21 U.S.gal.) of fuel. If the ACT to be left unused, preventive treatment must be carried out to prevent the bladder tank from drying out (Ref. AMM 28-10-00, P. Block 301).

**ON A/C 101-200,

Post SB 28-2105 For A/C 101-200,

Post SB 28-2108 For A/C 101-200,

E. Test (Ref. Fig. 402, 404, 406)
(Ref. Fig. 412)
(1)Do an operational test of the ACT FAULT light on the fuelling panel 430VU.
(a)Operate the LO LEVEL TEST switch on the maintenance panel 472VU and make sure that the ACT FAULT light comes on.
(2)Do the functional test of the ACT(s) system (with ACT(s) installed) (Ref. 28-13-00, P. Block 501, Para. 3).
(3)Do this step after the leakage rate check in step (2).
(a)Do a functional check of the opening pressure of the emergency descent valve 280251 (280252) (4).
1 Increase the test pressure used in the step (4) to above the opening pressure of the emergency descent valve (4) (0.2 psi) (0.0138 bar).
(4)Do a leak check of the refuel/transfer line.
CAUTION : REMOVE FUEL LEAKAGE IMMEDIATELY.
(a)Do this step if you installed the fwd ACT (1) only.
1 Fill the ACT (1) with approx. 500 litres (132 U.S.gal.) of fuel (Ref. 12-11-28, P. Block 301).
2 Examine the area behind the sidewall lining (25) and make sure that there is no leakage from:
- the flange connections of the vent pipes (10),(13),(97),(222),
- the flange connections of the fuel pipes (11),(14),(104),

- the connections of the cavity drain pipes (21) to the vent pipes (97),(222).

3 Examine the drain mast for signs of leakage.

4 Do a check of the drain monitor (37).

(b)Do this step if you installed the fwd ACT (1) and the aft ACT (2).

1 Fill each ACT (1),(2) with approx. 500 litres (132 U.S.gal.) of fuel (Ref. 12-11-28, P. Block 301).

2 Examine the area behind the sidewall lining (25) and make sure that there is no leakage from:

- the flange connections of the vent pipes (8),(10),(13),(97),(222),
- the flange connections of the fuel pipes (9),(11),(14),(104),
- the connections of the cavity drain pipe (21) to the vent pipes (97),(222).

3 Examine the drain mast for sign of leakage.

4 Do a check of the drain monitor (37).

(5)Do the operational test of the transfer system in manual (fwd) transfer and automatic transfer mode (Ref. 28-28-00, P. Block 501, Para. 1).

(a)Select FWD with the ACT pushbutton on the fuelling panel 430VU.

1 Transfer approx 100 litres (26.5 U.S.gal.) from the ACT (1),(2) to the center tank (15).

NOTE : This is to make sure that the manual transfer system is functional for the first flight after installation of the ACT.

(6)Do a BITE check of the FQI signal conditioning stages and the indicator displays (Ref. 28-42-00, P. Block 501).

(7)Do a functional check of the water drain valves 280241 (280242) and 280243 (280244) (31) (Ref. Fig. 404).

(a)Put the drainage containers in position below the water drain openings.

NOTE : If the fwd ACT (1) only is installed, put the containers in position aft of FR54.
If the fwd ACT (1) and the aft ACT (2) are installed, put the containers in position aft of FR54 and FR54.3.

CAUTION : REMOVE FUEL LEAKAGE IMMEDIATELY.

(b)Put the flange (58) of the water drain adaptor PN 98A2810800100 in position at one of the water drain openings.

(c)Connect the flange (58) to the aircraft skin with the quick-release fasteners.

(d)Put the thrust rod (57) of the water drain adaptor PN 98A28108001000 in the drain tube (56) of the water drain mechanism (33).

(e)Use the thrust rod (57) and lift water drain valve (31).

(f)Let the fuel drain from the ACT (1),(2).

(g)Remove the thrust rod (57) and release the water drain valve (31).

(h)Make sure that there are no fuel leaks from the water drain valve (31) in a time of fifteen minutes.

(i)Disconnect the quick-release fasteners and remove the flange (58).

(j)Do the steps (b) thru (i) again at the other water drain valves (31).

(k)Remove the drainage containers.

F. Close-Up (Ref. Fig. 402, 404, 406)
(Ref. Fig. 408, 410, 413)

(1)Safety the access panels 153DL (153EL) and 154DR (154ER) (46).

(a)Put the access panel (46) in position at the water drain opening.
(b)Safety the access panel (46) with the screws (45).
(c)Do the steps (a) and (b) again and safety the other access panels (46).
(2)Do this step if you installed the fwd ACT (1) only.
(a)Make sure that the work area below the AFT cargo-compartment floor at FR54.3 is clean and clear of tools and other items.
(b)Install the floor panels 151EF (271) and 152EF (272).
(3)Do this step if you installed the fwd ACT (1) and the aft ACT (2).
(a)Make sure that the work area below the AFT cargo-compartment floor at FR60 is clean and clear of tools and other items.
(b)Install the floor panels 151GF (151) and 152GF (152).
(4)Make sure that the work area behind the sidewall lining (25) is clean and clear of tools and other items.
(5)Do this step if you installed the fwd ACT (1) only.
(a)Install the panel section of the sidewall lining (25) aft of FR54.3.
(b)Install the panel section (177) of the sidewall at the cargo door position.
(6)Do this step if you installed the fwd ACT (1) and the aft ACT (2).
(a)Install the panel section (23) of the sidewall at the cargo door position.
(7)Install the heat shield (3).
(a)Make sure that the heat shield (3) is serviceable.
(b)Put the three sections of the heat shield (3) in position on the rear wall of the ACT.
(c)Connect the heat shield (3) to the ACT with the quick-release fasteners.
(8)Make sure that the work area is clean and clear of tools and other items.
(9)Close the AFT cargo-compartment door (Ref. 52-30-00, P. Block 1).
(10)Remove the access platform.
(11)Refuel the aircraft as necessary (Ref. 12-11-28, P. Block 301).

NOTE : To prevent cracking or drying out of the inner lining of the bladder tank(s), refuel the ACT(s) to a minimum of 50 litres (13.21 U.S.gal.) of fuel. If the ACT(s) to be left unused, preventive treatment must be carried out to prevent the bladder tank(s) from drying out (Ref. AMM 28-10-00, P. Block 301).

ADDITIONAL CENTER TANK - INSPECTION/CHECK

WARNING : OBEY THE SAFETY PRECAUTIONS IN 28-00-00, P. BLOCK 301 AND 28-10-00, P. BLOCK 301.
MAKE SURE THAT THE SAFETY EQUIPMENT IS AVAILABLE AND NEAR TO THE WORK AREA, BEFORE THE MAINTENANCE OPERATIONS ARE STARTED.
MAKE SURE THAT THE ELECTRICAL CIRCUITS ON WHICH THE WORK IS IN PROGRESS, ARE ISOLATED BEFORE THE POWER IS SUPPLIED TO THE AIRCRAFT.

NOTE : Do an approved non-destructive test, if you think that there is a crack when the inspection/check is done.
Do a structural repair or replace the component if a crack is found.

NOTE : Remove the bladder tank 280262, if you think that there is a leak from the bladder tank. Do an approved leak test before an approved repair of the bladder tank.

**ON A/C 101-200,

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NOTE : Remove the bladder tank 280262 (280263) if you think that there is a leak from the bladder tank. Do an approved leak test before an approved repair of the bladder tank.

**ON A/C 101-200,

Post SB 28-2105 For A/C 101-200,

NOTE : The forward and the aft additional center tanks (ACT) are the same.

**ON A/C 101-200,

R 1. General Visual Inspection of the ACT Heat Shield, the Structure of the
R ACT(s), the Bay Sidewalls and the Pipe Collars
R
R A. Reason for the job
R Refer to the MPD TASK: 282800-05-1
R
R B. Equipment and Materials

ITEM	DESIGNATION
A.	Access Platform, 2.7 m (9 ft.)
B. 98A28108001000	Water Drain Adapter
C.	Fluorescent Lamp - Explosion Proof
D.	Magnifying Glass
E.	Inspection Mirror
F.	Drainage Containers
G.	Circuit Breaker Safety Clips and Tags
H.	Lint-free Cloth
I.	Warning Notices

ITEM	DESIGNATION
J. Material No. 01-001	Fuels (Ref. 20-31-00)
or	
Material No. 01-002	Fuels (Ref. 20-31-00)
or	
Material No. 01-003	Fuels (Ref. 20-31-00)

Referenced Procedures

- 12-11-28, P. Block 301 — Fuel Tank Replenishing
- 20-28-11, P. Block 1 — Electrical Bonding
- 25-21-00, P. Block 401 — Passenger Compartment Seats
- 28-00-00, P. Block 301 — Fuel - General
- 28-10-00, P. Block 301 — Storage
- 28-11-00, P. Block 301 — Tanks
- 28-11-36, P. Block 401 — Additional Center Tank
- 28-11-37, P. Block 401 — Manhole Cover - Additional Center Tank
- 28-11-38, P. Block 601 — Bladder Tank
- 28-11-39, P. Block 401 — Water Drain Valve - Aux. Ctr. Tank

- 28-25-00, P. Block 301 Refuel/Defuel System
- 28-42-00, P. Block 501 Quantity Indicating
- 28-42-61, P. Block 401 Probe - Fuel Quantity, Additional Center Tank
- 51-73-10, P. Block 801 Repair of Minor Damage
- 51-74-10, P. Block 801 Removal of Corrosion
- 51-75-10, P. Block 801 Repair of Paint Coatings
- 52-30-00, P. Block 1 Cargo Compartment Doors

R

R C. Job Set-Up

(1)Move the fuel from, or defuel, as applicable, the fwd ACT and the aft ACT (if installed) (Ref. 28-25-00, P. Block 301).

(2)Open, safety and tag the circuit breakers:

PANEL	SERVICE	IDENT.	LOCATION
101VU	FUEL CARGO TK PUMP SUPPLY	1QH	GEN1/B02
132VU	FUEL ACT VENT AND PRESS VALVE	3QH	325/K57
132VU	FUEL ACT XFR VALVE MOTOR 1	4QH	325/K58
132VU	FUEL ACT PUMP CTL XFR VALVE MOTOR 2	5QH	325/K59

(3)Put the warning notices in position on the:
- refuel/defuel panel 110VU,
- fuelling panel 430VU,

to tell persons not to operate the MODE SELECTOR switch.

(4)Put the drainage containers in position below the leak monitor and the water drain valves.

CAUTION : REMOVE FUEL LEAKAGE IMMEDIATELY.

(5)Do a check of the leak monitor and look for signs of fuel leakage from the ACT system.

NOTE : If you think there is a fuel leak from the ACT system:
1. Remove the ACT (Ref. 28-11-36, P. Block 401).
2. Remove the bladder tank.
3. Do an approved leak test of the bladder tank.
4. Do an approved repair of the bladder tank, if necessary.
5. Install the bladder tank.
6. Install the ACT (Ref. 28-11-36, P. Block 401).

(6)Drain the remaining fuel from the ACT.

NOTE : Do this step if you are to do the internal inspection of the ACT.

(a)Disconnect the screws at the access panels 153DL and 154DR for the water drains.

NOTE : Do not disconnect the safety cords from the access panels 153DL, 154DR.

(b)Do a check of the water drain tubes and look for signs of fuel leakage from the water drain valves 280241 and 280244.

NOTE : Replace the unsatisfactory water drain valve if you find fuel leakage (Ref. 28-11-39, P. Block 401).

(c)Get the water drain adapter PN 98A28108001000.

(d)Put the flange assembly PN 98A28108001200 of the water drain adapter PN 98A28108001000 in position at one of the water drain tubes.

(e)Connect the flange PN 98A28108001200 to the aircraft skin.

(f)Put the thrust rod PN 98A28108001100 through the flange assembly PN 98A28108001200 into the drain tube.
(g)Lift the water drain valve with the thrust rod PN 98A28108001100.
(h)Drain the remaining fuel from the ACT into the drainage container.
(i)Remove the thrust rod PN 98A28108001100.
(j)Disconnect and remove the flange assembly PN 98A28108001200.
(k)Do the steps (d) thru (j) again at the other water drain valve 280241 (280244).
(l)Remove the drainage containers.
NOTE : Do not install the access panels 153DL and 154DR at this time.
(7)Put the access platform in position.
(8)Open the AFT cargo compartment door (Ref. 52-30-00, P. Block 1).

R D. Inspection/Check

**ON A/C 101-200,

Post SB 28-2105 For A/C 101-200,

(a)Disconnect the screws at the access panels 153DL (153EL) and 154DR (154ER) for the water drains.
NOTE : Do not disconnect the safety cords from the access panels 153DL, (153EL) and 154DR (154ER).
(b)Do a check of the drain tubes and look for signs of fuel leakage from the drain valves 280241 (280242) and 280244 (280243).
NOTE : Replace the unsatisfactory drain valve if you find fuel leakage (Ref. 28-11-39, P. Block 401).

(c)Get the water drain adapter PN 98A28108001000.
(d)Put the flange assembly PN 98A28108001200 of the water drain adapter PN 98A28108001000 in position at one of the drain tubes.
(e)Connect the flange PN 98A28108001200 to the aircraft skin.
(f)Put the thrust rod PN 98A28108001100 through the flange assembly PN 98A28108001200 into the drain tube.
(g)Lift the drain valve 280241 (280242) or 280244 (280243) with the thrust rod PN 98A28108001100.
(h)Drain the remaining fuel from the ACT into the drainage container.
(i)Remove the thrust rod PN 98A28108001100.
(j)Disconnect and remove the flange assembly PN 98A28108001200.
(k)Do the steps (d) thru (j) again at the other drain valves 280241 (280241) or 280243 (280244).
(l)Remove the drainage containers.
NOTE : Do not install the access panels 153DL (153EL) and 154DR (154ER) at this time.

(7)Put the access platform in position.
(8)Open the AFT cargo-compartment door (Ref. 52-30-00, P. Block 1).

R D. Inspection/Check

**ON A/C 101-200,

(Ref. Fig. 601)

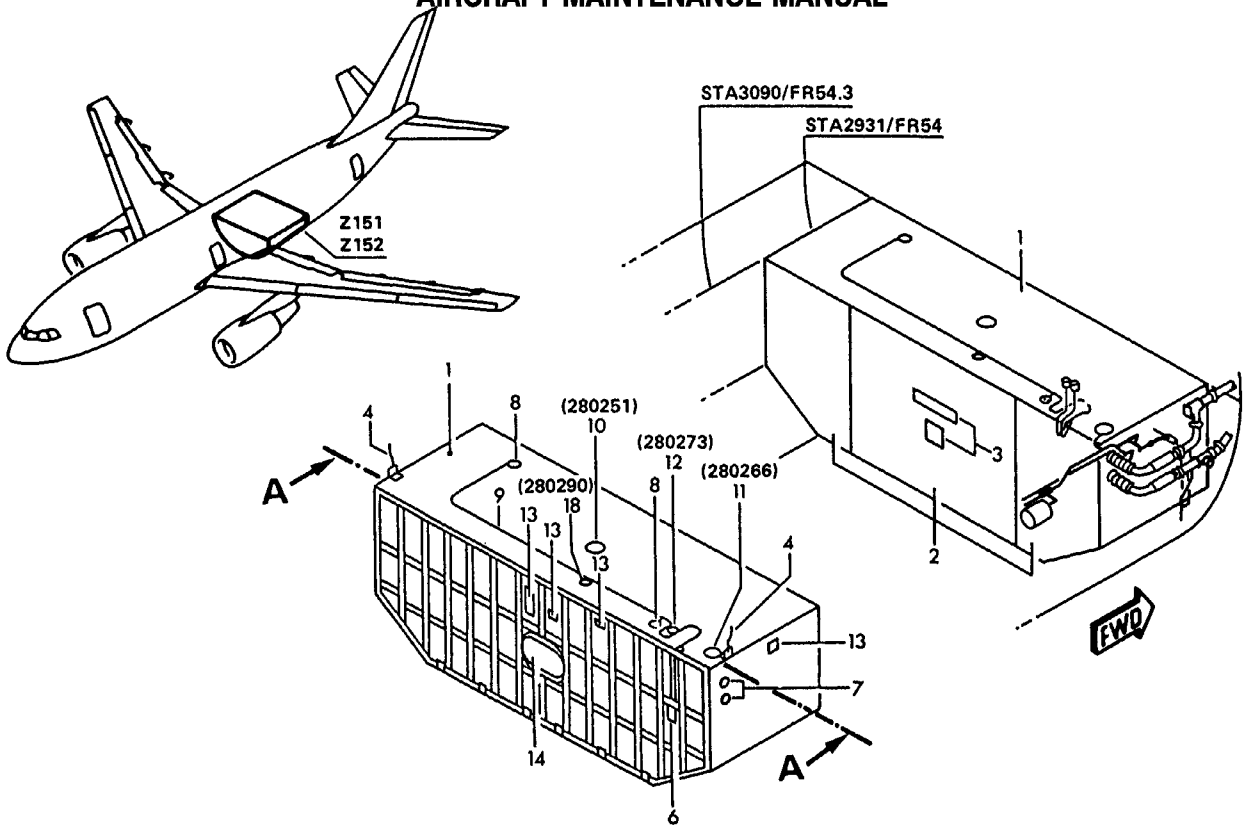
**ON A/C 101-200,

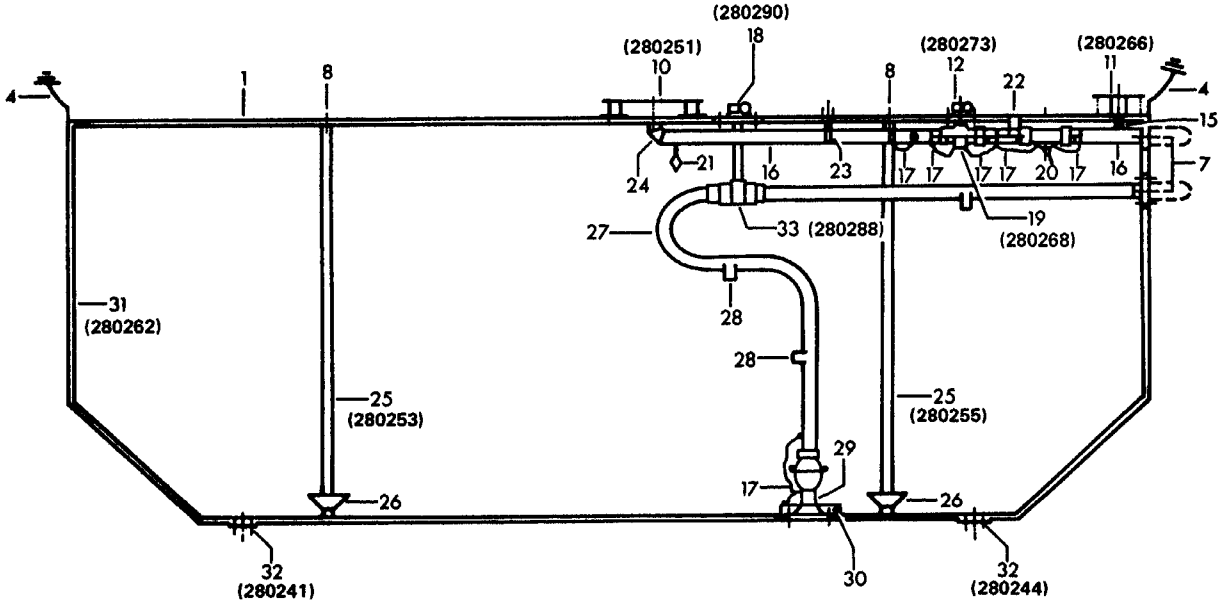
Post SB 28-2105 For A/C 101-200,

(Ref. Fig. 602)

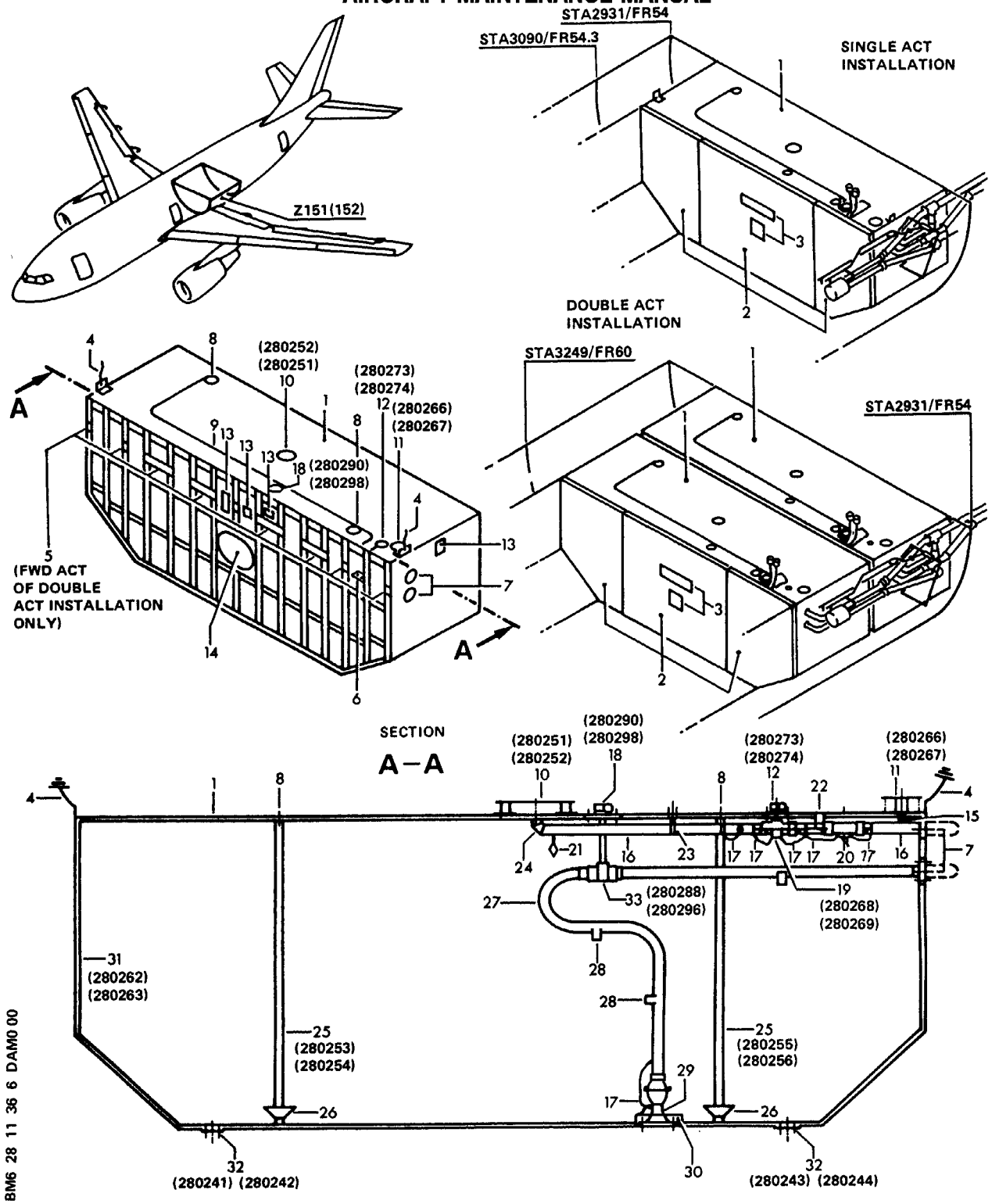
**ON A/C 101-200,

(1)Do a general visual inspection of the ACT heat shield (2), the structure of the ACT (1), the bay sidewalls and the pipe collars.
(a)Examine the heat shield (2) installed on the rear wall of the ACT (1) for:
1 Corrosion (Ref. 51-74-10, P. Block 801).
2 Scratches, marks and dents (Ref. 51-73-10, P. Block 801).
3 Loose or damaged quick-release fasteners.
4 Satisfactory paint coatings (Ref. 51-75-10, P. Block 801).
R 5 Satisfactory condition and bonding of the warning placards (3).
(b)Disconnect the quick-release fasteners and remove the heat shield (2) from the rear wall of the ACT (1).
(c)Examine the structure of the ACT (1), as far as possible, for:
1 Corrosion (Ref. 51-74-10, P. Block 801).
2 Damage.
3 Signs of fuel leakage.
4 Loose or damaged bonding jumpers (4) and bonding brackets (Ref. 20-28-11, P. Block 1).





ACT Components
Figure 601



ACT Components
Figure 602

5 Damaged stowage plugs (6).
6 Satisfactory paint coatings (Ref. 51-75-10, P. Block 801).
7 Satisfactory condition and bonding of the warning placards (13).

(d) Examine the bay sidewalls, as far as possible, for damage.

(e) Examine the pipe collars, as far as possible, for:
1 Damage.
2 Correct installation.

(2)Examine the components which are installed externally on the ACT (1), as far as possible.

NOTE : To help to do the inspection of the components on the top surface of the ACT (1), get access through the maintenance panels for the Fuel Quantity Indicator (FQI) Probes.

1. Remove the relevant passenger-compartment seats (Ref. 25-21-00, P. Block 401).
2. Remove the relevant floor panels from the passenger-compartment.
3. Remove the maintenance panels from the ceiling panels of the AFT cargo-compartment.

(a)Examine the vent pipe and the fuel pipe flanges (7) for:

1 Corrosion (Ref. 51-74-10, P. Block 801).
2 Signs of fuel leakage.
3 Correct installation.
4 Loose or damaged studs.

(b)Examine the installation flanges (8) for the FQI probes (25) for:

1 Corrosion (Ref. 51-74-10, P. Block 801).
2 Signs of fuel leakage.
3 Correct installation.
4 Loose or damaged studs.
5 Loose or damaged electrical connections.
6 Loose or damaged bonding straps (Ref. 20-28-11, P. Block 1).

(c)Examine the FQI electrical harness (9) for:

1 Damage.
2 Correct installation.

(d)Examine the emergency relief valve (10) for:

1 Corrosion (Ref. 51-74-10, P. Block 801).
2 Signs of fuel leakage.
3 Correct installation.

(e)Examine the non-return valve (11) for:

1 Corrosion (Ref. 51-74-10, P. Block 801).
2 Signs of fuel leakage.
3 Correct installation.
4 Loose or damaged studs.
5 Loose or damaged air hose connection.

(f)Examine the vent valve actuator (12) for:

1 Corrosion.
2 Signs of fuel leakage.
3 Correct installation.
4 Loose or damaged electrical connection.

(g)Examine the fuel inlet valve actuator (18) for:

1 Corrosion,
2 Signs of fuel leakage,
3 Correct installation,
4 Loose or damaged electrical connection.

(3)Not applicable.

(4)Not applicable.

(5)Not applicable.

**ON A/C 101-200,

Post SB 28-2105 For A/C 101-200,

(3)Do this step if it is necessary to do the internal inspection of the fwd ACT when the two ACT are installed.
(a)Remove the aft ACT (1) (Ref. 28-11-36, P. Block 401).

(4)Examine the buffers (5) for:
(a)Corrosion (Ref. 51-74-10, P. Block 801).
(b)Damage.
(c)Correct installation.
(d)Wear.
(e)Cracks.
NOTE : The buffers (5) are installed on the rear wall of the fwd ACT ACT only when two ACT are installed.
(5)Do this step if the aft ACT (1) has been removed for access to the fwd ACT (1).
(a)Examine the structure of the fwd ACT (1), as far as possible, for:
1 Corrosion (Ref. 51-74-10, P. Block 801).
2 Damage.
3 Signs of fuel leakage.
4 Loose or damaged bonding jumpers (4) and bonding brackets (Ref. 20-28-11, P. Block 1).
5 Damaged stowage plugs (6).
6 Satisfactory paint coatings (Ref. 51-75-10, P. Block 801).
7 Satisfactory condition and bonding of the warning placards (13).
(b)Examine the bay sidewalls, as far as possible, for damage.
(c)Examine the pipe collars, as far as possible, for:
1 Damage.
2 Corrosion.

**ON A/C 101-200,

(6)Remove the manhole cover (14) from the rear wall of the ACT (1) (Ref. 28-11-37, P. Block 401).
CAUTION : DO NOT GO INTO A FUEL TANK UNTIL IT IS PURGED AND/OR USE THE CORRECT SAFETY EQUIPMENT.
(7)Purge the ACT (1) as necessary (Ref. 28-11-00, P. Block 301).
(8)Examine the components which are installed in the ACT (1).
NOTE : Use a fluorescent lamp which is explosion-proof so that you can see the internal area of the bladder tank (31).
(a)Examine the air pipe (15) for:
1 Corrosion (Ref. 51-74-10, P. Block 801).
2 Cracks.
3 Damage.
4 Correct installation of the flange of the air pipe (15) to the bladder tank (31) at the non-return valve (11).
5 Correct installation of the air pipe (15) to the vent pipe assembly (16).
6 Correct installation of the support clamp (22) which connects the air pipe (15) to the bladder tank (31).
7 Loose or damaged bonding strap (17) (Ref. 20-28-11, P. Block 1).

(b)Examine the vent pipe assembly (16) for:
1 Corrosion (Ref. 51-74-10, P. Block 801).
2 Cracks.
3 Damage.
4 Correct installation of the flange of the vent pipe assembly (16) to the sidewall of the bladder tank (31) at the flange (7).
5 Not applicable.
6 Correct installation of the vent pipe assembly (16) to the vent valve (19).
7 Correct installation of the check valve (21) to the vent pipe assembly (16).
8 Correct installation of the support clamp (23) which connects the vent pipe assembly (16) to the bladder tank (31).
9 Correct installation of the support bracket (24) which holds the vent pipe assembly (16) below the emergency relief valve (10).
10 Loose or damaged bonding straps (17) (Ref. 20-28-11, P. Block 1).

(c)Not applicable.

(d)Examine the vent valve (19) for:
1 Corrosion (Ref. 51-74-10, P. Block 801).
2 Damage.
3 Correct installation of the vent valve (19) to the top surface of the bladder tank (31) and the vent valve actuator (12).
4 Correct installation of the bonding bracket to the vent valve (19).
5 Loose or damaged bonding straps (Ref. 20-28-11, P. Block 1).

(e)Examine the fuel pipe assembly (27) for:
1 Corrosion (Ref. 51-74-10, P. Block 801).
2 Cracks.
3 Damage.
4 Correct installation of the flange of the fuel pipe assembly (27) to the sidewall of the bladder tank (31) at the flange (7).
5 Correct installation of the fuel pipe assembly (27) to the diffuser cone (29).
6 Correct installation at the support brackets (28) which connect the fuel pipe assembly (27) to the bladder tank (31).
7 Loose or damaged bonding straps (17) (Ref. 20-28-11, P. Block 1).

(f)Examine the fuel inlet valve (33) for:
1 Corrosion (Ref. 51-74-10, P. Block 801).
2 Damage.
3 Correct installation of the fuel inlet valve (33) to the top surface of the bladder tank (31) and the fuel inlet valve actuator (18).
4 Loose or damaged bonding straps (34).
5 Correct installation of the fuel pipe assembly (27) to the fuel inlet valve (33).
6 Correct installation of the support clamps (28).

(g)Examine the diffuser grill assembly (30) for:
1 Corrosion (Ref. 51-74-10, P. Block 801).
2 Cracks.
3 Damage.
4 Blocked or damaged diffuser grill.
5 Correct installation of the diffuser grill assembly (30) to the

bottom surface of the bladder tank (31).
6 Correct installation of the diffuser top cover to the diffuser grill assembly (30).
7 Loose or damaged bonding strap (17) (Ref. 20-28-11, P. Block 1).
(h) Examine the FQI probes (25) for:
1 Corrosion (Ref. 51-74-10, P. Block 801).
2 Damage.
3 Correct installation to the installation flanges (8) at the top surface of the ACT (1).
4 Correct installation of the high and the low level sensors on the FQI probes (25).
NOTE : Remove the FQI probe (25) and install a known serviceable one (Ref. 28-42-61, P. Block 401) if you think that it is defective.
(i) Examine the FQI collars (26) for:
1 Damage.
2 Correct bonding of the FQI collars (26) to the bottom surface of the bladder tank (31).
(j) Examine the drain valves (32) for:
1 Damage.
2 Free operation.
3 Correct installation of the drain valve (32) to the bottom surface of the bladder tank (31).
(k) Examine the internal surfaces of the bladder tank (31) (Ref. 28-11-38, P. Block 601).
(9) Make sure that the internal surfaces of the bladder (31) are clean.
NOTE : Clean the internal surfaces with a clean lint-free cloth which is moistened with fuel (Material No. 01-001, 01-002 or 01-003) or water.
(10) Make sure that the internal area of the bladder tank (31) is clear of tools and other items.
(11) Examine the manhole cover (14) for:
(a) Corrosion (Ref. 51-74-10, P. Block 801).
(b) Damage.
(c) Signs of fuel leakage.
(12) Examine the flange fitting, for the manhole cover (14), on the rear wall of the ACT (1) for:
(a) Corrosion (Ref. 51-74-10, P. Block 801).
(b) Damage.
(c) Loose or damaged anchor nuts.
(d) Loose or damaged studs.
(e) Signs of fuel leakage.
(13) Install the manhole cover (Ref. 28-11-37, P. Block 401).
(14) Remove the safety clips and tags and close the circuit breakers 1QH, 3QH, 4QH and 5QH.
(15) Remove the warning notices from the refuel/defuel panel 110VU and the fuelling panel 430VU.
(16) Do an insulation resistance and dry capacitance test of the FQI probes (25) (Ref. 28-42-00, P. Block 501).
(17) Do a leak check of the ACT refuel/transfer line (Ref. 28-11-36, P. Block 401).

R E. Close-Up
R (1)Install the access panels 153DL and 154DR at the water drains.
(2)Install the heat shield on the rear wall of the ACT.
(3)Make sure that the work area is clean and clear of tools and other items.
(4)Do this step if you have removed the maintenance panels from the ceiling of the AFT cargo compartment.
(a)Install the maintenance panels in the ceiling panels of the AFT cargo compartment.
(b)Install the floor panels in the passenger compartment.
(c)Install the relevant passenger compartment seats (Ref. 25-21-00, P. Block 401).
(5)Remove the access platform.
(6)Close the AFT cargo compartment door (Ref. 52-30-00, P. Block 1).
(7)Refuel the ACT as required (Ref. 12-11-28, P. Block 301).
R NOTE : Refuel the ACT to a minimum of 50 liters (13.21 US.gal.). This will prevent cracking or drying out of the bladder tank 280257.

**ON A/C 101-200,

Post SB 28-2105 For A/C 101-200,

(1)Install the access panels 153DL (153EL) and 154DR (154ER) at the water drains.
NOTE : If you have inspected the fwd ACT, when the two ACT are installed, install the aft ACT (Ref. 28-11-36, P. Block 401).
(2)Install the heat shield on the rear wall of the ACT.
(3)Make sure that the work area is clean and clear of tools and other items.
(4)Do this step if you have removed the maintenance panels from the ceiling of the AFT cargo-compartment.
(a)Install the maintenance panels in the ceiling panels of the AFT cargo-compartment.
(b)Install the floor panels in the passenger compartment.
(c)Install the relevant passenger-compartment seats (Ref. 25-21-00, P. Block 401).
(5)Remove the access platform.
(6)Close the AFT cargo compartment door (Ref. 52-30-00, P. Block 1).
(7)Refuel the aircraft as required (Ref. 12-11-28, P. Block 301).
R NOTE : Refuel the ACT to a minimum of 50 liters (13.21 US.gal.). This will prevent cracking or drying out of the bladder tank 280257 (280258).

MANHOLE COVER - ADDITIONAL CENTER TANK - REMOVAL/INSTALLATION

R **WARNING** : THIS PROCEDURE USES A FUEL SYSTEM ITEM THAT IS IN A CATEGORY KNOWN
R AS A CRITICAL DESIGN CONFIGURATION CONTROL LIMITATION (CDCCL).
R CDCCL IDENTIFIES AN ITEM THAT CAN BE THE SOURCE OF A POSSIBLE FUEL
R TANK IGNITION. YOU MUST KEEP ALL CDCCL ITEMS IN THE APPROVED
R CONFIGURATION. DAMAGE, WEAR OR CHANGES TO A CDCCL ITEM CAN CAUSE
R A POSSIBLE FUEL TANK EXPLOSION.

R **WARNING** : MAKE SURE THAT THE FIRE FIGHTING EQUIPMENT IS AVAILABLE AND ADEQUATE.

R **WARNING** : MAKE SURE THAT YOU ISOLATE THE ELECTRICAL CIRCUITS UPON WHICH WORK
R IS IN PROGRESS.

R **WARNING** : OBEY THE FUEL SAFETY PROCEDURES. THIS CAN PREVENT INJURY AND DAMAGE.

R **WARNING** : DO NOT GET AIRCRAFT FUEL:
R - IN YOUR MOUTH
R - IN YOUR EYES
R - ON YOUR SKIN FOR A LONG TIME.

R **WARNING** : DO NOT GET YOUR CLOTHES SOAKED WITH FUEL.
R AIRCRAFT FUEL IS POISONOUS AND CAN GO THROUGH YOUR SKIN INTO YOUR
R BODY. IF YOU ARE CONTAMINATED, WASH WITH CLEAN WATER AND IF NECESSARY,
R GET MEDICAL HELP.

1. Equipment and Materials

ITEM	DESIGNATION
A.	Access Platform, 2.7 m (9 ft.)
B. 98A28108001000	Water Drain Adapter
C.	Drainage Containers
D.	Circuit Breaker Safety Clips and Tags
E.	O-Rings
F.	Lint-free Cloth
G. Material No. 04-012	Common Greases (Ref. 20-31-00)
H. Material No. 09-003	Sealants (Ref. 20-31-00)
R J. Material No. 11-002	Cleaning Agents (Ref. 20-31-00)

Referenced Procedures

- 12-11-28, P. Block 301	Fuel Tank Replenishing
- 20-28-11, P. Block 1	Electrical Bonding
- 28-00-00, P. Block 301	Fuel - General
R - 28-11-00, P. Block 301	Tanks
- 28-11-36, P. Block 601	Additional Center Tank
- 28-11-37, P. Block 501	Manhole Cover - Additional Center Tank
- 28-25-00, P. Block 301	Refuel/Defuel System
- 52-30-00, P. Block 1	Cargo Compartment Doors

**ON A/C 101-200,

Post SB 28-2105 For A/C 101-200,

Referenced Procedures

- 12-11-28, P. Block 301	Fuel Tank Replenishing
- 20-28-11, P. Block 1	Electrical Bonding
- 28-00-00, P. Block 301	Fuel - General
- 28-11-00, P. Block 301	Tanks
- 28-11-36, P. Block 601	Additional Center Tank
- 28-11-37, P. Block 501	Manhole Cover - Additional Center Tank
- 28-25-00, P. Block 301	Refuel/Defuel System
- 52-30-00, P. Block 1	Cargo Compartment Doors

**ON A/C 101-200,

2. Procedure

A. Job Set-Up

R (1)Obey the fuel safety procedures (Ref. 28-00-00, P. Block 301).

R (2)Move the fuel from the additional center tank (ACT) or defuel it as applicable (Ref. 28-25-00, P. Block 301).

R (3)Open, safety and tag the circuit breakers:

PANEL	SERVICE	IDENT.	LOCATION
110VU	FUEL CARGO TK PUMP SUPPLY	1QH	GEN1/B02
132VU	FUEL ACT VENT AND PRESS VALVE	3QH	325/K57
132VU	FUEL ACT XFR VALVE MOTOR 1	4QH	325/K58
132VU	FUEL ACT PUMP CTL XFR VALVE MOTOR 2	5QH	325/K59

R (4)Put the warning notices in position on:
- the refuel/defuel panel 110VU,
- the fuelling panel 430VU,

to tell persons not to operate the MODE SELECTOR switch.

R (5)Put the drainage containers in position below the leak monitor and the water drain valves.

CAUTION : REMOVE FUEL LEAKAGE IMMEDIATELY.

R (6)Do a check of the leak monitor and look for signs of fuel leakage from the ACT system.

NOTE : If you think there is a fuel leak from the ACT system:
(1) Remove the bladder tank.
(2) Do an approved leak test of the bladder tank.
(3) Do an approved repair of the bladder tank, if necessary.
(4) Install the bladder tank.

R (7)Drain the remaining fuel from the ACT.

(a)Disconnect the screws at the access panels 153DL (153EL) and 154DR (154ER) for the water drains.

NOTE : Do not disconnect the safety cords from the access panels 153DL (153EL) and 154DR (154ER).

(b)Get the water drain adapter PN 98A28108001000.

(c)Put the flange assembly PN 98A28108001200 of the water drain adapter PN 98A28108001000 in position at one of the drain tubes.

(d)Connect the flange assembly PN 98A28108001200 to the aircraft skin.

(e)Put the thrust rod PN 28108001100 through the flange assembly PN 98A28108001200 into the drain tube.

(f)Lift the drain valve 280241 (280242) or 280244 (280243) with the thrust rod PN 98A28108001100.

(g)Drain the remaining fuel from the ACT into the drainage container.

(h)Remove the thrust rod PN 98A28108001100.

R (j)Disconnect and remove the flange assembly PN 98A28108001200.

R (k)Do the steps (7)(c) thru (j) again at the other drain valves 280242 (280241) or 280243 (280244), as applicable.

R (l)Remove the drainage containers.

NOTE : Do not install the access panels 153DL (153EL) and 154DR (154ER) at this time.

(7)Put the access platform in position.
(8)Open the AFT cargo-compartment door (Ref. 52-30-00, P. Block 1).
(9)Disconnect the quick-release fasteners and remove the heat shield from the rear wall of the ACT.
NOTE : If it is necessary to remove the manhole cover of the fwd ACT when the two ACT are installed, remove the aft ACT (Ref. 28-11-36, P. Block 401).

B. Removal
(Ref. Fig. 401)

**ON A/C 101-200,

Post SB 28-2105 For A/C 101-200,

(Ref. Fig. 402)

**ON A/C 101-200,

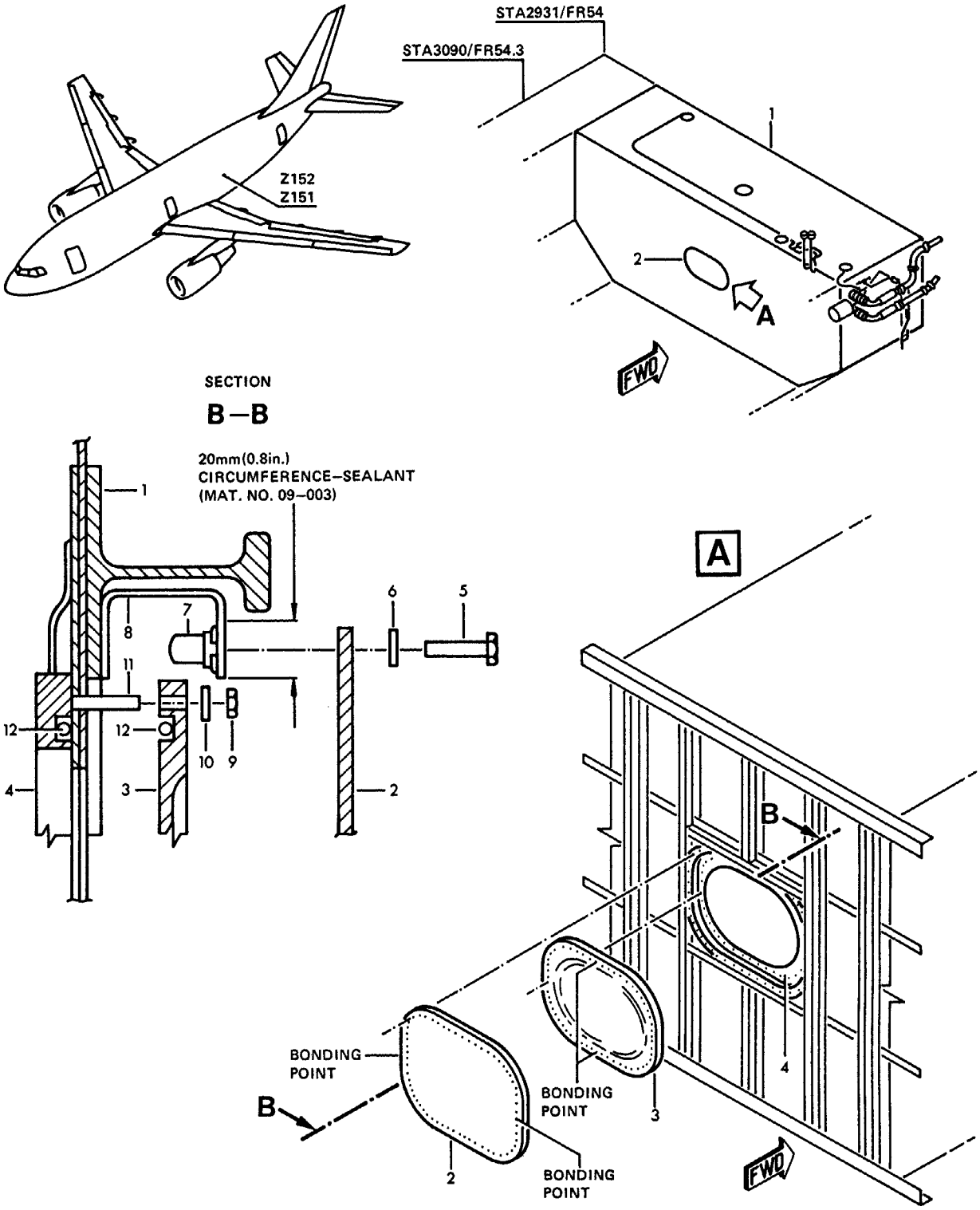
(1)Remove the bead of sealant from the interface of the outer cover (2) and the bracket (8).
(2)Remove the screws (5) and the washers (6) from the outer cover (2).
NOTE : Remove the screws (5) and the washers (6) in a sequence of opposites.
NOTE : Identify the screws (5) and the washers (6), removed from the bonding points, so that you can install them in the same positions.
(3)Remove the outer cover (2).
(4)Remove the nuts (9) and the washers (10) from the manhole cover (3).
NOTE : Remove the nuts (9) and the washers (10) in a sequence of opposites.
NOTE : Identify the nuts (9) and the washers (10), removed from the bonding points, so that you can install them in the same positions.
(5)Remove the manhole cover (3).
(6)Put a temporary cover over the opening of the ACT (1) as necessary.
WARNING : DO NOT GO INTO A FUEL TANK UNTIL IT IS PURGED AND/OR USE THE CORRECT SAFETY EQUIPMENT.
(7)Purge the ACT (1) as necessary (Ref. 28-11-00, P. Block 301).

C. Preparation for Installation
(Ref. Fig. 401)

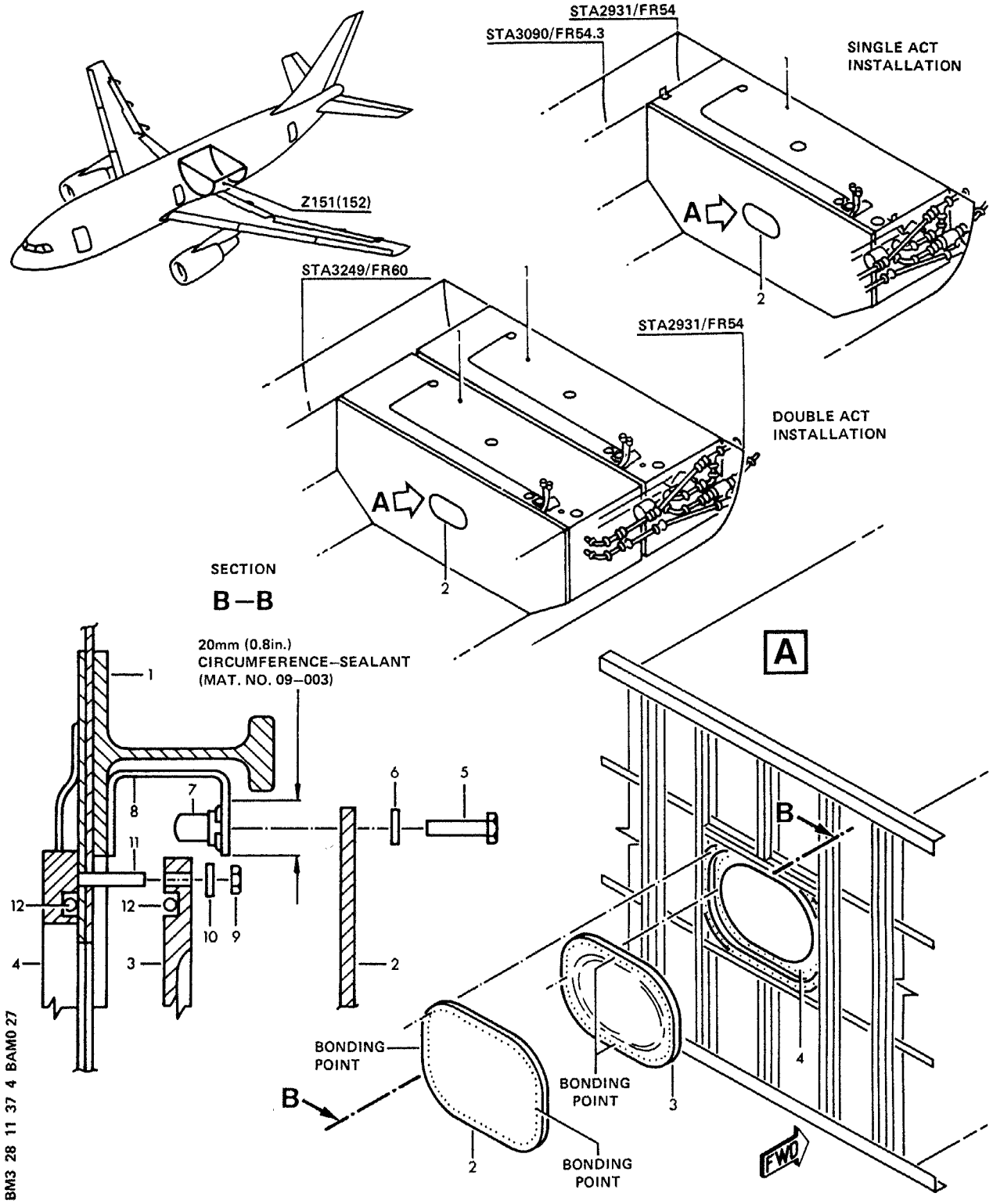
**ON A/C 101-200,

Post SB 28-2105 For A/C 101-200,

(Ref. Fig. 402)



ACT Manhole Cover
Figure 401



ACT Manhole Cover
Figure 402

**ON A/C 101-200,

(1)Do an inspection of the internal components of the ACT (1) (Ref. 28-11-36, P. Block 601).
(2)Remove and discard the O-ring (12) from the groove in the interface of the manhole cover (3).
(3)Remove and discard the O-ring (12) from the groove in the interface of the fabric flange fitting (4).
(4)Apply white spirit (Material No. 11-002) to a clean lint-free cloth.
(5)Clean the interface of:
- the manhole cover (3),
- the fabric flange fitting (4),
with the moist lint-free cloth.
(6)Use white spirit (Material No. 11-002) and remove all signs of sealant from the outer cover (2) and the bracket (8).

(7)Make sure that:
- the outer cover (2),
- the manhole cover (3),
- the fabric flange fitting (4),
- the anchor nuts (7),

are clean and not damaged.

WARNING : THIS INSTRUCTION IS APPLICABLE TO A CRITICAL DESIGN CONFIGURATION CONTROL LIMITATION (CDCCL). CAREFULLY OBEY ALL GIVEN INSTRUCTIONS WHEN YOU DO THIS STEP. IF YOU DO NOT OBEY THESE INSTRUCTIONS, A DANGEROUS CONDITION CAN OCCUR THAT CAN CAUSE A POSSIBLE FUEL TANK EXPLOSION.

(8)Make sure that the bonding points on:
- the outer cover (2),
- the manhole cover (3),
- the bracket (8),

are clear of contamination (Ref. 20-28-11, P. Block 1).

(9)Apply vaseline (Material No. 04-012) to the new O-rings (12).

(10)Put the O-ring (12) in the groove in the interface of the manhole cover (3).

(11)Put the O-ring (12) in the groove in the interface of the fabric flange fitting (4).

D. Installation
(Ref. Fig. 401)

**ON A/C 101-200,

Post SB 28-2105 For A/C 101-200,

(Ref. Fig. 402)

**ON A/C 101-200,

(1)Make sure that the internal area of the ACT (1) is clean and clear of tools and other items.

R (2)Make sure that there are no unwanted objects and materials, tools
R or other equipment in the tank.

R (3)Put the manhole cover (3) on the studs (11) of the fabric flange fitting (4).

NOTE : Make sure that the O-rings (12) are correctly installed.

WARNING : THIS INSTRUCTION IS APPLICABLE TO A CRITICAL DESIGN CONFIGURATION CONTROL LIMITATION (CDCCL). CAREFULLY OBEY ALL GIVEN INSTRUCTIONS WHEN YOU DO THIS STEP. IF YOU DO NOT OBEY THESE INSTRUCTIONS, A DANGEROUS CONDITION CAN OCCUR THAT CAN CAUSE A POSSIBLE FUEL TANK EXPLOSION.

R (4)Put the washers (10) and the nuts (9) on the studs (11).

NOTE : Make sure that the washers (10) and the nuts (9), identified in the step B(4), are installed at the bonding points of the manhole cover (3) (Ref. 20-28-11, P. Block 1).

R (5)Tighten the nuts (9).
(a)Tighten the nuts (9) in a sequence of opposites to the initial torque.
(b)Tighten the nuts (9) in the same sequence to the finish torque.

R (6)Do the adjustment/test of the manhole cover (3) (Ref. 28-11-37, P. Block 501).

R (7)Do a leak test of the manhole cover (3).
(a)Move fuel to the ACT (1) or refuel it as applicable (Ref. 28-25-00, P. Block 301), until the manhole cover (3) is below the fuel level.
(b)Examine the manhole cover (3) and make sure that there is no fuel leakage.
(c)Do this step if there is fuel leakage from the manhole cover (3).
1 Move the fuel from the ACT (1) or defuel it, as applicable (Ref. 28-25-00, P. Block 301).
2 Drain the remaining fuel from the ACT (1) (Ref. step 2A(6)).
3 Remove the manhole cover (3) (Ref. steps 2B(4) and (5)).
4 Examine and replace as necessary, the O-rings (12) (Ref. steps 2C(2) and (3) and steps 2C(9) and (11)).
5 Install the manhole cover (3) (Ref. steps 2D(1) thru (5)).
6 Do the leak test of the manhole cover (3) again (Ref. step 2D(6)).

(d)Make sure that there is no fuel leakage from the water drain valves 280241 and 280244.

**ON A/C 101-200,

Post SB 28-2105 For A/C 101-200,

(d)Make sure that there is no leakage from the water drain valves 280241 (280242) and 280244 (280243).

**ON A/C 101-200,

(e)Make sure that there is no leakage from the cavity drain at the drain monitor.

(7)Apply a 20 mm (0.08 in.) bead of sealant (Material No. 09-003) to the interface circumference of the bracket (8).

(8)Put the outer cover (2) in position on the bracket (8).

R WARNING : THIS INSTRUCTION IS APPLICABLE TO A CRITICAL DESIGN CONFIGURATION
R CONTROL LIMITATION (CDCCL). CAREFULLY OBEY ALL GIVEN INSTRUCTIONS
R WHEN YOU DO THIS STEP. IF YOU DO NOT OBEY THESE INSTRUCTIONS, A
R DANGEROUS CONDITION CAN OCCUR THAT CAN CAUSE A POSSIBLE FUEL
R TANK EXPLOSION.

(9)Put the screws (5) with washers (6) thru the outer cover (2) into the anchor nuts (7).

NOTE : Make sure that the screws (5) and the washers (6), identified in the step B(2), are at the bonding points of the outer cover (2).

(10)Tighten the screws (5).

(a)Tighten the screws (5) in a sequence of opposites to the initial torque.

(b)Tighten the screws (5) in the same sequence to the final torque.

(11)Remove the unwanted sealant from the connection of the outer cover (2) and the bracket (8).

(12)Do the adjustment/test of the outer cover (2) (Ref. 28-11-37, P. Block 501).

**ON A/C 101-200,

Post SB 28-2105 For A/C 101-200,

(13)Install the aft ACT (1), if necessary (Ref. 28-11-36, P. Block 401).

**ON A/C 101-200,

E. Close-Up

(1)Remove the safety clips and tags and close the circuit breakers 1QH, 3QH, 4QH and 5QH.

(2)Remove the warning notices from the refuel/defuel panel 110VU and the fuelling panel 430VU.
(3)Install the access panels 153DL and 154DR.
(a)Put the access panels 153DL and 154DR in position at the aircraft skin.
(b)Safety the access panels 153DL and 154DR with the screws.

**ON A/C 101-200,

Post SB 28-2105 For A/C 101-200,

(3)Install the access panels 153DL (153EL) and 154DR (154ER) at the water drains.

**ON A/C 101-200,

(4)Install the heat shield on the rear wall of the ACT.
(5)Make sure that the work area is clean and clear of tools and other items.
(6)Remove the access platform.
(7)Close the AFT cargo compartment door (Ref. 52-30-00, P. Block 1).
(8)Refuel the aircraft as required (Ref. 12-11-28, P. Block 301).
NOTE : To prevent cracking or drying out of the inner lining of the bladder tank, refuel the ACT with a minimum of 50 litres (13.21 U.S. gal) of fuel.

MANHOLE COVER - ADDITIONAL CENTER TANK - ADJUSTMENT/TEST

**WARNING : OBEY THE SAFETY PRECAUTIONS IN 28-00-00, P. BLOCK 301 AND 28-10-00, P. BLOCK 301.
MAKE SURE THAT THE FIRE FIGHTING EQUIPMENT IS AVAILABLE AND NEAR TO THE WORK AREA BEFORE THE MAINTENANCE OPERATIONS ARE STARTED.
MAKE SURE THAT THE ELECTRICAL CIRCUITS ON WHICH THE WORK IS IN PROGRESS, ARE ISOLATED BEFORE POWER IS SUPPLIED TO THE AIRCRAFT.**

1. Equipment and Materials

ITEM	DESIGNATION
A.	Access Platform, 2.7 m (9 ft.)
B.	Bonding Tester NOTE : A low-voltage ohmmeter with connection leads and probes. The effective range must be at least up to 0.1 ohm when a test current of 1 ampere is used. The measurement accuracy must be within ±10% (Ref. 20-28-11, P. Block 1).

Referenced Procedures

- 20-28-11, P. Block 1	Electrical Bonding
- 28-00-00, P. Block 301	Fuel - General
- 28-10-00, P. Block 301	Storage
- 28-11-36, P. Block 401	Additional Center Tank
- 28-11-37, P. Block 401	Manhole Cover - Additional Center Tank
- 52-30-00, P. Block 1	Cargo Compartment Doors

2. Procedure

A. Job Set-Up
(1)Put the access platform in position.
(2)Open the AFT cargo-compartment door (Ref. 52-30-00, P. Block 1).
(3)Remove the center section of the heat shield from the rear wall of the additional center tank (ACT).
(a)Disconnect the quick-release fasteners.
(b)Remove the center section of the heat shield.

**ON A/C 101-200,

Post SB 28-2105 For A/C 101-200,

NOTE : If it is necessary to do a test of the manhole cover of the fwd ACT when the two ACT are installed, remove the aft ACT (Ref. 28-11-36, P. Block 401).

**ON A/C 101-200,

B. Test

NOTE : Make sure that the maximum test current is 1 ampere.

(1)Connect one of the test probes of the bonding tester to the ground point nearest to the manhole cover.

(2)Do a resistance check of the manhole cover.

(a)Remove the outer cover (Ref. 28-11-37, P. Block 401).

(b)Probe the surface of the manhole cover with the other test probe.

(c)Get a resistance reading between the manhole cover and the ACT.

(d)Make sure that the resistance reading is not more than:

- 50 milliohms for an "In Service" cover,
- 25 milliohms for a "New or Refurbished" cover.

(e)Do this step if the resistance is more than the necessary quantity.

1 Do a check of the bonding and the protective treatment (Ref. 20-28-11, P. Block 1).

(f)Install the outer cover (Ref. 28-11-37, P. Block 401).

(3)Do a resistance check of the outer cover of the manhole.

(a)Probe the surface of the outer cover with the other test probe.

(b)Get a resistance reading between the outer cover and the ACT.

(c)Make sure that the resistance reading is not more than:

- 50 milliohms for an "In Service" cover,
- 25 milliohms for a "New or Refurbished" cover.

(d)Do this step if the resistance is more than the necessary quantity.

1 Do a check of the bonding and the protective treatment (Ref. 20-28-11, P. Block 1).

(4)Disconnect the test probe from the ground point.

C. Close-Up

**ON A/C 101-200,

Post SB 28-2105 For A/C 101-200,

NOTE : If it was necessary to do a test of the manhole cover of the fwd ACT when the two ACT were installed, install the aft ACT (Ref. 28-11-36, P. Block 401).

**ON A/C 101-200,

(1)Install the center section of the heat shield on the rear wall of the ACT.

(a)Put the center section of the heat shield in position on the rear wall of the ACT.

(b)Attach the heat shield to the ACT with the quick-release fasteners.

(2)Make sure that the work area is clean and clear of tools and other items.

(3)Close the AFT cargo-compartment door (Ref. 52-30-00, P. Block 1).

(4)Remove the access platform.

BLADDER TANK, ADD CTR TANK - INSPECTION/CHECK

WARNING : OBEY THE SAFETY PRECAUTIONS IN 28-00-00, P. BLOCK 301 AND 28-10-00, P. BLOCK 301, BEFORE AND DURING MAINTENANCE OPERATIONS IN A FUEL TANK.
MAKE SURE THAT THE FIRE FIGHTING EQUIPMENT IS AVAILABLE AND NEAR TO THE WORK AREA BEFORE THE MAINTENANCE OPERATIONS ARE STARTED. MAKE SURE THAT THE ELECTRICAL CIRCUITS ON WHICH THE WORK IS IN PROGRESS, ARE ISOLATED BEFORE YOU SUPPLY POWER TO THE AIRCRAFT.

1. Equipment and Materials

ITEM	DESIGNATION
A.	Access Platform, 2.7 m (9 ft.)
B. 98A28108001000	Water Drain Adapter
C.	Fluorescent Lamp - Explosion Proof
D.	Inspection Mirror
E.	Circuit Breaker Safety Clips and Tags
F.	Warning Notices
G.	Drainage Containers
H.	Lint-free Cloth
I. Material No. 01-001	Fuels (Ref. 20-31-00)
or	
Material No. 01-002	Fuels (Ref. 20-31-00)
or	
Material No. 01-003	Fuels (Ref. 20-31-00)

Referenced Procedures

- 12-11-28, P. Block 301	Fuel Tank Replenishing
- 28-00-00, P. Block 301	Fuel - General
- 28-10-00, P. Block 301	Storage
- 28-11-00, P. Block 301	Tanks
- 28-11-36, P. Block 401	Additional Center Tank
- 28-11-36, P. Block 601	Additional Center Tank
- 28-11-37, P. Block 401	Manhole Cover - Additional Center Tank
- 28-11-39, P. Block 401	Water Drain Valve - Aux. Ctr. Tank
- 28-25-00, P. Block 301	Refuel/Defuel System
- 52-30-00, P. Block 1	Cargo Compartment Doors
- CMMM 28-11-36	Manufacturer Component Maintenance Manual
- CMMM 28-11-37	Manufacturer Component Maintenance Manual

2. Procedure

**ON A/C 101-200,

Post SB 28-2105 For A/C 101-200,

2. Procedure
NOTE : In the double additional center tank (ACT) installation, the bladder tanks installed in the fwd and the aft ACT are the same. The inspection/check of one of the bladder tanks only is given.
NOTE : For the inspection/check of the bladder tank of the fwd ACT, the aft ACT must be removed (Ref. 28-11-36, P. Block 401).

**ON A/C 101-200,

A. Job Set-Up
(1)Make sure that the aircraft is statically grounded.
(2)Do a check of the leak monitor and look for signs of leakage from the bladder tank 280262.
NOTE : If you think there is leakage from the bladder tank:
1. Remove the Additional Center Tank (ACT) (Ref. 28-11-36, P. Block 401).

**ON A/C 101-200,

Post SB 28-2105 For A/C 101-200,

A. Job Set-Up
(1)Make sure that the aircraft is statically grounded.
(2)Do a check of the leak monitor and look for signs of leakage from the bladder tank 280262 (280263).
NOTE : If you think there is leakage from the bladder tank:
1. Remove the ACT (Ref. 28-11-36, P. Block 401).

**ON A/C 101-200,

2. Remove the bladder tank (Ref. Manufacturer CMM 28-11-36 or Ref. Manufacturer CMM 28-11-37 as applicable).
3. Do an approved leak test of the bladder tank (Ref. Manufacturer CMM 28-11-36 or Ref. Manufacturer CMM 28-11-37 as applicable).
4. Do an approved repair of the bladder tank, if

necessary (Ref. Manufacturer CMM 28-11-36 or Ref. Manufacturer CMM 28-11-37 as applicable).

5. Install the bladder tank (Ref. Manufacturer CMM 28-11-36 or Ref. Manufacturer CMM 28-11-37 as applicable).
6. Install the ACT (Ref. 28-11-36, P. Block 401).

(3)Make the ACT empty (Ref. 28-25-00, P. Block 301).

(4)Open, safety and tag the circuit breakers:

PANEL	SERVICE	IDENT.	LOCATION
101VU	FUEL CARGO TK L PUMP SUPPLY	1QH	GEN1/B02
132VU	FUEL ACT VENT AND PRESS VALVE	3QH	325/K57
132VU	FUEL ACT XFR VALVE MOTOR 1	4QH	325/K58
132VU	FUEL ACT PUMP CTL XFR VALVE MOTOR 2	5QH	325/K59

(5)Put the warning notices in position on:
- the refuel/defuel panel 110VU,
- the fuelling panel 430VU,

to tell persons not to operate the MODE SELECTOR switch.

(6)Put the drainage containers in position below the water drain valves 280241 and 280244.

CAUTION : REMOVE FUEL LEAKAGE IMMEDIATELY.

(7)Drain the remaining fuel from the ACT.

(a)Disconnect the screws at the access panels 153DL and 154DR to the water drain valves 280241 and 280244.

(b)Remove the access panels 153DL and 154DR from the aircraft skin.

(c)Put the flange PN 98A28108001200 of the water drain adapter PN 98A28108001000, in position at the water drain opening.

(d)Connect the flange PN 98A28108001200 to the aircraft skin with the quick-release fasteners.

(e)Put the thrust rod PN 98A2810800100 through the flange PN 98A28108001200 into the drain tube.

(f)Use the thrust rod PN 98A28108001100 to lift the drain valve 280241 (280244) and drain the fuel from the ACT.

(g)Remove the thrust rod PN 98A28108001100.

(h)Disconnect the quick-release fasteners and remove the flange PN 98A28108001200.

(i)Do the steps (c) thru (h) again at the other water drain valve 280244 (280241).

NOTE : Do not connect the access panels 153DL and 154DR to the aircraft skin at this time.

**ON A/C 101-200,

Post SB 28-2105 For A/C 101-200,

(6)Put the drainage containers in position below the water drain valves 280241 (280242) and 280244 (280243).
CAUTION : REMOVE FUEL LEAKAGE IMMEDIATELY.
(7)Drain the remaining fuel from the ACT.
(a)Disconnect the screws at the applicable access panels for the water drain valves.
NOTE : For the fwd ACT:
- access panels 153DL and 154DR for the valves 280241 and 280244.
For the aft ACT:
- access panels 153EL and 154ER for the valves 280242 and 280243.
(b)Remove the access panels 153DL (153EL) and 153DR (154ER) from the aircraft skin.
NOTE : Do not disconnect the safety cords from the access panels 153DL (153EL) and 154DR (154ER).

(c)Put the flange PN 98A28108001200 of the water drain adapter PN 98A28108001000 in position at the water drain opening.
(d)Connect the flange PN 98A28108001200 to the aircraft skin with the quick-release fasteners.
(e)Put the thrust rod PN 98A2810801100 through the flange PN 98A28108001200 into the drain tube.
(f)Use the thrust rod PN 98A28108001100 to lift the drain valve 280241 (280242) or 280244 (280243) and drain the fuel from the ACT.
(g)Remove the thrust rod PN 98A28108001100.
(h)Disconnect the quick-release fasteners and remove the flange PN 98A28108001200.
(i)Do the steps (c) thru (h) again at the other water drain valve 280244 (280243) or 280241 (280242).
NOTE : Do not connect the access panels 153DL (153EL) and 154DR (154ER) to the aircraft skin at this time.

**ON A/C 101-200,

(8)Put the access platform in position.
(9)Open the AFT cargo-compartment door (Ref. 52-30-00, P. Block 1).

(10)Remove the heat shield from the rear wall of the ACT.
(a)Disconnect the quick-release fasteners.
(b)Remove the three sections of the heat shield.
(11)Remove the manhole cover from the rear wall of the ACT (Ref. 28-11-37, P. Block 401).
WARNING : DO NOT GO INTO A FUEL TANK UNTIL IT IS PURGED AND/OR USE THE CORRECT SAFETY EQUIPMENT (REF. 28-10-00, P. BLOCK 301).
(12)Purge the ACT as necessary (Ref. 28-11-00, P. Block 301).
(13)Use an explosion-proof fluorescent lamp to light the internal area of the bladder tank 280262.

**ON A/C 101-200,

Post SB 28-2105 For A/C 101-200,

(13)Use an fluorescent lamp which is explosion-proof to light the internal area of the bladder tank 280262 (280263).

**ON A/C 101-200,

B. Inspection/Check
(1)Do a visual check of the external surfaces of the ACT, where possible.
(a)Examine the structure of the ACT and look for:
- signs of fuel leakage,

- corrosion,
- damage.

(2)Use an inspection mirror and do a visual check of the internal surfaces of the bladder tank.

(a)Examine the internal surfaces of the bladder tank and look for:

- holes,
- tears,
- cracks,
- scuff marks,
- signs of leakage (discoloration/delamination).

NOTE : If the bladder tank is damaged, do these steps:

1. Remove the ACT (Ref. 28-11-36, P. Block 401).
2. Remove the bladder tank.
3. Do an approved leak test of the bladder tank.
4. Do an approved repair of the bladder tank, as necessary.
5. Install the bladder tank.
6. Install the ACT (Ref. 28-11-36, P. Block 401).

(b)Make sure that the fabric flange fittings are correctly attached.
(c)Make sure that the collars for the fuel quantity indicators are correctly bonded to the bottom surface.
(3)Examine the bladder tank for correct attachment to the internal surface of the ACT.
(a)Make sure that:
- the corners of the bladder tank are not folded in,
- the bladder tank is fully extended to the structure of the ACT.

NOTE : If you think the bladder tank is not correctly attached to the structure of the ACT:
1. Remove the ACT (Ref. 28-11-36, P. Block 401).
2. Do a negative leak test of the bladder tank and check the installation of the attachment cords.
3. Install the ACT (Ref. 28-11-36, P. Block 401).

(4)Do a visual check of the components which are installed in the ACT (Ref. 28-11-36, P. Block 601).

C. Close-Up
(1)Make sure that the internal surfaces of the bladder tank are clean.
NOTE : Clean the internal surfaces with a clean lint-free cloth which is moistened with fuel (Material No. 01-001, 01-002 or 01-003).
(2)Remove the fluorescent lamp.
(3)Make sure that the internal area of the bladder tank is clear of tools and other items.
R (4)Make sure that there are no unwanted objects and materials, tools
R or other equipment in the bladder tank.
R (5)Install the manhole cover (Ref. 28-11-37, P. Block 401).

**ON A/C 101-200,

Post SB 28-2105 For A/C 101-200,

(5)Do this step if the inspection/check was done on the fwd ACT of a double ACT installation.
(a)Install the aft ACT (Ref. 28-11-36, P. Block 401).

**ON A/C 101-200,

(5)Remove the safety clips and tags and close the circuit breakers 1QH, 3QH, 4QH and 5QH.
(6)Remove the warning notices from the refuel/defuel panel 110VU and the fuelling panel 430VU.

**ON A/C 101-200,

Post SB 28-2105 For A/C 101-200,

(6)Remove the safety clips and tags and close the circuit brakers 1QH, 3QH, 4QH and 5QH.
(7)Remove the warning notice from the refuel/defuel panel 110VU and the fuelling panel 430VU.

**ON A/C 101-200,

(7)Refuel the ACT as required (Ref. 12-11-28, P. Block 301).
CAUTION : KEEP A MINIMUM OF 50 LITRES (13.21 U.S.gal.) OF FUEL IN THE ACT. THIS WILL PREVENT CRACKS IN THE INNER LINING OF THE BLADDER TANK 280257.
(8)Use the water drain adapter and do a functional test of the water drain valves 280241 and 280244 (Ref. 28-11-39, P. Block 401).
(9)Remove the drainage containers.
(10)Connect the access panels 153DL and 154DR to the aircraft skin at the water drain locations.
(11)Install the heat shield on the rear wall of the ACT.
(12)Make sure that the work area is clean and clear of tools and other items.
(13)Close the AFT cargo-compartment door (Ref. 52-30-00, P. Block 1).
(14)Remove the access platform.

**ON A/C 101-200,

Post SB 28-2105 For A/C 101-200,

(8)Refuel the ACT as required (Ref. 12-11-28, P. Block 301).
CAUTION : KEEP A MINIMUM OF 50 LITRES (13.21 U.S. gal) OF FUEL IN THE ACT. THIS WILL PREVENT CRACKS IN THE INNER LINING OF THE BLADDER TANK 280257 (280258).
(9)Use the thrust rod PN 98A28108001100 of the water drain adapter PN 98A28108001000 and do a functional check of the water drain valves 280241 (280242) and 280244 (280243).
(10)Remove the drainage containers.
(11)Connect the access panels 153DL (153EL) and 154DR (154ER) to the aircraft skin at the water drain locations.
(12)Install the heat shield on the rear wall of the ACT.
(13)Make sure that the work area is clean and clear of tools and other items.

(14)Close the AFT cargo-compartment door (Ref. 52-30-00, P. Block 1).
(15)Remove the access platform.

WATER DRAIN VALVE, ADDITIONAL CENTER TANK -!
REMOVAL/INSTALLATION

WARNING : OBEY THE SAFETY PRECAUTIONS IN 28-00-00, P. BLOCK 301 AND 28-10-00, P. BLOCK 301, BEFORE AND DURING MAINTENANCE OPERATIONS IN A FUEL TANK.
MAKE SURE THAT THE FIRE FIGHTING EQUIPMENT IS AVAILABLE AND NEAR TO THE WORK AREA, BEFORE YOU START THE MAINTENANCE OPERATIONS.
MAKE SURE THAT THE ELECTRICAL CIRCUITS, ON WHICH THE WORK IS IN PROGRESS, ARE ISOLATED BEFORE YOU SUPPLY POWER TO THE AIRCRAFT.

NOTE : The installation of the two water drain valves 280241 and 280244 in the additional center tank (ACT) is the same. The removal/installation of one of the drain valves only is given.

**ON A/C 101-200,

Post SB 28-2105 For A/C 101-200,

NOTE : If two additional center tanks (ACT) are installed:
(1) The two ACT are the same.
(2) The installation of the water drain valves 280241 (280242) and 280244 (280243) in each of two ACT is the same.
(3) The removal/installation of one of the drain valves only is given.

**ON A/C 101-200,

1. Equipment and Materials

ITEM	DESIGNATION
A.	Access Platform, 2.7 m (9 ft.)
B. 98A28108001000	Water Drain Adapter
C.	External Hexagonal Wrench - 7/16 in. (11.11 mm) AF. approx. length 17 in. (500 mm)
D.	Torque Wrench, 0 to 1 m.daN (0 to 88.5 lbf.in.)
E.	Fluorescent Lamp - Explosion Proof
F.	O-Rings
G.	Containers
H.	Circuit Breaker Safety Clips and Tags
I.	Lint-Free Cloth
J.	Warning Notices
K. Material No. 04-012	Common Greases (Ref. 20-31-00)
L. Material No. 08-007	Bonding and Adhesive Compounds (Ref. 20-31-00)
M. Material No. 11-004	Cleaning Agents (Ref. 20-31-00)

Referenced Procedures

- 12-11-28, P. Block 301	Fuel Tank Replenishing
- 20-28-11, P. Block 1	Electrical Bonding

- 28-00-00, P. Block 301	Fuel - General
- 28-10-00, P. Block 301	Storage
- 28-11-00, P. Block 301	Tanks
- 28-11-36, P. Block 601	Additional Center Tank
- 28-11-37, P. Block 401	Manhole Cover - Additional Center Tank
- 28-11-38, P. Block 601	Bladder Tank
- 28-25-00, P. Block 301	Refuel/Defuel System
- 52-30-00, P. Block 1	Cargo Compartment Doors

**ON A/C 101-200,

Post SB 28-2105 For A/C 101-200,

Referenced Procedures

- 12-11-28, P. Block 301	Fuel Tank Replenishing
- 20-28-11, P. Block 1	Electrical Bonding
- 28-00-00, P. Block 301	Fuel - General
- 28-10-00, P. Block 301	Storage
- 28-11-00, P. Block 301	Tanks
- 28-11-36, P. Block 401	Additional Center Tank
- 28-11-36, P. Block 601	Additional Center Tank
- 28-11-37, P. Block 401	Manhole Cover - Additional Center Tank
- 28-11-38, P. Block 601	Bladder Tank
- 28-25-00, P. Block 301	Refuel/Defuel System
- 52-30-00, P. Block 1	Cargo Compartment Doors

**ON A/C 101-200,

2. Procedure

A. Job Set-Up
(1)Make sure that the aircraft is statically grounded.
(2)Make the ACT empty (Ref. 28-25-00, P. Block 301).
(3)Open, safety and tag the circuit breakers:

PANEL	SERVICE	IDENT.	LOCATION
101VU	FUEL CAGO TK L PUMP SUPPLY	1QH	GEN1/B02
132VU	FUEL ACT VENT AND PRESS VALVE	3QH	325/K57
132VU	FUEL ACT XFR VALVE MOTOR 1	4QH	325/K58
132VU	FUEL ACT PUMP CTL XFR VALVE MOTOR 2	5QH	325/K59

(4)Put the warning notices in position on:
- the refuel/defuel panel 110VU,
- the fuelling panel 430VU
to tell persons not to operate the MODE SELECTOR switch.

(5)Put the containers in position below the access panels 153DL and 154DR for the water drain valves 280241 and 280244.
CAUTION : REMOVE FUEL LEAKAGE IMMEDIATELY.
(6)Drain the remaining fuel from the ACT.

**ON A/C 101-200,

Post SB 28-2105 For A/C 101-200,

(5)Put the drainage containers in position below the water drain valves 280241 (280242) and 280244 (280243).
CAUTION : REMOVE FUEL LEAKAGE IMMEDIATELY.
(6)Drain the remaining fuel from the ACT.

**ON A/C 101-200,

(Ref. Fig. 401)

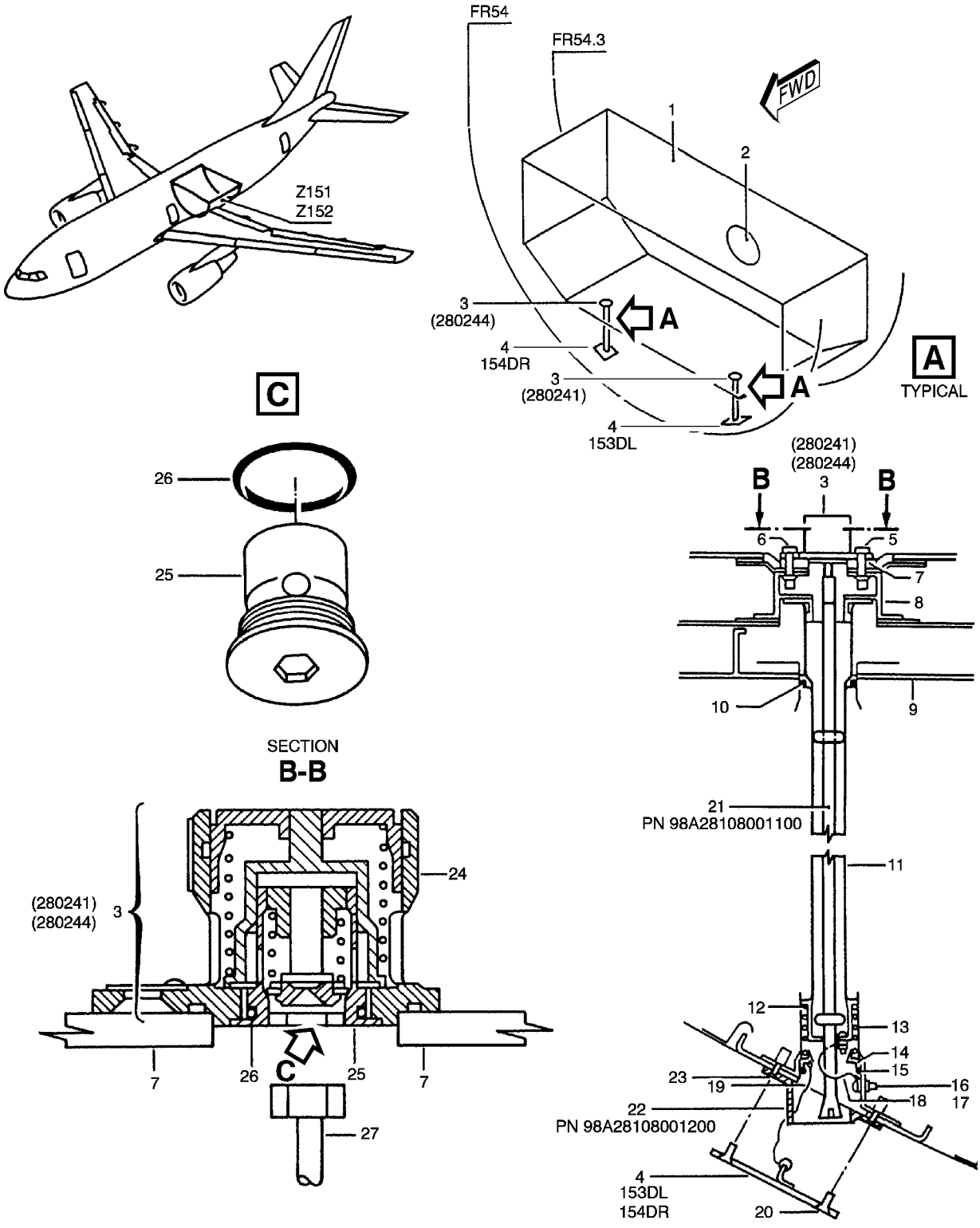
**ON A/C 101-200,

Post SB 28-2105 For A/C 101-200,

(Ref. Fig. 402)

**ON A/C 101-200,

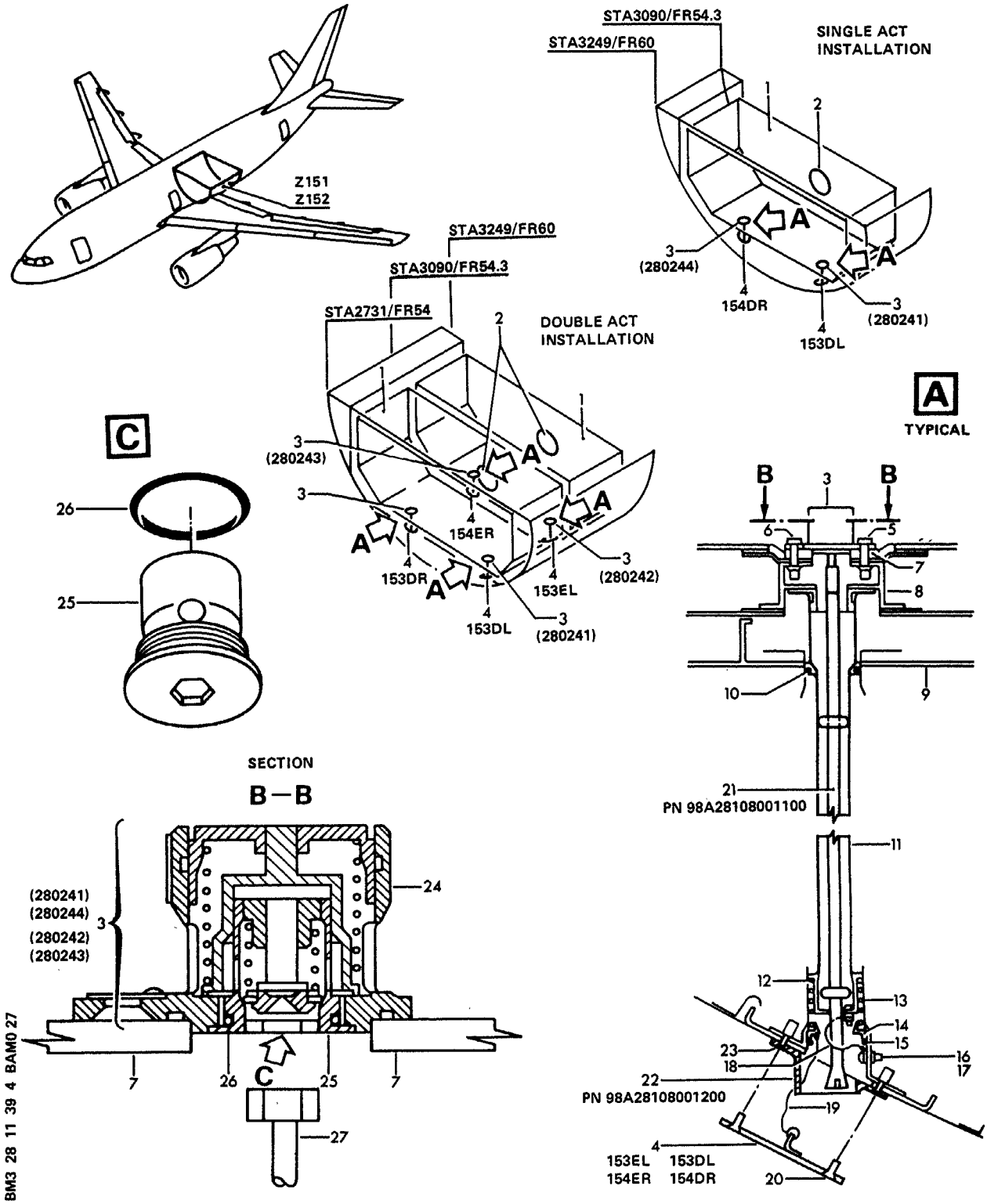
(a)Disconnect the screws at the access panels 153DL and 154DR (4).



BM6 28 11 39 4 AAM0 01

Water Drain Valve - Outer Valve Assembly
Figure 401

R



Water Drain Valve - Outer Valve Assembly
Figure 402

(b)Remove the access panels 153DL and 154DR (4) from the aircraft skin.
(c)Put the flange (22) of the water drain adapter PN 98A28108001000, in position at the water drain opening.
(d)Connect the flange (22) to the aircraft skin with the quick-release fasteners (23).
(e)Put the thrust rod (21) of the water drain adapter PN 98A28108001000, through the flange (22) to lift the water drain valve 280241 (280244) (3).
(f)Drain the remaining fuel from the ACT.
(g)Remove the thrust rod (21) and the flange (22).
(h)Do the steps (c) thru (g) again at the other drain valve (3) position.

B. Removal

**ON A/C 101-200,

Post SB 28-2105 For A/C 101-200,

(a) Disconnect the screws (20) at the applicable access panels (4) for the water drain valves (3).
NOTE : For the fwd ACT (1):
- access panels 153DL and 154DR (4) for valves 280241 and 280244 (3).
For the aft ACT (1):
- access panels 153EL and 154ER (4) for valves 280242 and 280243 (3).

(b) Remove the access panels 153DL (153EL) and 154DR ((154ER) 2) from the aircraft skin.
(c) Put the flange (22) of the water drain adapter, PN 98A28108001000, in position at the water drain opening.
(d) Connect the flange (22) to the aircraft skin with the quick-release fasteners (23).
(e) Put the thrust rod (21) through the flange (22) into the drain tube (11).
(f) Use the thrust rod (21) to lift the drain valves 280241 (280242) or 280244 (280243 (3) and drain the fuel from the ACT.
(g) Remove the thrust rod (21).
(h) Disconnect the quick-release fasteners (23) and remove the flange (22).
(i) Do the steps (c) thru (h) again at the other drain valve 280244 (280243) or 280242 (280241) (3).

B. Removal

**ON A/C 101-200,

(1)Removal of the Outer Valve Assembly (Ref. Fig. 401)
(a)Disconnect the safety cord (19) of the applicable access panel 153DL (154DR) (4) from the spring support (14).

**ON A/C 101-200,

Post SB 28-2105 For A/C 101-200,

(1)Removal of the Outer Valve Assembly (Ref. Fig. 402)
(a)Remove the safety cord (19) of the applicable access panel 153DL (153EL) or 154DR (154ER) (4) from the spring support (14).

**ON A/C 101-200,

(b)Remove and retain the access panel (4) complete with the safety cord (19).
(c)Remove the bonding jumper (18) from the sidewall.
1 Remove and retain the screw (16) and the washer (17) and remove the bonding jumper (18) from the sidewall.
NOTE : Do not remove the bonding jumper (18) from the drain tube (11) unless a repair or a new installation is necessary.
(d)Remove the lockring (15).
(e)Remove and retain the spring support (14) and the spring (13).
(f)Put the thrust rod (21) in the drain tube (11).
(g)Turn the thrust rod (21) thru 90° and then remove the thrust rod (21) and the drain tube (11).
(h)Put a 7/16 in. (11.11 mm) external hexagonal wrench (27) in the drain opening.
(i)Use the wrench (27) to disconnect the outer valve assembly (25) from the valve housing (24).
(j)Remove the wrench (27) and the outer valve assembly (25) from the drain opening.
(k)Remove and discard the O-rings (10),(12) from the drain tube (11).
(l)Remove and discard the O-ring (26) from the outer valve assembly (25).
(2)Removal of the Water Drain Valve 280241 (280244) Complete

**ON A/C 101-200,

Post SB 28-2105 For A/C 101-200,

(2)Removal of the Water Drain Valve 280241 (280242) or 280244 (280243) Complete

**ON A/C 101-200,

(Ref. Fig. 403)

**ON A/C 101-200,

Post SB 28-2105 For A/C 101-200,

(Ref. Fig. 404)

**ON A/C 101-200,

(a)Put the access platform in position.
(b)Open the AFT cargo-compartment door (Ref. 52-30-00, P. Block 1).

(c)Disconnect the quick-release fasteners and remove the heat shield from the rear wall of the ACT (1).
(d)Not applicable.

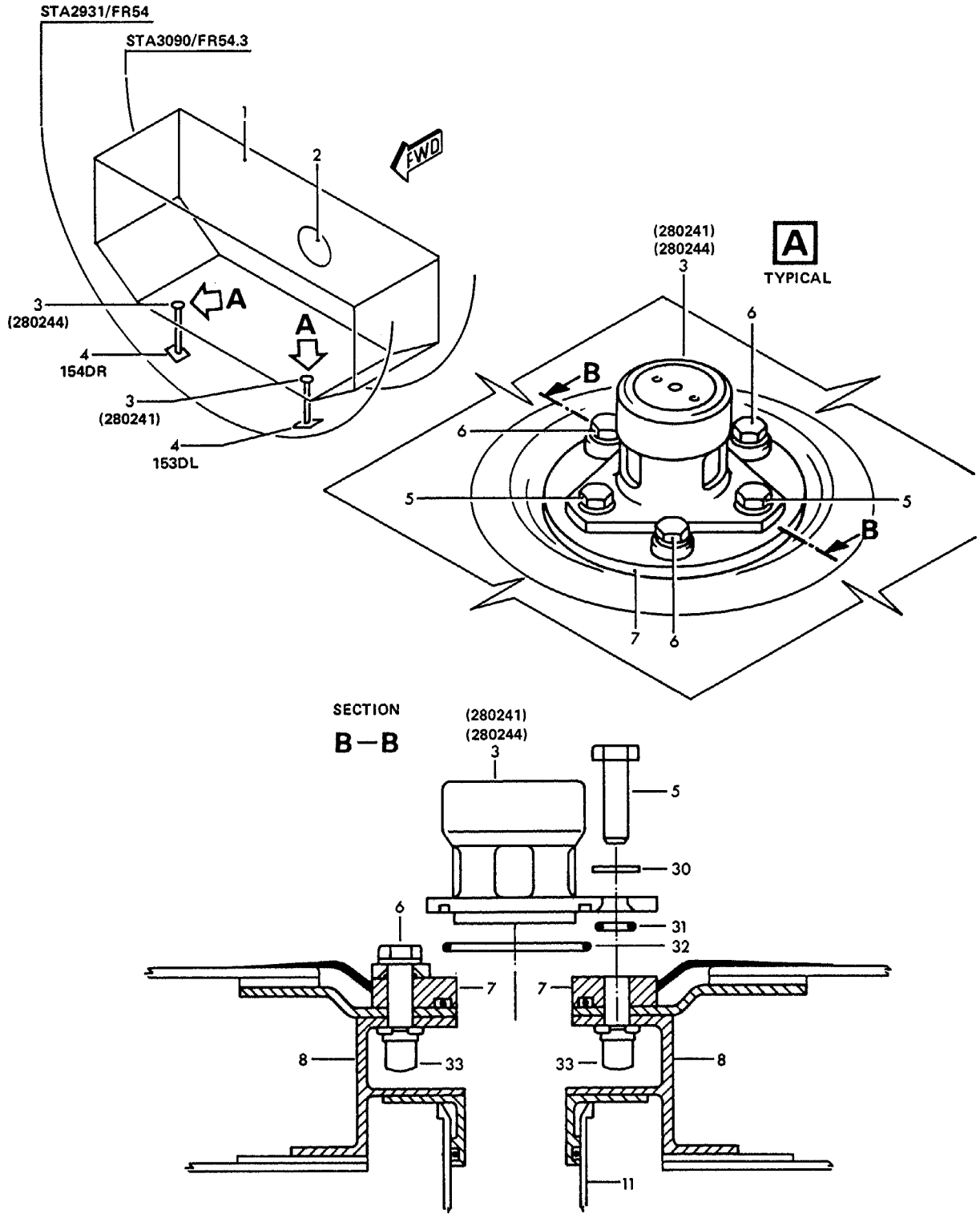
**ON A/C 101-200,

Post SB 28-2105 For A/C 101-200,

(d)Do this step if a drain valve (3) is to be removed from the fwd ACT (1) of a double ACT installation.
1 Remove the aft ACT (1) (Ref. 28-11-36, P. Block 401).

**ON A/C 101-200,

(e)Remove the manhole cover (2) (Ref. 28-11-37, P. Block 401).
WARNING : DO NOT GO INTO A FUEL TANK UNTIL IT IS PURGED AND/OR USE THE CORRECT SAFETY EQUIPMENT.
(f)Purge the ACT (1) (Ref. 28-11-00, P. Block 301).
(g)Use an explosion-proof fluorescent lamp so that you can see the internal area of the ACT (1).



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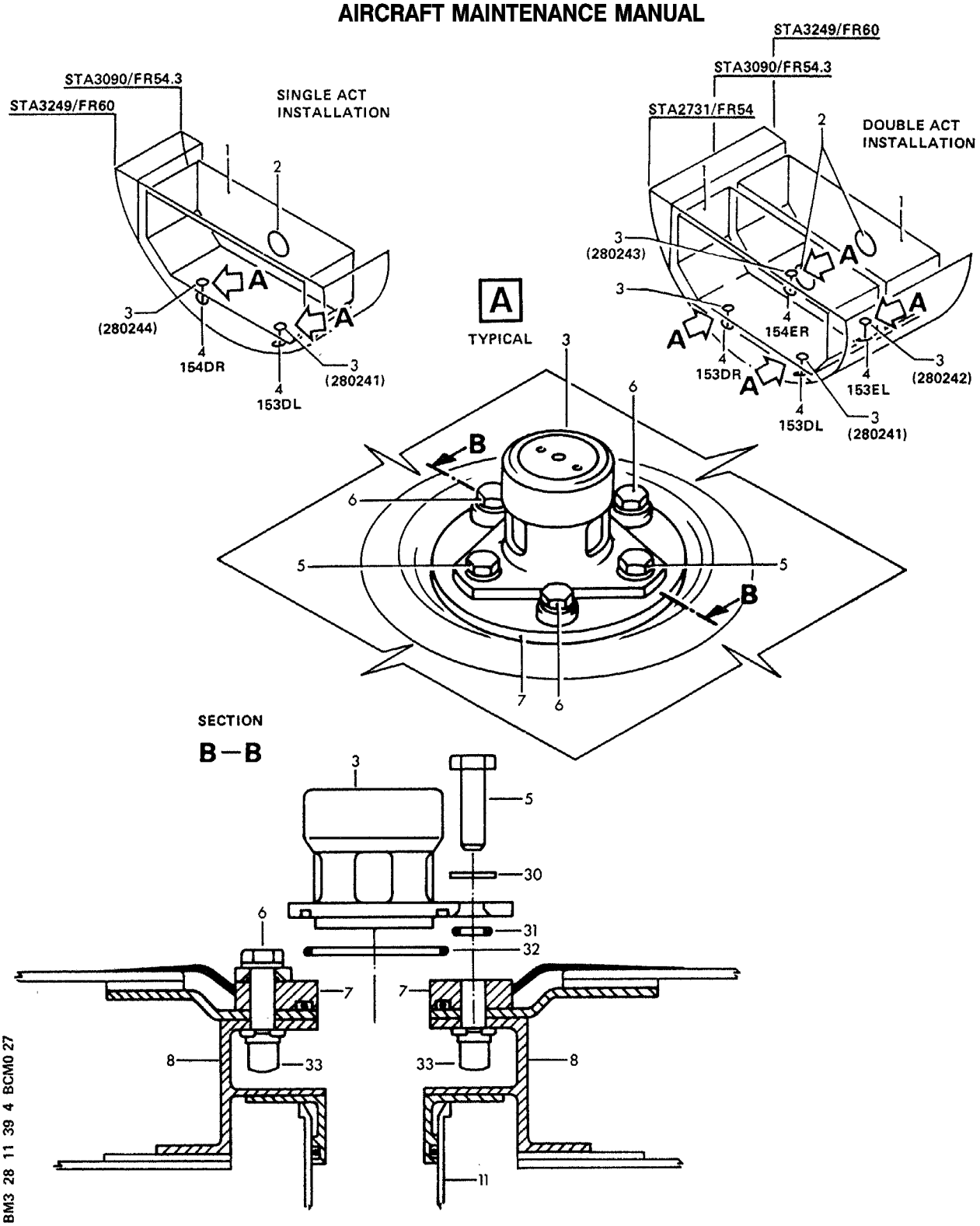
Water Drain Valve 280241 (280244)
Figure 403



Water Drain Valve - Complete
Figure 404

(h)Remove the screws (5) and the washers (30) from the drain valve (3).
(i)Remove the drain valve (3) from the fabric flange (7) of the bladder tank 280257 (280258).
NOTE : Do not remove:
- the screws (6) from the fabric flange (7),
- the anchor nuts (33) from the base plate (8) of the ACT (1).
unless a repair or a new installation is necessary.
(j)Remove the drain valve (3) from the ACT (1) through the manhole in the rear wall of the ACT (1).
(k)Remove and discard the O-rings (31),(32) from the interface of the drain valve (3).

C. Preparation for Installation
(1)Preparation of the Outer Valve Assembly (Ref. Fig. 401)

**ON A/C 101-200,

Post SB 28-2105 For A/C 101-200,

(1)Preparation of the Outer Valve Assembly (Ref. Fig. 402)

**ON A/C 101-200,

(a)Remove the preservation from the outer valve assembly (25), if necessary.
(b)Make sure that the outer valve assembly (25) is clean and has no damage.
(c)Make sure that the outer valve assembly (25) operates freely.
(d)Clean the thread of the outer valve assembly (25) and the mating thread of the valve housing (24) with cleaning agent (Material No. 11-004).
(e)Apply vaseline (Material No. 04-012) to the new O-rings (10),(12),(26).
(f)Put the O-ring (10) in the upper groove of the drain tube (11).
(g)Put the O-ring (12) in the lower groove of the drain tube (11).
(h)Put the O-ring (26) in the groove in the body of the outer valve assembly (25).
(2)Preparation of the Water Drain Valve 280241 (280244) Complete (Ref. Fig. 403)

**ON A/C 101-200,

Post SB 28-2105 For A/C 101-200,

(2)Preparation of the Water Drain Valve 280241 (280242) or 280244 (280243) Complete (Ref. Fig. 404)

**ON A/C 101-200,

(a)Do a visual check of the external surface and components of the

ACT (1) (Ref. 28-11-36, P. Block 601), as far as possible.
(b)Do a visual check of the internal surfaces and components of the bladder tank (Ref. 28-11-38, P. Block 601).
(c)Make sure that the interface of the fabric flange fitting (7) is clean and has no damage.
(d)Make sure that the water drain opening in the aircraft skin is clean and has no damage.
(e)Remove the preservation from the drain valve (3), if necessary.
(f)Make sure that the drain valve (3) is clean and has no damage.
(g)Make sure that the drain valve (3) operates freely.
(h)Apply vaseline (Material No. 04-12) to the new O-rings (31),(32).
(i)Put the O-rings (31) in the recesses in the interface of the drain valve (3) at the positions for the screws (5).
(j)Put the O-ring (32) in the groove in the interface of the drain valve (3).

D. Installation
(1)Installation of the Outer Valve Assembly (Ref. Fig. 401)

**ON A/C 101-200,

Post SB 28-2105 For A/C 101-200,

(1)Installation of the Outer Valve Assembly (Ref. Fig. 402)

**ON A/C 101-200,

(a)Apply loctite violet (Material No. 08-007) to the thread of the outer valve assembly (25).
(b)Put the outer valve assembly (25) through the drain opening and position it in the valve housing (24).
(c)Put a 7/16 in. (11.11 mm) external hexagonal wrench (27) in position in the outer valve assembly (25).
(d)Use the wrench (27) and tighten the outer valve assembly (25).
NOTE : Make sure that the O-ring (26) is correctly installed.
(e)TORQUE the outer valve assembly (25) to 0.75 m.daN (66.36 lbf.in.).
(f)Remove the wrench (27) from the drain opening.
(g)Use the thrust rod (21) and install the drain tube (11) in the drain opening.
NOTE : Make sure that the drain tube (11) is correctly installed through the floor panel (9) to the base plate (8) of the ACT (1).
NOTE : Make sure that the O-rings (10),(12) are correctly installed.
(h)Install the spring (13) and the spring support (14).
(i)Install the lockring (15) and safety the spring support (14).
(j)Connect the bonding jumper (18) to the side wall (Ref. 20-28-11, P. Block 1).
1 Put the bonding jumper (1) from the drain tube (11) in position at the sidewall.
2 Install the screw (16) and the washer (17) and connect the bonding jumper (18) to the sidewall.
(k)Put the access panel 153DL (154DR) (2) in position at the drain opening.
(l)Connect the safety cord (14) from the access panel 153DL (154DR) (2) to the spring support (11).
NOTE : Do not connect the access panel 153DL (154DR) (2) to the aircraft skin at this time.

**ON A/C 101-200,

Post SB 28-2105 For A/C 101-200,

(k)Put the access panel 153DL (153EL) or 154DR (154ER) (4) in position at the drain opening.
(l)Connect the safety cord (1) from the access panel 153DL (153EL) or

154DR (154ER) (4) to the spring support (14).
NOTE : Do not connect the access panel 153DL (153EL) or 154DR (154ER) to the aircraft skin at this time.

**ON A/C 101-200,

(2)Installation of the Water Drain Valve 280241 (280244) Complete (Ref. Fig. 403).

**ON A/C 101-200,

Post SB 28-2105 For A/C 101-200,

(2)Installation of the Water Drain Valve 280241 (280242) or 280244 (280243) Complete (Ref. Fig. 404).

**ON A/C 101-200,

(a)Put the drain valve (3) through the manhole in the rear wall of the ACT (1).
(b)Put the drain valve (3) in position at the fabric flange fitting (7) in the bottom surface of the bladder tank.
(c)Install the washers (30) and the screws (5).
NOTE : Make sure that the O-rings (31),(32) are correctly installed.
(d)Remove the fluorescent lamp.
(e)Make sure that no tools or other items are in the ACT (1).
R (f)Make sure that there are no unwanted objects and materials, tools
R or other equipment in the tank.
R (g)Install the manhole cover (2) (Ref. 28-11-37, P. Block 401).

E. Test
(1)Make sure that the drainage containers are in position below the water drain openings.
CAUTION : REMOVE FUEL LEAKAGE IMMEDIATELY.
(2)Fill the ACT (Ref. 28-25-00, P. Block 301) with 100 litres (26.5 U.S.gal) of fuel to cover the water drain valves 280241 and 280244.
(3)Put the flange PN 98A28108001200 in position at one of the water drain openings.
(4)Connect the flange PN 98A28108001200 to the aircraft skin with the quick-release fasteners.
(5)Put the thrust rod PN 98A28108001100 through the flange PN 98A28108001200 into the drain tube.
(6)Use the thrust rod PN 98A28108001100 to lift the water drain valve 280241 (280244) and let fuel drain from the ACT.
(7)Remove the thrust rod PN 98A28108001100 and release the water drain valve 280241 (280244).
(8)Make sure that no fuel leaks past the water drain valve 280241 (280244) in a time of fifteen minutes.
(9)Disconnect the quick-release fasteners and remove the flange PN 98A28108001200.
(10)Do the steps (3) thru (9) again at the other water drain valve 280244 (280241).

F. Close-Up
(1)Do this step if the water drain valve 280241 (280244) complete was replaced.
(a)Put the heat shield in position on the rear wall of the ACT.
(b)Connect the heat shield to the ACT with the quick-release fasteners.
(c)Remove the access platform.
(2)Put the access panels 153DL and 154DR in position at the aircraft skin.
(3)Connect the screws and safety the access panels 153DL and 154DR.
(4)Not applicable.

**ON A/C 101-200,

Post SB 28-2105 For A/C 101-200,

(2)Move fuel to the ACT or refuel the ACT, as applicable, to cover the water drain valves 280241 (280242) and 280244 (280243) (Ref. 28-25-00, P. Block 301).
NOTE : Approximately 100 litres (26.5 U.S.gal) of fuel are necessary.
(3)Put the flange PN 98A28108001200 in position at one of the water drain openings.
(4)Connect the flange PN 98A28108001200 to the aircraft skin with the quick-release fasteners.
(5)Put the thrust rod PN 98A28108001100 through the flange PN 98A28108001200 into the drain tube.
(6)Use the thrust rod PN 98A28108001100 to lift the water drain valve 280241 (280242) or 280244 (280243).
(7)Let fuel drain from the ACT into the drainage container.

(8)Remove the thrust rod PN 98A28108001100 and release the water drain valve 280241 (280242) or 280244 (280243).
(9)Make sure that there are no fuel leaks from the water drain valve 280241 (280242) or 280244 (280243) in a time of fifteen minutes.
(10)Disconnect the quick-release fasteners and remove the flange PN 98A28108001200.
(11)Do the steps (3) thru (10) again at the other water drain valve 280241 (280242) or 280244 (280243) of the ACT.

F. Close-Up
(1)Do this step if the complete drain valve was removed/installation from the fwd ACT of a double ACT installation.
(a)Install the aft ACT (Ref. 28-11-36, P. Block 401).
(2)Do this step if the complete drain valve was removed/installed.
(a)Put the heat shield in position on the rear wall of the ACT.
(b)Connect the heat shield to the ACT with the quick-release fasteners.
(c)Remove the access platform.
(3)Put the access panels 153DL (153EL) and 154DR (154ER) in position at aircraft skin.
(4)Connect the screws and safety the access panels 153DL (153EL) and 154DR (154ER).

**ON A/C 101-200,

(5)Remove the drainage containers.
(6)Make sure that the work area is clean and clear of tools and other items.
(7)Remove the safety clips and the tags and close the circuit breakers 1QH, 3QH, 4QH and 5QH.
(8)Remove the warning notices from the refuel/defuel panel 110VU and the fuelling panel 430VU.
(9)Refuel the ACT as required (Ref. 12-11-28, P. Block 301).
NOTE : Refuel the ACT with a minimum of 50 litres (13.21 U.S.gal). This will prevent cracking or drying out of the bladder tank.

(10)Close the AFT cargo-compartment door (Ref. 52-30-00, P. Block 1).

R **ON A/C ALL

Post SB 28-2049 For A/C 001-003,

SCAVENGE FUEL PUMP - REMOVAL/INSTALLATION

**ON A/C ALL

Post SB 28-2049 For A/C 001-003,

WARNING : LANDING GEAR - MAKE SURE THAT THE GROUND SAFETIES AND CHOCKS ARE IN POSITION.

PUT THE SAFETY DEVICES AND THE WARNING NOTICES IN POSITION BEFORE YOU START A TASK ON OR NEAR:
- THE FLIGHT CONTROLS
- THE FLIGHT CONTROL SURFACE
- THE LANDING GEAR AND THE RELATED DOORS
- COMPONENTS THAT MOVE.

OBEY THE FUEL SAFETY PRECAUTIONS IN 28-00-00, P. BLOCK 301 AND 28-10-00, P. BLOCK 301.

MAKE SURE THAT THE FIRE FIGHTING EQUIPMENT IS AVAILABLE AND IS ADEQUATE.

MAKE SURE THAT YOU ISOLATE THE ELECTRICAL CIRCUITS UPON WHICH WORK IS IN PROGRESS.

**ON A/C ALL

Post SB 28-2049 For A/C 001-003,

1. Inner-Tank Scavenge Fuel-Pump

A. Equipment and Materials

ITEM	DESIGNATION
A.	Access Platform 4.5 m (15 ft)
B. Material No.01-001	Fuels (Ref. 20-31-00)
C.	Blanking Caps
D.	O-Rings

ITEM	DESIGNATION
Referenced Procedures	
- 12-11-28, P. Block 301	Replenishing of Fuel Tanks
- 28-00-00, P. Block 301	Fuel
- 28-10-00, P. Block 301	Storage
- 28-11-00, P. Block 501	Tanks
- 28-11-22, P. Block 401	Wing Manhole Covers
- 28-11-41, P. Block 501	Scavenge Fuel Pumps
- 28-25-00, P. Block 301	Refuel/Defuel System

B. Procedure

(1)Job Set-Up

(a)Put the access platform in position.

(b)Move or drain the fuel from the inner wing tanks (Ref. 28-25-00, P. Block 301).

(c)Remove the manhole covers from the inner wing tank (Ref. 28-11-22, P. Block 401).

**ON A/C ALL

Post SB 28-2049 For A/C 001-003,

(2)Removal

**ON A/C ALL

Post SB 28-2049 For A/C 001-003,

(Ref. Fig. 401)

**ON A/C ALL

Post SB 28-2049 For A/C 001-003,

(a)Disconnect the electrical connector from the electrical socket (18) on the scavenge fuel pump (19).

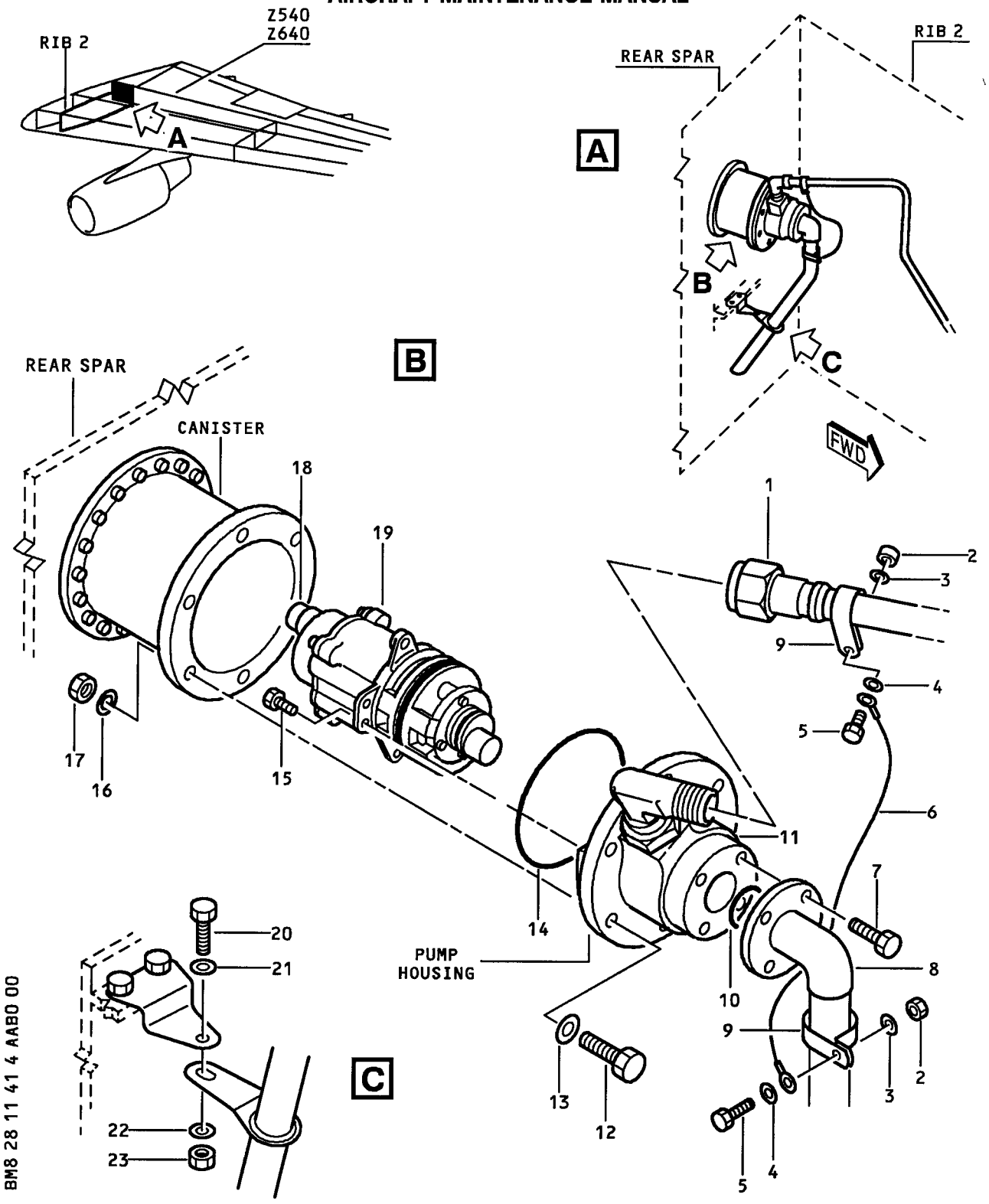
(b)Put the blanking caps on the disconnected electrical connectors.

(c)Remove the nut (23), the washer (22), the bolt (20) and the washer (21).

(d)Remove the nuts (2), the washers (3), the screws (5) and the washers (4).

(e)Remove the bonding lead (6) and the clamps (9).

(f)Disconnect the coupling nut of the pipe assembly (1).



Scavenge Fuel Pump - Removal/Installation
Figure 401

(g)Install a blanking cap on the coupling nut of the pipe assembly (1).
(h)Remove the bolts (7) and remove the pipe assembly (8). Remove and discard the O-ring (10).
(j)Remove the nuts (17), the washers (16), the bolts (12) and the washers (13).
(k)Remove the pump housing (11) together with the scavenge fuel pump (19).
(l)Remove the bolts (15) and remove the pump housing (11) from the scavenge fuel pump (19). Remove and discard the O-ring (14).

**ON A/C ALL

Post SB 28-2049 For A/C 001-003,

(3)Preparation for Installation
(a)Apply fuel (Mat. No.01-001) to the new O-ring (14) and the new O-ring (10).
(b)Make sure that the replacement component is clean.
(c)Apply fuel (Mat. No.01-001) to the O-rings on the scavenge fuel pump (19).

**ON A/C ALL

Post SB 28-2049 For A/C 001-003,

(4)Installation
(a)Install the O-ring (14) on the pump housing (11).
(b)Install the scavenge fuel pump (19) into the pump housing (11).
(c)Install the bolts (15).
(d)Install the scavenge fuel pump (19) and the pump housing (11) into the canister. Make sure that the electrical socket (18) of the scavenge fuel pump (19) is aligned with the hole in the rear spar.
(e)Install the bolts (12), the washers (13) and (16) and the nuts (17).
(f)Install the O-ring (10) on the pump housing (11).
(g)Install the pipe assembly (8) on the pump housing (11) and install the bolts (7).
(h)Remove the blanking cap and connect the coupling nut of the pipe assembly (1) to the pump housing (11).
(j)Install the bolt (20), the washers (21) and (22) and the nut (23).
(k)Install the clamps (9).
(l)Install the bonding lead (6) and safety to the clamps (9) with the screws (5), the washers (4) and (3) and the nuts (2).
(m)Remove the blanking caps from the disconnected electrical

connectors.
(n)Connect the electrical connector to the electrical socket (18) of the scavenge fuel pump (19).

**ON A/C ALL

Post SB 28-2049 For A/C 001-003,

(5)Test
(a)Do a test of the inner tank water scavenge system with air (Ref. 28-11-00, P. Block 501).
(b)Make sure that the work area is clean and clear of tools and test equipment.
(c)Install the manhole covers of the inner wing tank (Ref. 28-11-22, P. Block 401).
(d)Refuel the inner wing tank (Ref. 12-11-28, P. Block 301).
(e)Examine the aft face of the rear spar for leakage of fuel. Check the area(s) where, the fuel pump canister is attached and the electrical socket opening is, for leakage of fuel.
(f)Do an operational test of the scavenge fuel pump (Ref. 28-11-41, P. Block 501.

**ON A/C ALL

Post SB 28-2049 For A/C 001-003,

(6)Close-Up
(a)Make sure that the work area is clean and clear of tools and test equipment.
(b)Remove the warning notices.
(c)Refuel or defuel the inner wing tanks as required (Ref. 12-11-28 or 28-25-00, P. Block 301).
(d)Remove the access platform.

R **ON A/C 004-200,

R

2. Trim-Tank Scavenge Fuel-Pump

A. Equipment and Materials

ITEM	DESIGNATION
A.	Access Platform 6m (19.6 ft)
B. Material No.01-001	Fuels (Ref. 20-31-00)
C.	Blanking Caps
D	O-Rings
Referenced Procedures	
- 12-11-28, P. Block 301	Replenishing of Fuel Tanks
- 28-00-00, P. Block 301	Fuel
- 28-10-00, P. Block 301	Storage
- 28-11-00, P. Block 501	Tanks
- 28-11-33, P. Block 401	Trim Tank Manhole Covers
- 28-11-41, P. Block 501	Scavenge Fuel Pump
- 28-25-00, P. Block 301	Refuel/ Defuel System

B. Procedure

(1)Job Set-Up

(a)Put the access platform in position.

(b)Move or drain the fuel from the trim tank (Ref. 28-25-00, P. Block 301).

(c)Open the access door (312AR/313AL).

(d)Remove the manhole covers (319AZ/319BZ) from the central compartment of the trim tank (Ref. 28-11-33, P. Block 401).

R **ON A/C ALL

R Post SB 28-2049 For A/C 001-003,

R Post SB 28-2153 For A/C ALL

R 2. Trim-Tank Scavenge Fuel-Pump

R A. Equipment and Materials

ITEM	DESIGNATION
A.	Access Platform 6m (19.6 ft)
B. Material No. 01-001	Fuels (Ref. 20-31-00)
C. Material No. 07-001C	Paints (Ref. 20-31-00)
D.	Blanking Caps
E.	O-Rings
Referenced Procedures	
- 12-11-28, P. Block 301	Replenishing of Fuel Tanks
- 20-28-11, P. Block 1	Electrical Bonding
- 28-00-00, P. Block 301	Fuel
- 28-10-00, P. Block 301	Storage
- 28-11-00, P. Block 501	Tanks
- 28-11-33, P. Block 401	Trim Tank Manhole Covers
- 28-11-41, P. Block 501	Scavenge Fuel Pump
- 28-25-00, P. Block 301	Refuel/ Defuel System

B. Procedure

(1)Job Set-Up
(a)Put the access platform in position.
(b)Move or drain the fuel from the trim tank (Ref. 28-25-00, P. Block 301).
(c)Open the access door (312AR/313AL).
(d)Remove the manhole covers (319AZ/319BZ) from the central compartment of the trim tank (Ref. 28-11-33, P. Block 401).

**ON A/C ALL

Post SB 28-2049 For A/C 001-003,

(2)Removal

**ON A/C ALL

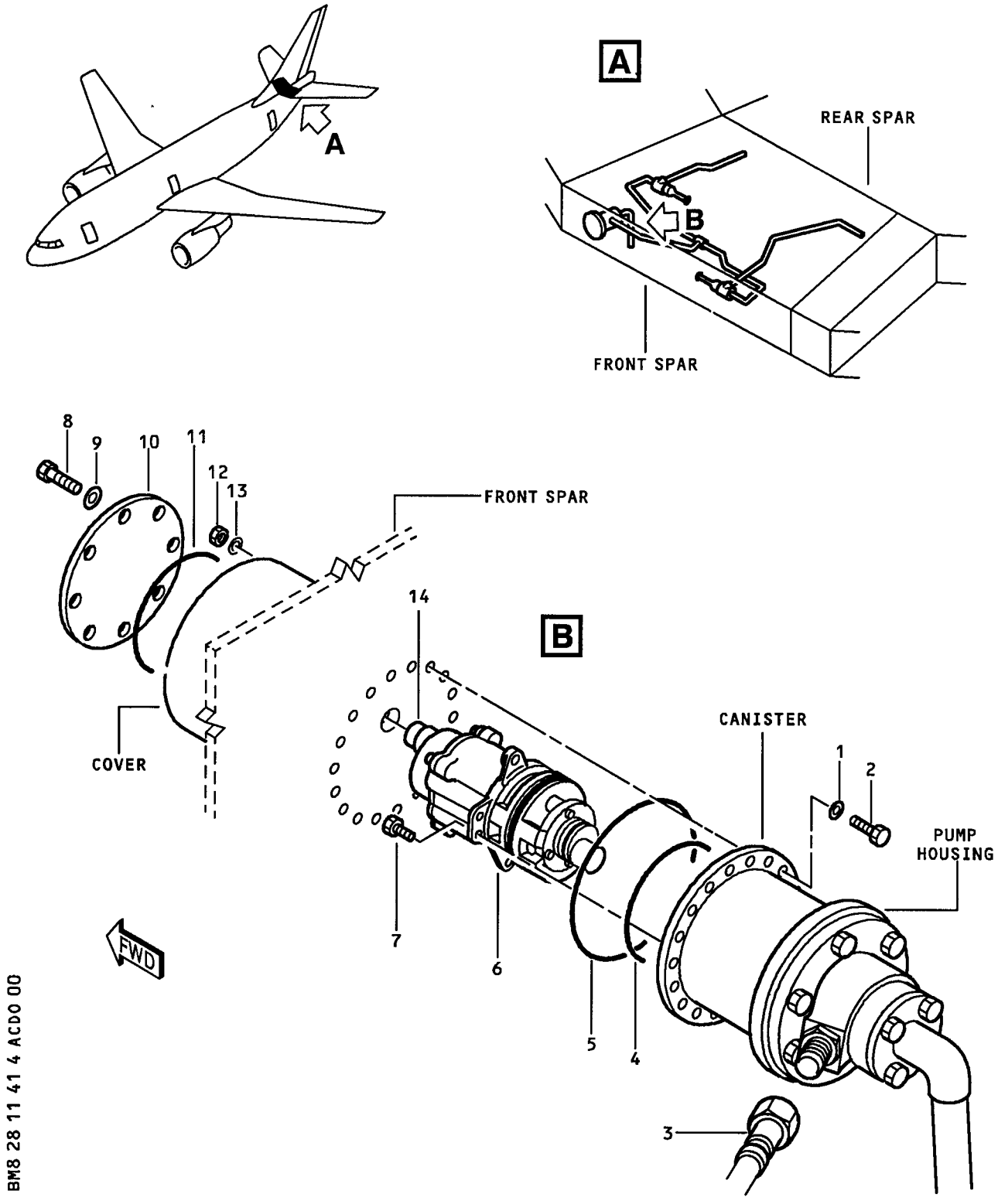
Post SB 28-2058 For A/C 001-100,

Post SB 28-2049 For A/C 001-003,

(Ref. Fig. 402)

**ON A/C ALL

Post SB 28-2058 For A/C 001-100,



Scavenge Fuel Pump - Removal/Installation
Figure 402

Post SB 28-2049 For A/C 001-003,

(a)Remove the bolts (8), the washers (9), the cover (10) and the O-ring (11). Discard the O-ring (11).
(b)Disconnect the electrical connector from the electrical socket (14) of the scavenge fuel pump (6).
(c)Put the blanking caps on the disconnected electrical connectors.
(d)Disconnect the coupling nut of the pipe assembly (3).
(e)Install a blanking cap on the coupling nut of the pipe assembly (3).
(f)Remove the nuts (12), the washers (13), the bolts (2) and the washers (1).
(g)Remove the pump housing and the canister together with the scavenge fuel pump (6).
(h)Remove and discard the O-rings (4) and (5).
(j)Remove the bolts (7) and remove the scavenge fuel pump (6) from the pump housing and the canister.

R **ON A/C ALL

R Post SB 28-2049 For A/C 001-003,

R Post SB 28-2058 For A/C 001-100,

R Post SB 28-2153 For A/C ALL

R (a)Remove the bolts (8), the washers (9), the cover (10) and the O-ring (11). Discard the O-ring (11).
R (b)Disconnect the electrical connector from the electrical socket (14) of the scavenge fuel pump (6).
R (c)Put the blanking caps on the disconnected electrical connectors.
R (d)Disconnect the coupling nut of the pipe assembly (3).
R (e)Install a blanking cap on the coupling nut of the pipe assembly (3).
R (f)Record the positions of the bonding bolts (2).

R NOTE : The heads and the tails of the bonding bolts (2) are colored blue for identification.

R (g)Remove the nuts (12), the washers (13), the bolts (2) and the washers (1).
R (h)Remove the pump housing and the canister together with the scavenge fuel pump (6).
R (j)Remove and discard the O-rings (4) and (5).
R (k)Remove the bolts (7) and remove the scavenge fuel pump (6) from the pump housing and the canister.

**ON A/C ALL

Post SB 28-2058 For A/C 001-100,

Post SB 28-2049 For A/C 001-003,

(3)Preparation for Installation

(a)Apply fuel (Mat. No.01-001) to the new O-rings (4) and (5) and (11).
(b)Make sure that the replacement component is clean.
(c)Apply fuel (Mat. No.01-001) to the new O-rings on the scavenge fuel pump (6).

R **ON A/C ALL

R Post SB 28-2049 For A/C 001-003,

R Post SB 28-2058 For A/C 001-100,

R Post SB 28-2153 For A/C ALL

R (3)Preparation for Installation

R (a)Make sure that the replacement component is clean.
R (b)Do the electrical bonding method (Ref. 20-28-11, P. Block 1 para 3.D.(2)) to prepare the surfaces of the canister and the front spar in the area of the bonding bolts (2).
R (c)Apply fuel (Mat. No.01-001) to the new O-rings (4) and (5) and (11).
R (d)Apply fuel (Mat. No.01-001) to the new O-rings on the scavenge fuel pump (6).

R **ON A/C 004-100,

(4)Installation

(a)Install the scavenge fuel pump (6) into the pump housing.
(b)Install the bolts (7).
(c)Install the new O-rings (4) and (5).

NOTE: Make sure that you install the new O-rings (4) and (5) correctly.

(d)Align the scavenge fuel pump (6) and pump housing and the canister on the front spar. Make sure that the electrical socket (8) of the scavenge fuel pump (6) is aligned with the hole in the front spar.
(e)Install the bolts (2), the washers (1) and (10) and the nuts (9).
(f)Remove the blanking cap and connect the pipe assembly (3) to the pump housing.
(g)Remove the blanking caps from the disconnected electrical connectors.
(h)Connect the electrical connector to the electrical socket (8) of the scavenge fuel pump (6).

R **ON A/C 101-200,

R

(4)Installation

(a)Install the scavenge fuel pump (6) into the pump housing.
(b)Install the bolts (7).
(c)Install the new O-rings (4) and (5).

NOTE: Make sure that you install the new O-rings (4) and (5) correctly.

(d)Align the scavenge fuel pump (6) and pump housing and the canister on the front spar. Make sure that the electrical socket (14) of the scavenge fuel pump (6) is aligned with the hole in the front spar.
(e)Install the bolts (2), the washers (1) and (13) and the nuts (12).
(f)Remove the blanking cap and connect the pipe assembly (3) to the pump housing.
(g)Remove the blanking caps from the disconnected electrical connectors.
(h)Connect the electrical connector to the electrical socket (14) of the scavenge fuel pump (6).
(j)Install the new O-ring (11) and the cover (10).
(k)Install the washers (9) and the bolts (8).

R **ON A/C ALL

R Post SB 28-2049 For A/C 001-003,

R Post SB 28-2058 For A/C 001-100,

R Post SB 28-2153 For A/C ALL

R (4)Installation

R (a)Install the scavenge fuel pump (6) into the pump housing.
R (b)Install the bolts (7).
R (c)Install the new O-rings (4) and (5).

R NOTE : Make sure that you install the new O-rings (4) and (5)
R correctly.

R (d)Align the scavenge fuel pump (6), the pump housing and the canister on
R the front spar. Make sure that the electrical socket (14) of the
R scavenge fuel pump (6) is aligned with the hole in the front spar.
R (e)Install the bolts (2), the washers (1) and (13) and the nuts (12). Do
R not install the two bonding bolts (2) at this step.
R (f)Do the electrical bonding method (Ref. 20-28-11, P. Block 1,
R para 3.D.(2)) to install the bonding bolts (2), the washers (1) and
R (13) and the nuts (12). Allow the sealant to dry.
R (g)Apply a layer of paint (Material No. 07-001C) to the heads and the
R tails of the bonding bolts (2).
R (h)Remove the blanking cap and connect the pipe assembly (3) to the pump
R housing.
R (j)Remove the blanking caps from the disconnected electrical connectors.
R (k)Connect the electrical connector to the electrical socket (14) of
R the scavenge fuel pump (6).
R (l)Install the new O-ring (11) and the cover (10).
R (m)Install the washers (9) and the bolts (8).

**ON A/C ALL

Post SB 28-2049 For A/C 001-003,

(5)Test
(a)Do a test of the trim tank water scavenge system with air
(Ref. 28-11-00, P. Block 501).
(b)Make sure that the work area is clean and clear of tools and test
equipment.
(c)Install the manhole covers (319AZ/319BZ) to the central
compartment of the trim tank (Ref. 28-11-33, P. Block 401).
(d)Keep the access door (312AR/313AL) in the open position.
(e)Refuel the trim tank (Ref. 12-11-28, P. Block 301).
(f)Examine the scavenge fuel pump attachment, at the forward
face of the front spar, for leakage of fuel.
(g)Examine the manhole covers (319AZ/319BZ) for leakage of fuel.
(h)Do an operational test of the scavenge fuel pump (Ref. 28-11-41,
P. Block 501).

**ON A/C ALL

(6)Close-Up
(a)Remove the warning notices.
(b)Close the access door (312AR/313AL).
(c)Remove the access platform.

**ON A/C ALL

Post SB 28-2049 For A/C 001-003,

SCAVENGE FUEL PUMP - ADJUSTMENT/TEST

**ON A/C ALL

Post SB 28-2049 For A/C 001-003,

WARNING : LANDING GEAR - MAKE SURE THAT THE GROUND SAFETIES AND CHOCKS ARE IN POSITION.

FLIGHT CONTROLS - MAKE SURE THAT THE GROUND SAFETIES AND NOTICES ARE IN POSITION.

FLIGHT CONTROLS - MAKE SURE THAT THE TRAVEL RANGES OF THE CONTROL SURFACES ARE CLEAR.

OBEY THE FUEL SAFETY PRECAUTIONS IN 28-00-00, P. BLOCK 301 AND 28-10-00, P. BLOCK 301.

MAKE SURE THAT THE FIRE FIGHTING EQUIPMENT IS AVAILABLE AND ADEQUATE.

MAKE SURE THAT YOU ISOLATE THE ELECTRICAL CIRCUITS UPON WHICH WORK IS IN PROGRESS.

R **ON A/C ALL

R Post SB 28-2049 For A/C 001-003,

R 1. Reason For The Job
R A. READ lateral panel MFA "Scavenge System"

R NOTE : Refer to MPD TASK 281100-06-1

R B. Operational test to confirm that the scavenge system and all the pumps are
R operating satisfactorily.

R C. Operational test to confirm that one or more of the scavenge pumps are
R operating satisfactorily.

**ON A/C ALL

Post SB 28-2049 For A/C 001-003,

2. Equipment and Materials

ITEM	DESIGNATION
A.	Circuit breaker safety clips and tags
Referenced Procedures	
- 05-57-11, P. Block 1	Aircraft Stability
- 12-11-28, P. Block 301	Replenishing of Fuel Tanks
- 24-41-00, P. Block 301	AC External Power Control
- 24-50-30, P. Block 1	Circuit Breaker Panels 800VU and 811VU
- 28-00-00, P. Block 301	Fuel
- 28-10-00, P. Block 301	Storage
- 28-25-00, P. Block 301	Refuel/Defuel System
R - 28-11,	TSM

R **ON A/C ALL

R Post SB 28-2049 For A/C 001-003,

R 3. Read Lateral Panel MFA 'Scavenge System'
R

R A. Job Set-UP
R (1)Energize the aircraft electrical network (Ref. 24-41-00, P. Block 301).
R (2)Make sure that the circuit breakers that follow are closed:

PANEL	SERVICE	IDENT.	LOCATION
132VU	LIGHTING/MAINT PANEL/ANN & MFA	1WB	324/L78
132VU	LIGHTING/MAINT PANEL/ANN & MFA	22WB	324/L79
132VU	SCAVENGE SYSTEM/PUMP/INNER L	1QQ	325/K60
132VU	SCAVENGE SYSTEM/PUMP/INNER R	2QQ	325/K61
132VU	SCAVENGE SYSTEM/PUMP/TT	3QQ	325/K62
132VU	SCAVENGE SYSTEM/PUMP/CTL	13QQ	325/K63

R B. Test
R (1)In the flight compartment do the test that follows:

ACTION	RESULT
1. On the Maintenance Panel 472VU: - put the ANN LT switch in the READ position	On the Maintenance Panel 472VU: - if the FAULT legend on the SCAVENGE SYSTEM annunciator comes on, then there is a fault in the system and you must refer to the (TSM 28-11) for further testing
	- if the FAULT legend on the SCAVENGE SYSTEM annunciator stays off, then do step 2.
2. Hold the ANN LT switch in the TEST position.	- check that the SCAVENGE SYSTEM FAULT annunciator, comes on
	- if the FAULT legend stays off then there is a fault in the scavenge system annunciator. This must be repaired and you must do the test again.
3. Release the ANN LT switch to the READ position.	- the SCAVENGE SYSTEM FAULT annunciator will stay on.
4. Push (in) the Memorized Fault Annunciator (MFA) RESET switch.	- all memorized fault annunciators will go off.

ACTION	RESULT
NOTE : Some memorized fault annunciators may come on again, to indicate the status of the system.	
5. Put the ANN LT switch in the OFF position.	- all memorized fault annunciators will go off, without exception.

C. Close-Up

(1) De-energize the aircraft electrical network (Ref. 24-41-00, P. Block 301).

**ON A/C ALL

Post SB 28-2049 For A/C 001-003,

R 4. Operational Test of Trim Tank and Inner Tanks Scavenge System

R

A. Job Set-Up

(1)Energize the aircraft electrical network (Ref. 24-41-00, P. Block 301).

**ON A/C ALL

Post SB 28-2049 For A/C 001-003,

(2)Open the access door 144DR, to the refuel/defuel panel 110VU. Do not close the access door or operate the access door microswitch until the test is completed.

(3)Not applicable.

**ON A/C ALL

Post SB 28-2049 For A/C 001-003,

CAUTION : MAKE SURE THAT THE STABILITY OF THE AIRCRAFT BEFORE, DURING AND AT THE END OF THE TEST, STAYS IN SAFE CENTER OF GRAVITY LIMITS. (REF. 05-57-11, P. BLOCK 1).

(4)Refuel, defuel or transfer fuel (Ref. 12-11-28 or 28-25-00, P. Block 301) to get the fuel state that follows:

TANK	L OUTR	L INR	CTR	R INR	R OUTR	TRIM
kg (min)	NIL	1500	NIL	1500	NIL	1500
kg (max)	FULL	2000	9000	2000	FULL	2000

NOTE : This amount of fuel will wet the calibration sensors and let the scavenge pumps operate during the test.

**ON A/C ALL

Post SB 28-2049 For A/C 001-003,

(5)In the flight compartment:

(a)On panel 9VU, make sure that the ENG 1 and ENG 2 HP VALVE control

levers are in the OFF position.

(b)On the overhead panel 430VU, release (out) the fuel pump p/bsw's that follow:
- L OUTR TK PUMP 1
- L OUTR TK PUMP 2
- R OUTR TK PUMP 1
- R OUTR TK PUMP 2
- L INR TK PUMP 1
- L INR TK PUMP 2
- R INR TK PUMP 1
- R INR TK PUMP 2
- L CTR TK PUMP
- R CTR TK PUMP
- TRIM TK PUMP 1
- TRIM TK PUMP 2.

(c)Make sure that the TRIM TK AUTO MODE p/bsw is released (out) and the TRIM TK AUTO MODE p/bsw FWD legend is off.

(d)Make sure that the TRIM TK ISOL VALVE p/bsw is pushed (in) and the flowbar is on.

(e)Push (in) the X-FEED valve p/bsw. Make sure that:
- the cross-line flowbar goes off
- the in-line flowbar comes on.

(f)Make sure that the circuit breakers that follow are closed:

PANEL	SERVICE	IDENT.	LOCATION
132VU	SCAVENGE SYSTEM/PUMP/CTL	13QQ	325/K63
132VU	FUEL/AUTO FEED CTL	65QA	323/M55
132VU	LIGHTING/MAINT PANEL/ANN & MFA	1WB	324/L78
132VU	LIGHTING/MAINT PANEL/ANN & MFA	22WB	324/L79

(g)Open, safety and tag the circuit breakers that follow:

PANEL	SERVICE	IDENT.	LOCATION
101VU	FUEL/L INR TK/PUMP 2 SUPPLY	1QA	ESS1/B01
101VU	FUEL/R INR TK/PUMP 1/SUPPLY	2QA	ESS1/A01
101VU	FUEL/L INR TK/PUMP 1 SUPPLY	7QA	GEN2/A23
101VU	FUEL/R INR TK/PUMP 2/SUPPLY	8QA	GEN2/A20
101VU	FUEL/CTR TK/L PUMP SUPPLY	99QA	ESS1/B04
101VU	FUEL/CTR TK/R PUMP SUPPLY	100QA	GEN2/B17
133VU	HYDRAULIC-L/G PROX DET AND RELAYS SYS 2 FLT/GND	1GB	331/V52
800VU	DRAIN MAST	1DU	
811VU	DRAIN MAST	11DU	

NOTE : For more detailed location of the DRAIN MAST circuit breakers refer to 24-50-30, P. Block 1.

(h)Open the circuit breakers that follow but do not fit the safety clips and tags as they will be opened and closed during the test:

PANEL	SERVICE	IDENT.	LOCATION
132VU	SCAVENGE SYSTEM/PUMP/INNER L	1QQ	325/K60
132VU	SCAVENGE SYSTEM/PUMP/INNER R	2QQ	325/K61
132VU	SCAVENGE SYSTEM/PUMP/TT	3QQ	325/K62

**ON A/C ALL

Post SB 28-2049 For A/C 001-003,

B. Test

ACTION	RESULT
1. On the Maintenance Panel 472VU: - Put the ANN LT switch in the TEST position.	On the Maintenance Panel 472VU: - The FAULT legend on the scavenge system annunciator comes on.
- Put the ANN LT switch in the OFF position.	- The FAULT legend on the scavenge system annunciator goes off.
- Push (in) the MFA RESET switch.	

**ON A/C ALL

Post SB 28-2049 For A/C 001-003,

2. On panel 430VU: - Push (in) all the INR TK PUMP p/bsw's.	On panel 430VU: - The OFF legends on the INR TK PUMP p/bsw's go off. - The FAULT legends on the INR TK PUMP p/bsw's come on.
- Push (in) the two CTR TK PUMP p/bsw's.	- The OFF legends on the two CTR TK PUMP p/bsw's go off - The FAULT legends on the two CTR TK PUMP p/bsw's come on.

NOTE : The aircraft is now in this condition:
- the fuel feed sequence is in AUTO
- the calibration fuel sensors in the inner-tanks and the trim-tank, are wet with fuel
- the inner-tank and trim-tank scavenge pumps are isolated.

3. On the Maintenance Panel 472VU: - put the ANN LT switch in the READ position.	On the Maintenance Panel 472VU: - the FAULT legend on the scavenge system annunciator comes on.

NOTE : The FAULT legend on the scavenge system annunciator (17QQ) comes on because the scavenge pumps should operate, but the circuit breakers

ACTION	RESULT
that control them (1QQ, 2QQ and 3QQ) are in the open position.	
4. On panel 430VU: - release (out) the two CTR TK PUMP p/bsw's.	On panel 430VU; - The FAULT legends on the two CTR TK PUMP p/bsw's go off. - The OFF legends on the two CTR TK PUMP p/bsw's come on.
NOTE : The auto fuel feed sequence is unlatched.	
5. On the Maintenance Panel 472VU: - push (in) the MFA RESET switch.	On the Maintenance Panel 472VU: - the FAULT legend on the scavenge system annunciator, goes off.
6. On panel 132VU: - close circuit breakers: 1QQ (line 325/K60), 2QQ (line 325/K61), 3QQ (line 325/K62).	In the inner-tanks and the trim-tank: - all the scavenge pumps are now ready to operate.
7. On panel 430VU: - push (in) the two CTR TK PUMP p/bsw's.	On panel 430VU: - the OFF legends on the two CTR TK PUMP p/bsw's go off - the FAULT legends on the two CTR TK PUMP p/bsw's come on In the inner-tanks and the trim-tank: - all the scavenge pumps operate.
NOTE : The aircraft is now in this condition: - the fuel feed sequence is in auto - the calibration fuel sensors in the inner-tanks and the trim-tank, are wet with fuel - the inner-tank and the trim-tank scavenge pumps, are operational.	
8. On the Maintenance Panel 472VU: - with the ANN LT switch in the READ position.	On the Maintenance Panel 472VU: - the FAULT legend on the scavenge system annunciator, stays off.
NOTE : This confirms that the scavenge pumps operate normally.	

**ON A/C ALL

Post SB 28-2049 For A/C 001-003,

9. On panel 110VU:

ACTION	RESULT
- Lift the guards and put all the **REFUEL-DEFUEL-VALVES** switches in the **SHUT** position. - Put the **MODE SELECTOR/SELECT** switch in the **REFUEL** position.	

**ON A/C ALL

Post SB 28-2049 For A/C 001-003,

ACTION	RESULT
Test the trim-tank scavenge pump:	
10. On panel 132VU: - open the circuit breaker 3QQ (line 325/K62).	In the trim-tank: - the scavenge pump (14QQ) is isolated.
11. On the Maintenance Panel 472VU: - with the ANN LT switch in the READ position.	On the Maintenance panel 472VU: - the FAULT legend on the scavenge system annunciator, comes on.
NOTE : The FAULT legend comes on because the trim-tank scavenge pump should operate, but it is isolated from the system.	
12. On panel 430VU: - Make sure that the TRIM TK ISOL VALVE p/bsw is pushed (in) and the flowbar is on.	In the trim-tank: - the trim-tank isolation valve is open.
- Push (in) the TRIM TK AUTO MODE p/bsw.	On panel 430VU: - the TRIM TK AUTO MODE p/bsw FWD legend comes on. In the center tank: - the transfer control valve and the auxiliary transfer valve, open.
- Push (in) the TRIM TK PUMP 1 and 2 p/bsw's.	On panel 430VU: - the TRIM TK PUMP 1 and 2 p/bsw OFF legends go off. In the trim-tank: - the fuel booster pumps operate.
13. Transfer all the fuel from the trim-tank into the center-tank until the TRIM TK PUMP 1 and 2 p/bsw LO PR legends on panel 430VU, stay on.	
14. On panel 430VU: - Release (out) the TRIM TK PUMP 1 and 2 p/bsw's.	On panel 430VU: - the TRIM TK PUMP 1 and 2 p/bsw LO PR legends go off and the OFF legends come on. In the trim-tank: - the fuel booster pumps stop.

ACTION	RESULT
- Release (out) the **TRIM TK AUTO MODE** p/bsw.	On panel 430VU: - the **TRIM TK AUTO MODE** p/bsw **FWD** legend goes off. In the center-tank: - the transfer control valve, and the auxiliary transfer valve, close.
15.On the Maintenance Panel 472VU: - push (in) the **MFA RESET** switch.	On the Maintenance Panel 472VU: - the **FAULT** legend on the scavenge system annunciator, goes off.

NOTE : The **FAULT** legend goes off even though the trim-tank scavenge pump is isolated from the system because when the calibration sensors are dry the scavenge system does not operate.

**ON A/C ALL

Post SB 28-2049 For A/C 001-003,

16.On panel 110VU: - put the **CTR TK** and the **TRIM TK REFUEL-DEFUEL-VALVES** switches in the **OPEN** position.	In the center-tank: - the center-tank and the trim-tank refuel/defuel valves, open. In the trim-tank: - the refuel/transfer valve, opens.
- lift the guard and put the **TRANSF. VALVE** switch in the **OPEN** position.	On panel 110VU: - the **TRANSF. VALVE OPEN** legend comes on.

NOTE : When the inner-tanks are not refueled to high level, the center-tank refuel/defuel valve must be selected open to let the trim-tank refuel/defuel valve open.

**ON A/C ALL

Post SB 28-2049 For A/C 001-003,

17.On panel 132VU: - open the circuit breaker **65QA** (line **323/M55**)	- removes the auto feed control
- open the circuit breaker **2QU** (line **321/P55**).	On panel 110VU: - the **TRANSF. VALVE OPEN** legend goes off.

ACTION	RESULT
NOTE : The TRANSF. VALVE is now locked in the open position to let the fuel booster pumps transfer fuel from the center tank to the trim-tank.	
**ON A/C ALL	
Post SB 28-2049 For A/C 001-003,	
18.On panel 101VU: - remove the safety clips and tags and close the circuit breakers 99QA (line ESS1/B04) 100QA (line GEN2/B17).	On panel 430VU: - the L and R CTR TK PUMP p/bsw FAULT legends go off. In the center-tank: - the fuel booster pumps operate.
**ON A/C ALL	
Post SB 28-2049 For A/C 001-003,	
19.Transfer between 1500 kg and 2000 kg of fuel from the center-tank into the trim-tank.	
**ON A/C ALL	
Post SB 28-2049 For A/C 001-003,	
NOTE : Some of the fuel will recirculate into the center-tank, continue until the required amount of fuel has been transferred into the trim-tank.	
20.On panel 101VU: - open, safety and tag the circuit breakers 99QA (line ESS1/B04) and 100QA (line GEN2/B17).	On panel 430VU: - the L and R CTR TK PUMP p/bsw FAULT legends come on. In the center-tank: - the fuel booster pumps stop.
**ON A/C ALL	
Post SB 28-2049 For A/C 001-003,	
21.On panel 110VU:	In the center-tank:

ACTION	RESULT
- put the CTR TK and the TRIM TK REFUEL-DEFUEL-VALVES switches in the SHUT position.	- the center-tank and trim-tank refuel/defuel valves, close In the trim-tank: - the refuel/transfer valve, closes.
22.On panel 132VU: - close the circuit breaker 65QA (line 323/M55)	- reconnects the auto feed control
- close the circuit breaker 2QU (line 321/P55).	On panel 110VU: - the TRANSF. VALVE OPEN legend comes on then goes off.
NOTE : The TRANSF. VALVE is now shut because of the refuel inhibit interlocks of the trim tank.	
**ON A/C ALL	
Post SB 28-2049 For A/C 001-003,	
23.On the Maintenance Panel 472VU: - with the ANN LT switch in the READ position.	On the Maintenance Panel 472VU: - the FAULT legend on the scavenge system annunciator, comes on.
24.On panel 132VU: - close the circuit breaker 3QQ (line 325/K62).	In the trim-tank: - the scavenge pump (14QQ) is re-connected.
25.On the Maintenance Panel 472VU: - push (in) the MFA RESET switch.	On the Maintenance Panel 472VU: - the FAULT legend on the scavenge system annunciator, goes off.
26.On panel 430VU: - Make sure that the TRIM TK ISOL VALVE p/bsw is pushed (in) and the flowbar is on.	In the trim-tank: - the trim-tank isolation valve is open.
- Push (in) the TRIM TK AUTO MODE p/bsw.	On panel 430VU: - the TRIM TK AUTO MODE p/bsw FWD legend comes on. In the center tank: - the transfer control valve and the auxiliary transfer valve, open.
- Push (in) the TRIM TK PUMP 1 and 2 p/bsw's.	On panel 430VU: - the TRIM TK PUMP 1 and 2 p/bsw OFF legends go off.

ACTION	RESULT
	In the trim-tank: - the fuel booster pumps operate.
27. Transfer all the fuel from the trim-tank into the center-tank until the **TRIM TK PUMP** 1 and 2 p/bsw **LO PR** legends on panel **430VU**, stay on.	
28. On panel **430VU**: - Release (out) the **TRIM TK PUMP** 1 and 2 p/bsw's.	On panel **430VU**: - the **TRIM TK PUMP** 1 and 2 p/bsw **LO PR** legends go off and the **OFF** legends come on. In the trim-tank: - the fuel booster pumps stop.
- Release (out) the **TRIM TK AUTO MODE** p/bsw.	On panel **430VU**: - the **TRIM TK AUTO MODE** p/bsw **FWD** legend goes off. In the center-tank: - the transfer control valve, and the auxiliary transfer valve, close.

**ON A/C ALL

Post SB 28-2049 For A/C 001-003,

ACTION	RESULT
Test the LH inner-tank scavenge pump:	
29.On panel 132VU: - open the circuit breaker 1QQ (line 325/K60). - open then close the circuit breaker 13QQ (line 325/K63).	In the LH inner-tank: - the LH scavenge pump (11QQ) is isolated. - the relays 15QQ and 16QQ are/stay unlatched.
30.On the Maintenance Panel 472VU: - with the ANN LT switch in the READ position.	On the Maintenance panel 472VU: - the FAULT legend on the scavenge system annunciator, comes on.

NOTE : The FAULT legend comes on because the left inner-tank scavenge pump should operate, but it is isolated from the system.

**ON A/C ALL

Post SB 28-2049 For A/C 001-003,

31.On panel 110VU: - put the CTR TK REFUEL-DEFUEL-VALVES switch in the OPEN position.	In the center-tank: - the refuel/defuel valve, opens.

**ON A/C ALL

Post SB 28-2049 For A/C 001-003,

32.On panel 132VU: - open the circuit breaker 65QA (line 323/M55).	- removes the auto feed control and lets the inner and center tank pumps run independently when selected.
33.On panel 101VU:	On panel 430VU:

ACTION	RESULT
- remove the safety clips and tags and close the circuit breakers 1QA (line ESS1/B01) 7QA (line GEN2/A23).	- the LH INR TK PUMP 1 and 2 p/bsw FAULT legends go off. In the LH inner-tank: - the fuel booster pumps operate.
34. Transfer all the fuel from the LH inner-tank into the center-tank until the LH INR TK PUMP p/bsw FAULT legends on panel 430VU, come on.	
35. On panel 101VU: - open, safety and tag the circuit breakers 1QA (line ESS1/B01) and 7QA (line GEN2/A23).	In the LH inner-tank: - the fuel booster pumps stop On panel 430VU: - the fault legends come on.
**ON A/C ALL	
Post SB 28-2049 For A/C 001-003,	
36. On panel 110VU: - put the CTR TK REFUEL-DEFUEL-VALVES switch in the SHUT position.	In the center-tank: - the refuel/defuel valve, closes.
**ON A/C ALL	
Post SB 28-2049 For A/C 001-003,	
37. On panel 132VU: - close the circuit breaker 65QA (line 323/M55).	- reconnects the auto feed control
38. On the Maintenance Panel 472VU: - push (in) the MFA RESET switch.	On the Maintenance Panel 472VU: - the FAULT legend on the scavenge system annunciator, goes off.
NOTE : The FAULT legend goes off even though the left inner-tank scavenge pump is isolated from the system because when the calibration sensors are dry the scavenge system does not operate.	
39. On panel 132VU: - open the circuit breaker	- removes the auto feed control and

ACTION	RESULT
65QA (line 323/M55).	lets the inner and center tank pumps run independently when selected.
**ON A/C ALL	
Post SB 28-2049 For A/C 001-003,	
40. On panel 110VU: - put the L INNER TK REFUEL-DEFUEL-VALVES switch in the OPEN position.	In the LH inner-tank: - the refuel/defuel valve, opens.
**ON A/C ALL	
Post SB 28-2049 For A/C 001-003,	
41. On panel 101VU: - remove the safety clips and tags and close the circuit breakers 99QA (line ESS1/B04) 100QA (line GEN2/B17).	On panel 430VU: - the L and R CTR TK PUMP p/bsw FAULT legends go off. In the center-tank: - the fuel booster pumps operate.
**ON A/C ALL	
Post SB 28-2049 For A/C 001-003,	
42. Transfer between 1500 kg and 2000 kg of fuel from the center-tank into the LH inner-tank.	
**ON A/C ALL	
Post SB 28-2049 For A/C 001-003,	
43. On panel 101VU: - open, safety and tag the circuit breakers 99QA (line ESS1/B04) and 100QA (line GEN2/B17).	On panel 430VU: - the L and R CTR TK PUMP p/bsw FAULT legends come on. In the center-tank: - the fuel booster pumps stop.

ACTION	RESULT
**ON A/C ALL	
Post SB 28-2049 For A/C 001-003,	
44.On panel 110VU: - put the L INNER TK REFUEL-DEFUEL-VALVES switch in the SHUT position.	In the LH inner-tank: - the refuel/defuel valve, closes.
**ON A/C ALL	
Post SB 28-2049 For A/C 001-003,	
45.On panel 132VU: - close the circuit breakers 65QA (line 323/M55) 1QQ (line 325/K60).	- reconnects the auto feed control In the LH inner-tank: - the LH scavenge pump (11QQ) is reconnected
46.On the Maintenance Panel 472VU: - with the ANN LT switch in the READ position.	On the Maintenance Panel 472VU: - the FAULT legend on the scavenge system annunciator, stays off.
47.On panel 132VU: - open the circuit breaker 13QQ (line 325/K63).	In the inner-tanks and the trim-tank: - the scavenge pumps will not operate.
- close the circuit breaker 13QQ (line 325/K63).	- all the inner-tank scavenge pumps operate.

**ON A/C ALL

Post SB 28-2049 For A/C 001-003,

ACTION	RESULT
Test RH inner-tank scavenge pump:	
48.On panel 132VU: - Open the circuit breaker 2QQ (line 325/K61). - Open then close the circuit breaker 13QQ (line 325/K63).	In the RH inner-tank: - the RH scavenge pump (12QQ) is isolated. - the relays 15QQ and 16QQ are/stay unlatched.
49.On the Maintenance Panel 472VU: - with the ANN LT switch in the READ position.	On the Maintenance Panel 472VU: - the FAULT legend on the scavenge system annunciator, comes on.
NOTE : The FAULT legend comes on because the right inner-tank scavenge pump should operate, but it is isolated from the system.	

**ON A/C ALL

Post SB 28-2049 For A/C 001-003,

50.On panel 110VU: - put the CTR TK REFUEL-DEFUEL-VALVES switch in the OPEN position.	In the center-tank: - the refuel/defuel valve, opens.

**ON A/C ALL

Post SB 28-2049 For A/C 001-003,

51.On panel 132VU: - open the circuit breaker 65QA (line 323/M55).	- removes the auto feed control and lets the inner and center tank pumps run independently when selected.
52.On panel 101VU:	On panel 430VU:

ACTION	RESULT
- remove the safety clips and tags and close the circuit breakers 2QA (line ESS1/A01) 8QA (line GEN2/A20).	- the RH INR TK PUMP p/bsw FAULT legends go off. In the RH inner-tank: - the fuel booster pumps operate.
53. Transfer all the fuel from the RH inner-tank into the center-tank until the RH INR TK PUMP p/bsw FAULT legends on panel 430VU, come on.	
54. On panel 101VU, open, safety and tag the circuit breakers 2QA (line ESS1/A01) and 8QA (line GEN2/A20).	In the RH inner-tank: - the fuel booster pumps stop. On panel 430VU: - the fault legends come on.
**ON A/C ALL	
Post SB 28-2049 For A/C 001-003,	
55. On panel 110VU: - put the CTR TK REFUEL-DEFUEL VALVES switch in the SHUT position.	In the center-tank: - the refuel/defuel valve, closes.
**ON A/C ALL	
Post SB 28-2049 For A/C 001-003,	
56. On panel 132VU: - close the circuit breaker 65QA (line 323/M55).	- reconnects the auto feed control.
57. On the Maintenance Panel 472VU: - push (in) the MFA RESET switch.	On the Maintenance Panel 472VU: - the FAULT legend on the scavenge system annunciator, goes off.
NOTE : The FAULT legend goes off even though the right inner-tank scavenge pump is isolated from the system because when the calibration sensors are dry the scavenge system does not operate.	
58. On panel 132VU: - open the circuit breaker 65QA (line 323/M55).	- removes the auto feed control and lets the inner and center tank

ACTION	RESULT
	pumps run independently when selected.
**ON A/C ALL	
Post SB 28-2049 For A/C 001-003,	
59.On panel 110VU: - put the R INNER TK REFUEL-DEFUEL-VALVES switch in the OPEN position.	In the RH inner-tank: - the refuel/defuel valve, opens.
**ON A/C ALL	
Post SB 28-2049 For A/C 001-003,	
60.On panel 101VU: - remove the safety clips and tags and close the circuit breakers 99QA (line ESS1/B04) 100QA (line GEN2/B17).	On panel 430VU: - the CTR TK PUMP L and R p/bsw FAULT legends go off. In the center-tank: - the fuel booster pumps operate.
**ON A/C ALL	
Post SB 28-2049 For A/C 001-003,	
61.Transfer between 1500 kg and 2000 kg of fuel from the center-tank into the RH inner-tank.	
**ON A/C ALL	
Post SB 28-2049 For A/C 001-003,	
62.On panel 101VU: - open, safety and tag the circuit breakers 99QA (line ESS1/B04) and 100QA (line GEN2/B17).	On panel 430VU: - the L and R CTR TK PUMP p/bsw FAULT legends come on. In the center-tank: - the fuel booster pumps stop.

ACTION	RESULT
**ON A/C ALL	
Post SB 28-2049 For A/C 001-003,	
63.On panel 110VU: - put the R INNER TK REFUEL-DEFUEL-VALVES switch in the SHUT position.	In the RH inner-tank: - the refuel/defuel valve, closes.
**ON A/C ALL	
Post SB 28-2049 For A/C 001-003,	
64.On panel 132VU: - close the circuit breakers 65QA (line 323/M55) 2QQ (line 325/K61).	- reconnects the auto feed control In the RH inner-tank: - the RH scavenge pump (12QQ) is reconnected.
65.On the Maintenance Panel 472VU: - with the ANN LT switch in the READ position.	On the Maintenance Panel 472VU: - the FAULT legend on the scavenge system annunciator, stays off.
66.On panel 132VU: - open the circuit breaker 13QQ (line 325/K63).	In the inner-tanks and the trim-tank: - the scavenge pumps will not operate.
- close the circuit breaker 13QQ (line 325/K63).	- all the inner-tank scavenge pumps operate.
**ON A/C ALL	
Post SB 28-2049 For A/C 001-003,	

C. Close-Up
(1)On panel 430VU:
(a)Make sure that all the OUTR, INR, CTR and TRIM TK PUMP p/bsw's are released (out).
(b)Release (out) the X-FEED p/bsw. Make sure that:
- the in-line flowbar goes off
- the cross-line flowbar comes on.

(c)Make sure that the TRIM TK AUTO MODE p/bsw is released (out).
(2)On the circuit breaker panel 133VU, remove the safety clip and tag and close circuit breaker 1GB.
(3)On circuit breaker panel 132VU, make sure that circuit breakers 1QQ, 2QQ, 3QQ and 65QA are closed.
(4)On the circuit breaker panel 101VU, remove the safety clips and tags and close circuit breakers 1QA, 2QA, 7QA, 8QA, 99QA and 100QA.

**ON A/C ALL

Post SB 28-2049 For A/C 001-003,

(5)On panel 110VU:
(a)Put the MODE SELECTOR/SELECT switch in the OFF position and lower the guard.
(b)Put all the REFUEL-DEFUEL-VALVES switches in the NORM position and lower the guards.
(c)Put the TRANSF. VALVE switch in the CLOSED position and lower the guard. Make sure that the OPEN indicator light goes off.

**ON A/C ALL

Post SB 28-2049 For A/C 001-003,

(6)Refuel or defuel the aircraft to the required fuel load (Ref. 12-11-28 or 28-25-00, P. Block 301).
(7)Make sure that the work area is clean and clear of tools and all items of equipment.

**ON A/C ALL

Post SB 28-2049 For A/C 001-003,

(8)Close the access door 144DR.
(9)Not applicable.

**ON A/C ALL

Post SB 28-2049 For A/C 001-003,

(10)De-energize the aircraft electrical network (Ref. 24-41-00, P. Block 301).

**ON A/C ALL

Post SB 28-2049 For A/C 001-003,

R 5. Operational Test of Trim Tank and Inner Tanks Scavenge Fuel Pumps

NOTE : This procedure can be used to test one or more of the scavenge pumps after the removal/installation of the individual pump(s).

A. Job Set-Up

CAUTION : MAKE SURE THAT THE STABILITY OF THE AIRCRAFT BEFORE, DURING AND AT THE END OF THE TEST, STAYS IN SAFE CENTER OF GRAVITY LIMITS (REF. 05-57-11, P. BLOCK 1).

**ON A/C ALL

Post SB 28-2049 For A/C 001-003,

(1)Refuel, defuel or transfer fuel (Ref. 12-11-28 or 28-25-00, P. Block 301) to get the fuel state that follows:

TANK	L OUTR	L INR	CTR	R INR	R OUTR	TRIM
kg (min)	NIL	1500	NIL	1500	NIL	1500
kg (max)	FULL	2000	9000	2000	FULL	2000

NOTE : This amount of fuel will wet the calibration sensors and let the scavenge pumps operate during the test.

**ON A/C ALL

Post SB 28-2049 For A/C 001-003,

(2)In the flight compartment:
(a)On panel 9VU, make sure that the ENG 1 and ENG 2 HP VALVE control levers are in the OFF position.
(b)On the overhead panel 430VU, release (out) the fuel pump p/bsw's that follow:
- L OUTR TK PUMP 1
- L OUTR TK PUMP 2
- R OUTR TK PUMP 1
- R OUTR TK PUMP 2
- L INR TK PUMP 1
- L INR TK PUMP 2

- R INR TK PUMP 1
- R INR TK PUMP 2
- L CTR TK PUMP
- R CTR TK PUMP
- TRIM TK PUMP 1
- TRIM TK PUMP 2.

(c)Make sure that the circuit breakers that follow are closed:

PANEL	SERVICE	IDENT.	LOCATION
132VU	SCAVENGE SYSTEM/PUMP/CTL	13QQ	325/K63
132VU	SCAVENGE SYSTEM/PUMP/INNER L	1QQ	325/K60
132VU	SCAVENGE SYSTEM/PUMP/INNER R	2QQ	325/K61
132VU	SCAVENGE SYSTEM/PUMP/TT	3QQ	325/K62
132VU	FUEL/AUTO FEED CTL	65QA	323/M55
132VU	LIGHTING/MAINT PANEL/ANN & MFA	1WB	324/L78
132VU	LIGHTING/MAINT PANEL/ANN & MFA	22WB	324/L79

(d)Open only the circuit breaker(s) related to the water scavenge pump to be tested. Do not fit the safety clips and tags as the circuit breaker(s) will be closed during the test procedure.

PANEL	SERVICE	IDENT.	LOCATION
132VU	SCAVENGE SYSTEM/PUMP/INNER L	1QQ	325/K60
132VU	SCAVENGE SYSTEM/PUMP/INNER R	2QQ	325/K61
132VU	SCAVENGE SYSTEM/PUMP/TT	3QQ	325/K62

(e)Open, safety and tag the circuit breakers that follow:

PANEL	SERVICE	IDENT.	LOCATION
101VU	FUEL/L INR TK/PUMP 2 SUPPLY	1QA	ESS1/B01
101VU	FUEL/R INR TK/PUMP 1/SUPPLY	2QA	ESS1/A01
101VU	FUEL/L INR TK/PUMP 1 SUPPLY	7QA	GEN2/A23
101VU	FUEL/R INR TK/PUMP 2/SUPPLY	8QA	GEN2/A20
101VU	FUEL/CTR TK/L PUMP SUPPLY	99QA	ESS1/B04
101VU	FUEL/CTR TK/R PUMP SUPPLY	100QA	GEN2/B17

(3)Energize the aircraft electrical network (Ref. 24-41-00, P. Block 301).

B. Test

ACTION	RESULT
1. On the Maintenance Panel 472VU: - put the ANN LT switch in the TEST position	On the Maintenance Panel 472VU: - the FAULT legend on the scavenge system annunciator comes on
- put the ANN LT switch	- the FAULT legend on the

ACTION	RESULT
in the OFF position	scavenge system annunciator goes off
- push (in) the MFA RESET switch.	- the MFA circuit is reset.

2. On panel 430VU:
   - push (in) all the INR TK PUMP p/bsw's
   - push (in) the two CTR TK PUMP p/bsw's.

   NOTE : The aircraft is now in this condition:
   - the fuel feed sequence is in AUTO
   - the water scavenge pump(s) to be tested is (are) isolated.

3. On the Maintenance Panel 472VU:
   - put the ANN LT switch in the READ position.

   On the Maintenance Panel 472VU:
   - the FAULT legend on the scavenge system annunciator comes on.

   NOTE : The FAULT legend on the scavenge system annunciator (17QQ) comes on because the scavenge pump(s) should operate, but the circuit breaker (either 1QQ, 2QQ or 3QQ) that controls the pump in test is open. This simulates a failure of the pump.

4. On panel 430VU:
   - release (out) the two CTR TK PUMP p/bsw's.

   NOTE : The auto fuel feed sequence is unlatched.

5. On the Maintenance Panel 472VU:
   - push (in) the MFA RESET switch.

   On the Maintenance Panel 472VU:
   - the FAULT legend on the scavenge system annunciator, goes off.

6. On panel 132VU:
   - close the circuit breaker(s)
R 1QQ and/or 2QQ and/or 3QQ, that
R you opened before the start of
R the test.

7. On panel 430VU:
   - push (in) the two CTR TK PUMP p/bsw's.

   NOTE : The aircraft is now in this condition:
   - the fuel feed sequence is in auto
   - the water scavenge pump(s) to be tested is (are) now operational.

8. On the Maintenance Panel 472VU:

   On the Maintenance Panel 472VU:

ACTION	RESULT
- with the ANN LT switch in the READ position.	- the FAULT legend on the scavenge system annunciator, stays off.

NOTE : This confirms that the scavenge pumps operate normally. If the fault legend is on after the test then do the alternative procedure
R for testing the scavenge fuel pumps (Ref. Para 4.A.).

C. Close-Up
(1)On panel 430VU:
(a)Make sure that all the OUTR, INR, CTR and TRIM TK PUMP p/bsw's are released (out).
(2)On circuit breaker panel 132VU, make sure that circuit breaker 1QQ, 2QQ, 3QQ and 65QA are closed.
(3)On the circuit breaker panel 101VU, remove the safety clips and tags and close circuit breakers 1QA, 2QA, 7QA, 8QA, 99QA and 100QA.
(4)Make sure that the work area is clean and clear of tools and all other items of equipment.
(5)De-energize the aircraft electrical network (Ref. 24-41-00, P. Block 301).

R **ON A/C ALL

Post SB 28-2049 For A/C 001-003,

JET PUMP - REMOVAL/INSTALLATION

**ON A/C ALL

Post SB 28-2049 For A/C 001-003,

WARNING :MAKE SURE THAT THE GROUND SAFETY-LOCKS ARE IN POSITION ON THE LANDING GEAR.

WARNING :PUT THE SAFETY DEVICES AND THE WARNING NOTICES IN POSITION BEFORE YOU START A TASK ON OR NEAR:
- THE FLIGHT CONTROLS
- THE FLIGHT CONTROL SURFACE
- THE LANDING GEAR AND THE RELATED DOORS
- COMPONENTS THAT MOVE.

WARNING :OBEY THE SAFETY PRECAUTIONS IN 28-00-00, P. BLOCK 301. AND 28-10-00, P. BLOCK 301.

WARNING :MAKE SURE THAT YOU HAVE THE CORRECT FIRE FIGHTING EQUIPMENT AVAILABLE.

WARNING :MAKE SURE THAT ALL THE CIRCUITS IN MAINTENANCE ARE ISOLATED BEFORE YOU SUPPLY ELECTRICAL POWER TO THE AIRCRAFT.

**ON A/C ALL

Post SB 28-2049 For A/C 001-003,

1. Inner Tank Jet Pump

A. Equipment and Materials

ITEM	DESIGNATION
A.	Access Platform 4.5 m (15 ft)
B.	Blanking Caps

Referenced Procedures

- 12-11-28, P. Block 301	Replenishing of Fuel Tanks
- 28-00-00, P. Block 301	Fuel
- 28-10-00, P. Block 301	Storage

ITEM	DESIGNATION
- 28-11-22, P. Block 401	Wing Manhole Covers
- 28-25-00, P. Block 301	Refuel/Defuel System

B. Procedure

(1)Job Set-Up

(a)Put the access platform in position.

(b)Move or drain the fuel from the inner wing tanks (Ref. 28-25-00, P. Block 301).

(c)Remove the manhole covers from the inner wing tank (Ref. 28-11-22, P. Block 401).

**ON A/C ALL

Post SB 28-2049 For A/C 001-003,

(2)Removal

**ON A/C ALL

Post SB 28-2049 For A/C 001-003,

(Ref. Fig. 401)

**ON A/C ALL

Post SB 28-2049 For A/C 001-003,

(a)Disconnect the coupling nuts (1) and (2) of the pipe assemblies and install the blanking caps on the coupling nuts (1) and (2).

(b)Remove the nuts (3), the washers (4), the bolts (5) and the washers (6).

(c)Move the ends of the bonding leads (7) and (8) away from the jet pump (9).

(d)Remove the jet pump (9) from the bracket (10).

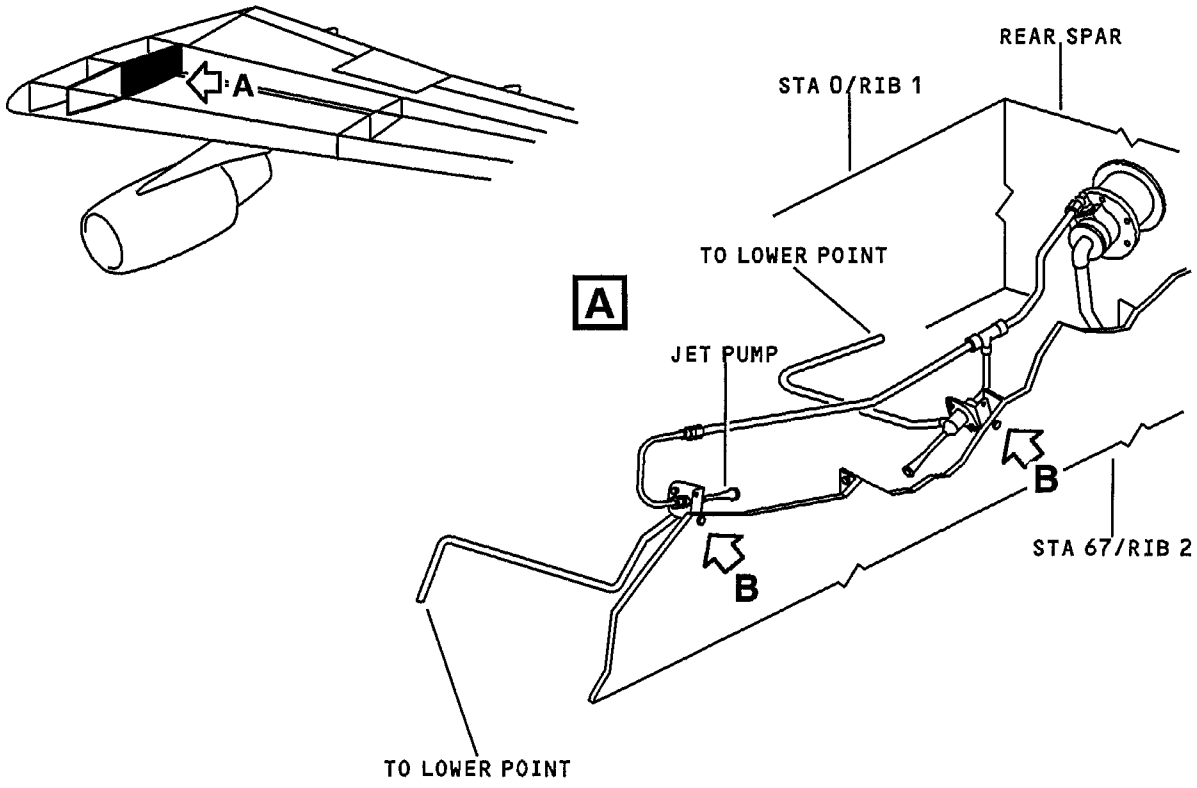
**ON A/C ALL

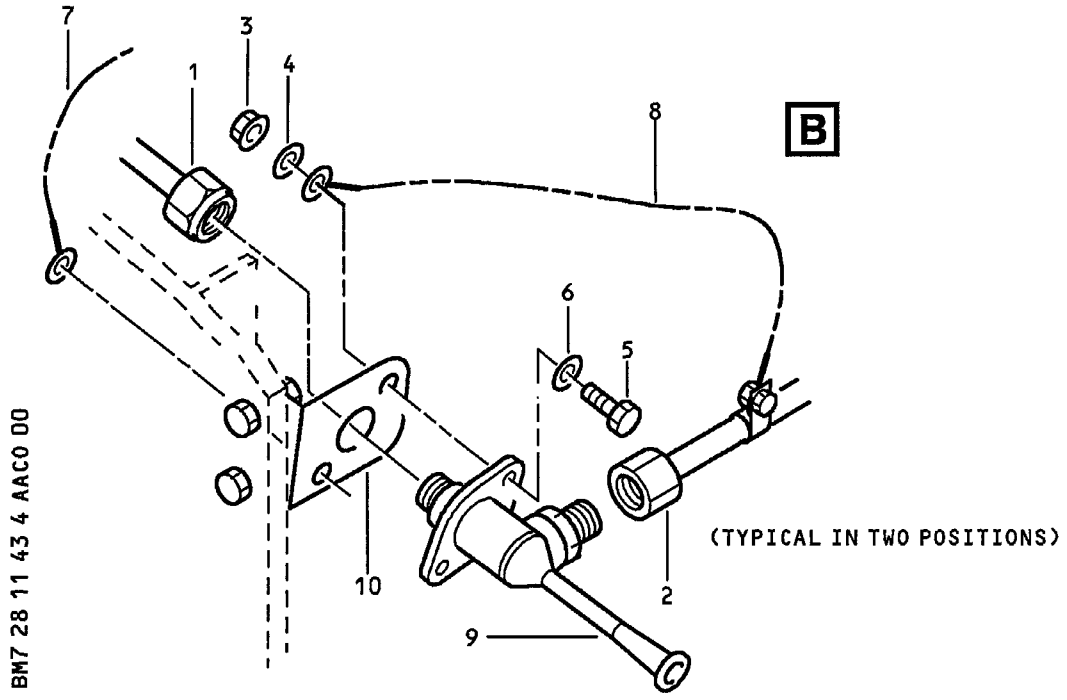
Post SB 28-2049 For A/C 001-003,

(3)Preparation for Installation

(a)Make sure that the replacement component is clean.

(b)Examine the replacement component and make sure that the mechanical condition and protective finish are correct.





Inner Wing Tank Jet Pump - Removal/Installation
Figure 401

**ON A/C ALL

Post SB 28-2049 For A/C 001-003,

(4)Installation
(a)Install the jet pump (9) to the bracket (10).
(b)Install the bolts (5) and the washers (6).
(c)Install the bonding leads (7) and (8) to the bolts (5).
(d)Install the washers (4) and the nuts (3). Tighten the nuts.
(e)Remove the blanking caps from the coupling nuts (1) and (2).
(f)Connect the coupling nuts (1) and (2) of the pipe assemblies to the jet pump (9). Tighten the coupling nuts (1) and (2).

**ON A/C ALL

Post SB 28-2049 For A/C 001-003,

(5)Close-Up
(a)Make sure that the work area is clean and clear of tools and test equipment.
(b)Install the manhole covers for the inner wing tank (Ref. 28-11-22, P. Block 401).
(c)Remove the warning notices.
(d)Refuel the inner wing tanks (Ref. 12-11-28, P. Block 301). Examine for leakage of fuel at the manhole covers.
(e)Remove the access platform.

R **ON A/C ALL

R Post SB 28-2049 For A/C 001-003,

2. Trim Tank Jet Pump

A. Equipment and Materials

ITEM	DESIGNATION
A.	Access Platform 6m (19.6 ft)
B.	Blanking Caps

Referenced Procedures

- 12-11-28, P. Block 301	Replenishing of Fuel Tanks
- 28-00-00, P. Block 301	Fuel
- 28-10-00, P. Block 301	Storage
- 28-11-33, P. Block 401	Trim Tank Manhole Covers
- 28-25-00, P. Block 301	Refuel/Defuel System

B. Procedure

(1)Job Set-Up

(a)Put the access platform in position.

(b)Move or drain the fuel from the trim tank (Ref. 28-25-00, P. Block 301).

(c)Remove the manhole covers from the central compartment of the trim tank (Ref. 28-11-33, P. Block 401).

R **ON A/C ALL

R Post SB 28-2049 For A/C 001-003,

(2)Removal

R **ON A/C ALL

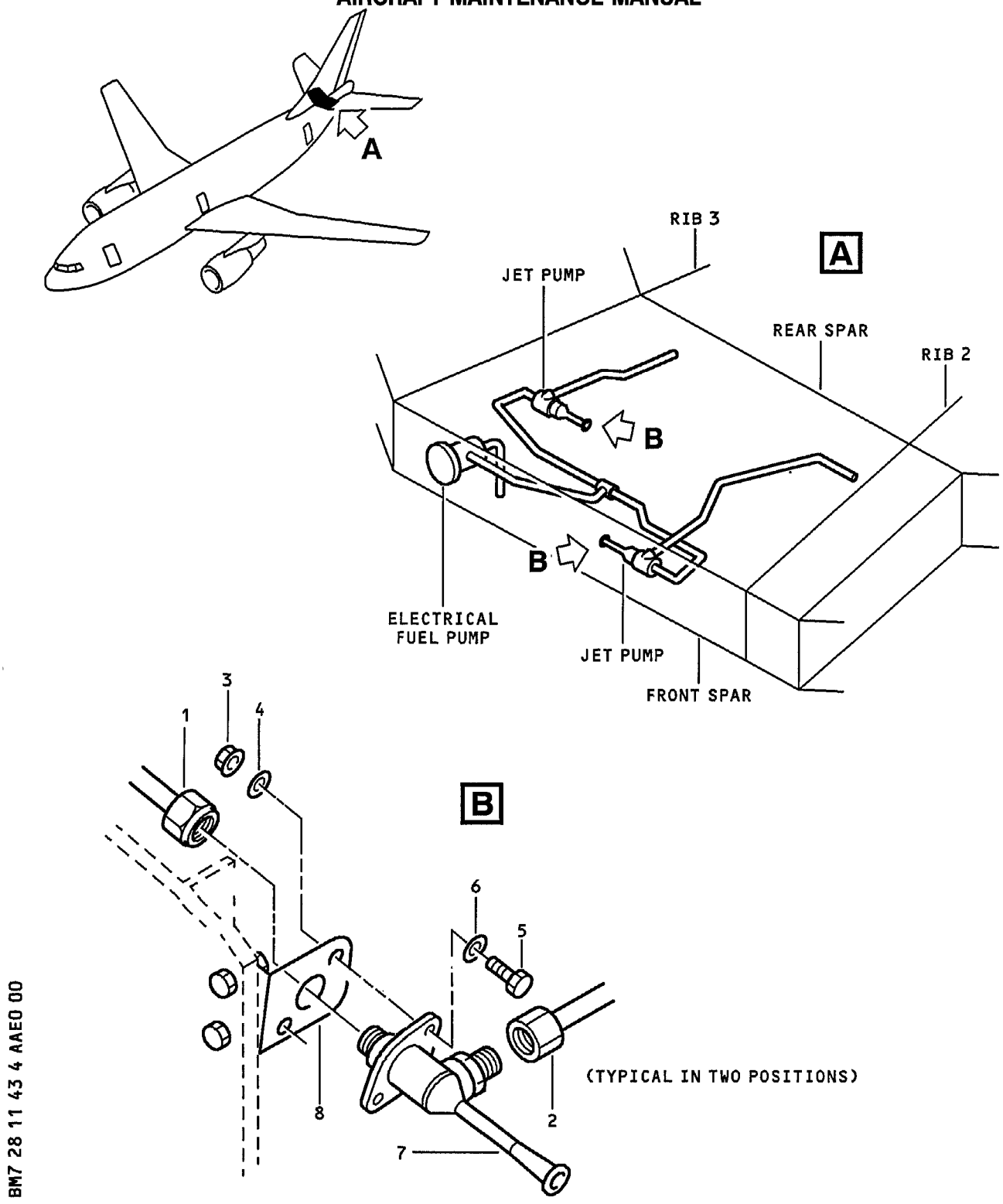
R Post SB 28-2049 For A/C 001-003,

(Ref. Fig. 402)

R **ON A/C ALL

R Post SB 28-2049 For A/C 001-003,

(a)Disconnect the coupling nuts (1) and (2) of the pipe assemblies and install the blanking caps on the coupling nuts (1) and (2).



Trim Tank Jet Pump - Removal/Installation
Figure 402

(b)Remove the nuts (3), the washers (4), the bolts (5) and the washers (6).
(c)Remove the jet pump (7) from the bracket (8).

R **ON A/C ALL

R Post SB 28-2049 For A/C 001-003,

(3)Preparation for Installation
(a)Make sure that the replacement component is clean.
(b)Examine the replacement component and make sure that the mechanical condition and protective finish are correct.

R **ON A/C ALL

R Post SB 28-2049 For A/C 001-003,

(4)Installation
(a)Install the jet pump (7) to the bracket (8).
(b)Install the bolts (5) and the washers (6).
(c)Install the washers (4) and the nuts (3). Tighten the nuts (3).
(d)Remove the blanking caps from the coupling nuts (1) and (2).
(e)Install the coupling nuts (1) and (2) of the pipe assemblies to the jet pump (7). Tighten the coupling nuts (1) and (2).

R **ON A/C ALL

R Post SB 28-2049 For A/C 001-003,

(5)Close-Up
(a)Make sure that the working area is clean and clear of tools and test equipment.
(b)Install the manhole covers to the central compartment of the trim tank (Ref. 28-11-33, P. Block 401).
(c)Remove the warning notices.
(d)Refuel the trim tanks (Ref. 12-11-28, P. Block 301). Examine for leakage of fuel at the manhole covers.
(e)Remove the access platform.

TANK VENTING SYSTEM - DESCRIPTION AND OPERATION

1. General

The fuel tank venting system ensures that the pressure within the tanks is kept within the design limits:
- during climb and descent maneuvers including emergencies
- when refueling and defueling
- if overfilling occurs when refueling.

2. Component Location

**ON A/C 001-100,

(Ref. Fig. 001)

**ON A/C 101-200,

(Ref. Fig. 002)

**ON A/C 101-200,

Post SB 28-2105 For A/C 101-200,

R Post SB 28-2126 For A/C 104-104,

(Ref. Fig. 003)

**ON A/C ALL

(Ref. Fig. 004)

**ON A/C 001-100,

FIN	FUNCTIONAL DESIGNATION	PANEL	ZONE	ACCESS DOOR	ATA REF
280052	PROTECTOR - OVERPRESSURE, CENTER TANK, L		141	147AZ	28-12-17
280053	PROTECTOR - OVERPRESSURE, CENTER TANK, R		142	148AZ	28-12-17
280202	INTAKE - NACA, AND VENT PROTECTOR, L		560	560AB	28-12-21
280203	INTAKE - NACA, AND VENT PROTECTOR, R		660	660AB	28-12-21
280204	PROTECTOR - OVERPRESSURE, VENT SURGE TANK, L		560	560AB	28-12-15
280205	PROTECTOR - OVERPRESSURE, VENT SURGE TANK, R		660	660AB	28-12-15
280376	VALVE - VENT FLOAT, L INR TK		540	540HB	28-12-22
280377	VALVE - VENT FLOAT, R INR TK		640	640HB	28-12-22

FIN	FUNCTIONAL DESIGNATION	PANEL	ZONE	ACCESS DOOR	ATA REF
280378	VALVE - VENT FLOAT, L OUTR TK		550	550PB	28-12-22
280379	VALVE - VENT FLOAT, R OUTR TK		650	650PB	28-12-22
280450	PROTECTOR - OVERPRESSURE, TRIM TANK		343	343GB	28-12-32
280451	VALVE - VENT FLOAT, TRIM TANK, L		333	333BB	28-12-34
280452	VALVE - VENT FLOAT, TRIM TANK, R INBOARD		343	343BB	28-12-34
280453	VALVE - VENT FLOAT, TRIM TANK, R OUTBOARD		343	343GB	28-12-34
280454	VALVE - VENT FLOAT, ANTI SIPHON		333	333GB	28-12-35
	CHECK VALVE - FUEL DRAIN		343	343GB	28-12-36
	CHECK VALVE - VENTING AIR, TRIM TANK		319	319AZ	28-12-31
	CHECK VALVE - VENTING AIR, TRIM TANK		319	319BZ	28-12-31
	CHECK VALVE - VENTING AIR, TRIM TANK		319	319AZ	28-12-31
	CHECK VALVE - VENTING AIR, TRIM TANK		319	319BZ	28-12-31
	CHECK VALVE - VENTING AIR, TRIM TANK		333	333BB	28-12-31
	CHECK VALVE - VENTING AIR, L INR TK		540	540AB	28-12-12
	CHECK VALVE - VENTING AIR, R INR TK		640	640AB	28-12-12
	CHECK VALVE - VENTING AIR, L INR TK		540	540HB	28-12-12
	CHECK VALVE - VENTING AIR, R INR TK		640	640HB	28-12-12
	CHECK VALVE - VENTING AIR, L OUTR TK		550	550BB	28-12-12
	CHECK VALVE - VENTING AIR, R OUTR TK		650	650BB	28-12-12
	INTAKE - NACA, AND VENT PROTECTOR, TRIM TANK		343	343GB	28-12-33
	INTAKE - NACA, L VENT SURGE TANK		560	560AB	28-12-21
	INTAKE - NACA, R VENT SURGE TANK		660	660AB	28-12-21
	PROTECTOR - OVERPRESSURE, INNER TANK, L		540	540HB	28-12-16
	PROTECTOR - OVERPRESSURE, INNER TANK, R		640	640HB	28-12-16

**ON A/C 101-200,

FIN	FUNCTIONAL DESIGNATION	PANEL	ZONE	ACCESS DOOR	ATA REF
280052	PROTECTOR - OVERPRESSURE, CENTER TANK, L		141	147AZ	28-12-17
280053	PROTECTOR - OVERPRESSURE, CENTER TANK, R		142	148AZ	28-12-17
280202	INTAKE - NACA, AND VENT PROTECTOR, L		560	560AB	28-12-21
280203	INTAKE - NACA, AND VENT PROTECTOR, R		660	660AB	28-12-21
280204	PROTECTOR - OVERPRESSURE, VENT SURGE TANK, L		560	560AB	28-12-15
280205	PROTECTOR - OVERPRESSURE, VENT SURGE TANK, R		660	660AB	28-12-15
280266	VALVE - NON RETURN, ACT		152		28-12-43
280268	VENT VALVE - ACT		152		28-12-42
280273	VENT VALVE ACTUATOR - ACT		152		28-12-42
280376	VALVE - VENT FLOAT, L INR TK		540	540HB	28-12-22
280377	VALVE - VENT FLOAT, R INR TK		640	640HB	28-12-22
280378	VALVE - VENT FLOAT, L OUTR TK		550	550PB	28-12-22

FIN	FUNCTIONAL DESIGNATION	PANEL	ZONE	ACCESS DOOR	ATA REF
280379	VALVE - VENT FLOAT, R OUTR TK		650	650PB	28-12-22
280450	PROTECTOR - OVERPRESSURE, TRIM TANK		343	343GB	28-12-32
280451	VALVE - VENT FLOAT, TRIM TANK, L		333	333BB	28-12-34
280452	VALVE - VENT FLOAT, TRIM TANK, R INBOARD		343	343BB	28-12-34
280453	VALVE - VENT FLOAT, TRIM TANK, R OUTBOARD		343	343GB	28-12-34
280454	VALVE - VENT FLOAT, ANTI SIPHON		333	333GB	28-12-35
	CHECK VALVE - FUEL DRAIN		343	343GB	28-12-36
	CHECK VALVE - VENT DUCT, ACT		152		28-12-18
	CHECK VALVE - VENTING AIR, TRIM TANK		319	319AZ	28-12-31
	CHECK VALVE - VENTING AIR, TRIM TANK		319	319BZ	28-12-31
	CHECK VALVE - VENTING AIR, TRIM TANK		319	319AZ	28-12-31
	CHECK VALVE - VENTING AIR, TRIM TANK		319	319BZ	28-12-31
	CHECK VALVE - VENTING AIR, TRIM TANK		333	333BB	28-12-31
	CHECK VALVE - VENTING AIR, L INR TK		540	540AB	28-12-12
	CHECK VALVE - VENTING AIR, R INR TK		640	640AB	28-12-12
	CHECK VALVE - VENTING AIR, L INR TK		540	540HB	28-12-12
	CHECK VALVE - VENTING AIR, R INR TK		640	640HB	28-12-12
	CHECK VALVE - VENTING AIR, L OUTR TK		550	550BB	28-12-12
	CHECK VALVE - VENTING AIR, R OUTR TK		650	650BB	28-12-12
	INTAKE - NACA, AND VENT PROTECTOR, TRIM TANK		343	343GB	28-12-33
	INTAKE - NACA, L VENT SURGE TANK		560	560AB	28-12-21
	INTAKE - NACA, R VENT SURGE TANK		660	660AB	28-12-21
	PROTECTOR - OVERPRESSURE, INNER TANK, L		540	540HB	28-12-16
	PROTECTOR - OVERPRESSURE, INNER TANK, R		640	640HB	28-12-16

**ON A/C 101-200,

Post SB 28-2105 For A/C 101-200,

R Post SB 28-2126 For A/C 104-104,

FIN	FUNCTIONAL DESIGNATION	PANEL	ZONE	ACCESS DOOR	ATA REF
280052	PROTECTOR - OVERPRESSURE, CENTER TANK, L		141	147AZ	28-12-17
280053	PROTECTOR - OVERPRESSURE, CENTER TANK, R		142	148AZ	28-12-17
280202	INTAKE - NACA, AND VENT PROTECTOR, L		560	560AB	28-12-21
280203	INTAKE - NACA, AND VENT PROTECTOR, R		660	660AB	28-12-21
280204	PROTECTOR - OVERPRESSURE, VENT SURGE TANK, L		560	560AB	28-12-15
280205	PROTECTOR - OVERPRESSURE, VENT SURGE TANK, R		660	660AB	28-12-15

FIN	FUNCTIONAL DESIGNATION	PANEL	ZONE	ACCESS DOOR	ATA REF
280266	VALVE - NON RETURN, ACT		152		28-12-43
280268	VENT VALVE - ACT		152		28-12-42
280269	VENT VALVE - ACT		152		28-12-42
280273	VENT VALVE ACTUATOR - ACT		152		28-12-42
280274	VENT VALVE ACTUATOR - ACT		152		28-12-42
280376	VALVE - VENT FLOAT, L INR TK		540	540HB	28-12-22
280377	VALVE - VENT FLOAT, R INR TK		640	640HB	28-12-22
280378	VALVE - VENT FLOAT, L OUTR TK		550	550PB	28-12-22
280379	VALVE - VENT FLOAT, R OUTR TK		650	650PB	28-12-22
280450	PROTECTOR - OVERPRESSURE, TRIM TANK		343	343GB	28-12-32
280451	VALVE - VENT FLOAT, TRIM TANK, L		333	333BB	28-12-34
280452	VALVE - VENT FLOAT, TRIM TANK, R INBOARD		343	343BB	28-12-34
280453	VALVE - VENT FLOAT, TRIM TANK, R OUTBOARD		343	343GB	28-12-34
280454	VALVE - VENT FLOAT, ANTI SIPHON		333	333GB	28-12-35
	CHECK VALVE - FUEL DRAIN		343	343GB	28-12-36
	CHECK VALVE - VENT DUCT, ACT		152		28-12-18
	CHECK VALVE - VENTING AIR, TRIM TANK		319	319AZ	28-12-31
	CHECK VALVE - VENTING AIR, TRIM TANK		319	319BZ	28-12-31
	CHECK VALVE - VENTING AIR, TRIM TANK		319	319AZ	28-12-31
	CHECK VALVE - VENTING AIR, TRIM TANK		319	319BZ	28-12-31
	CHECK VALVE - VENTING AIR, TRIM TANK		333	333BB	28-12-31
	CHECK VALVE - VENTING AIR, L INR TK		540	540AB	28-12-12
	CHECK VALVE - VENTING AIR, R INR TK		640	640AB	28-12-12
	CHECK VALVE - VENTING AIR, L INR TK		540	540HB	28-12-12
	CHECK VALVE - VENTING AIR, R INR TK		640	640HB	28-12-12
	CHECK VALVE - VENTING AIR, L OUTR TK		550	550BB	28-12-12
	CHECK VALVE - VENTING AIR, R OUTR TK		650	650BB	28-12-12
	INTAKE - NACA, AND VENT PROTECTOR, TRIM TANK		343	343GB	28-12-33
	INTAKE - NACA, L VENT SURGE TANK		560	560AB	28-12-21
	INTAKE - NACA, R VENT SURGE TANK		660	660AB	28-12-21
	PROTECTOR - OVERPRESSURE, INNER TANK, L		540	540HB	28-12-16
	PROTECTOR - OVERPRESSURE, INNER TANK, R		640	640HB	28-12-16

**ON A/C ALL

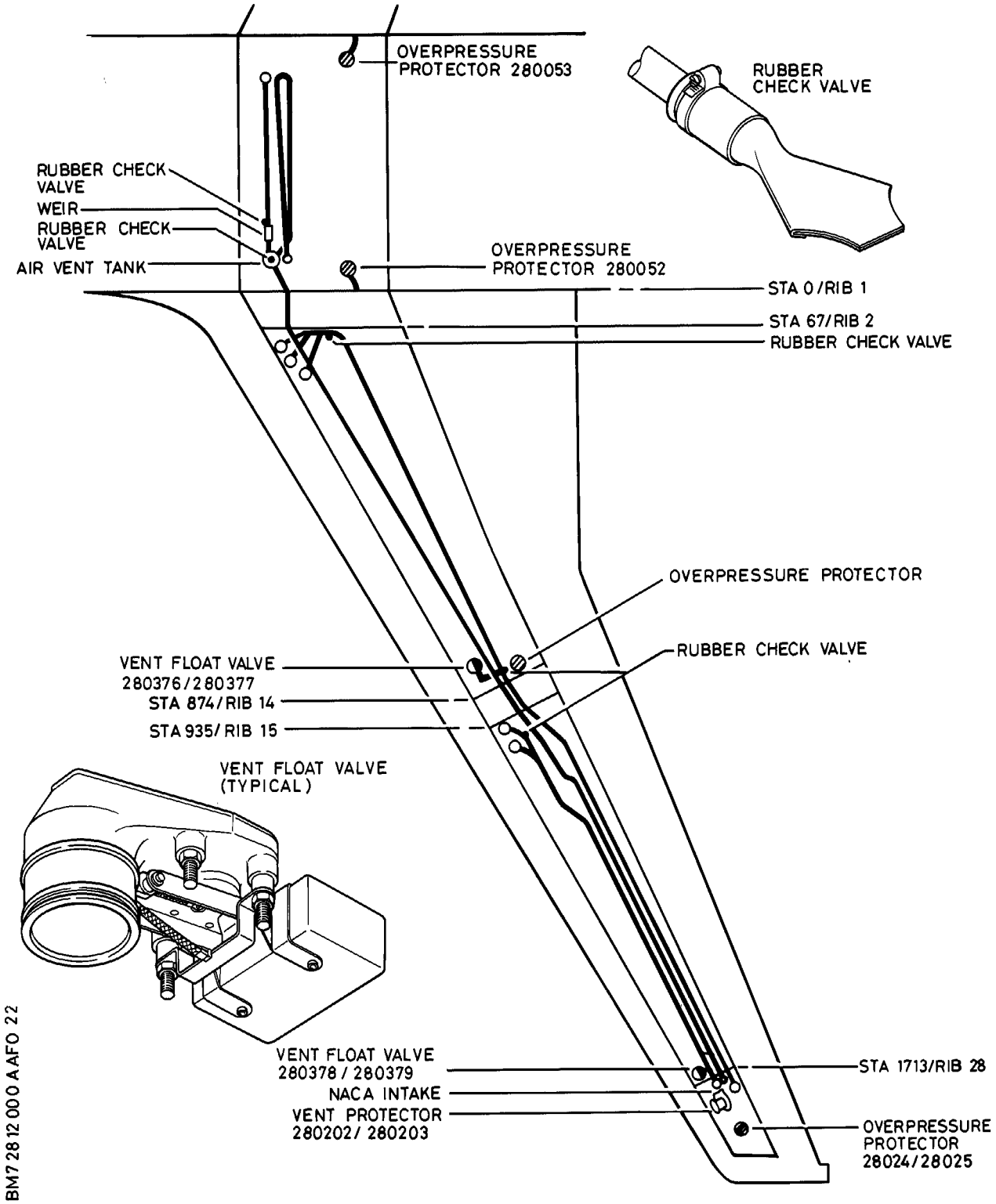
3. Description

**ON A/C 001-100,

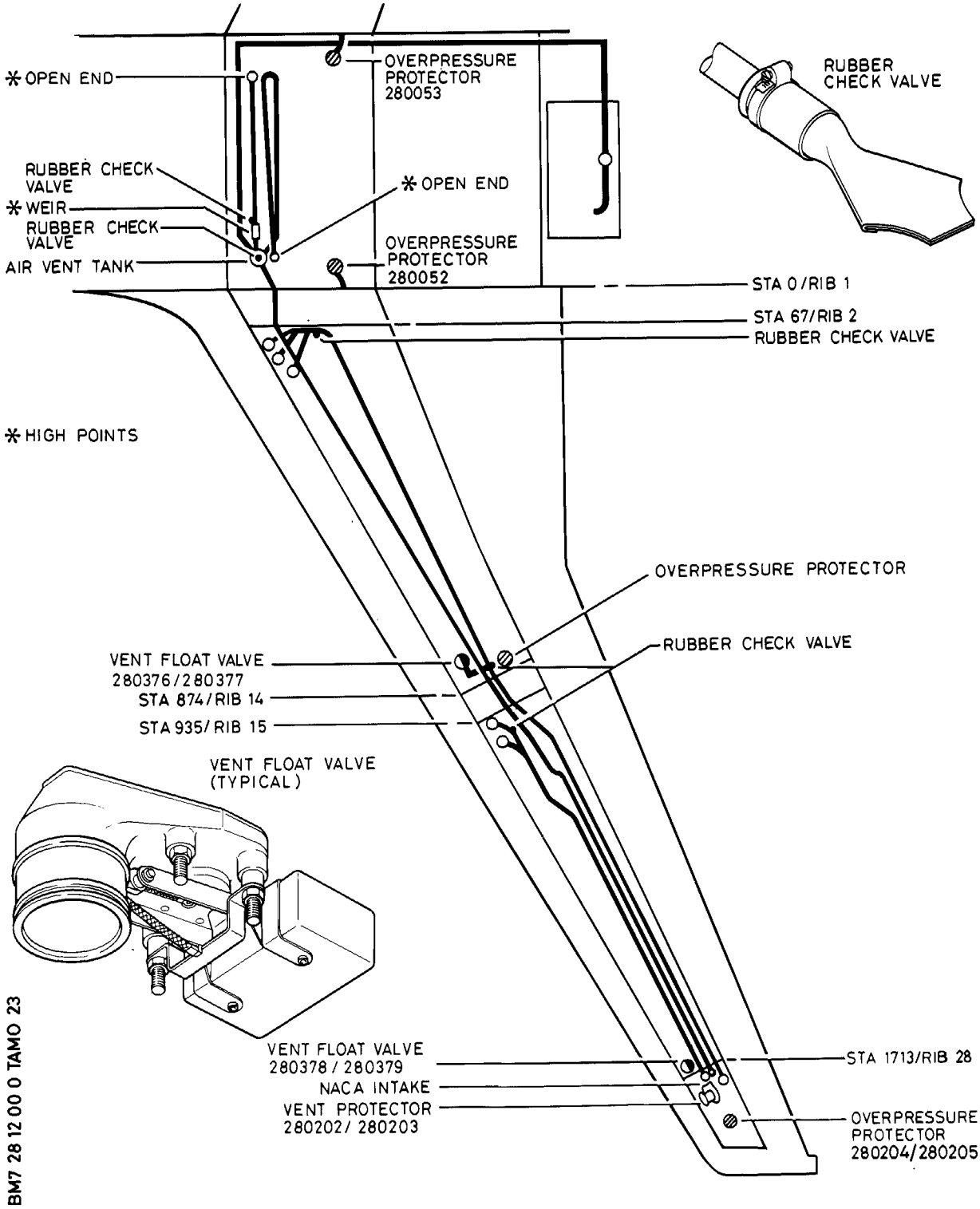
(Ref. Fig. 005)

**ON A/C ALL

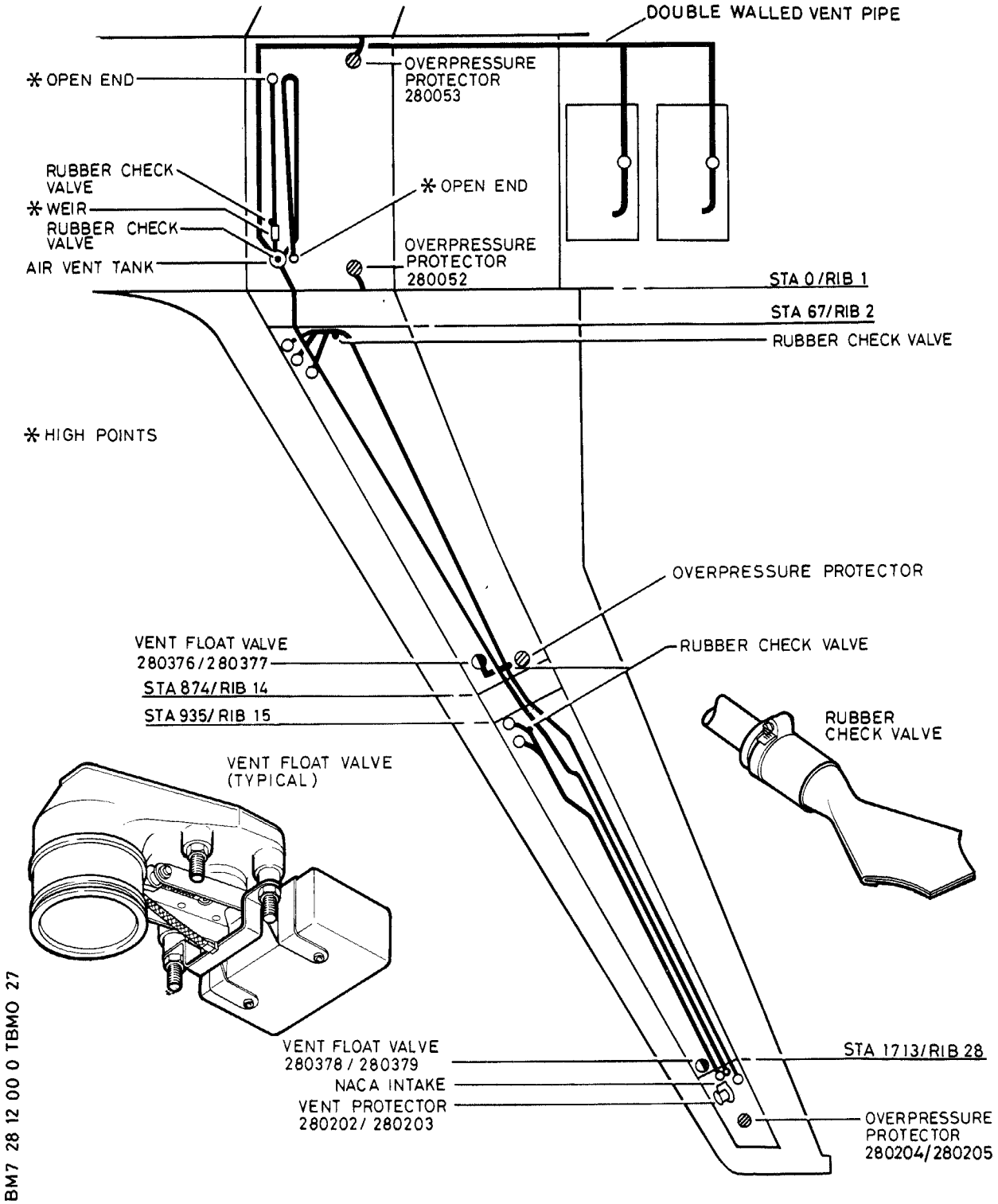
(Ref. Fig. 006)



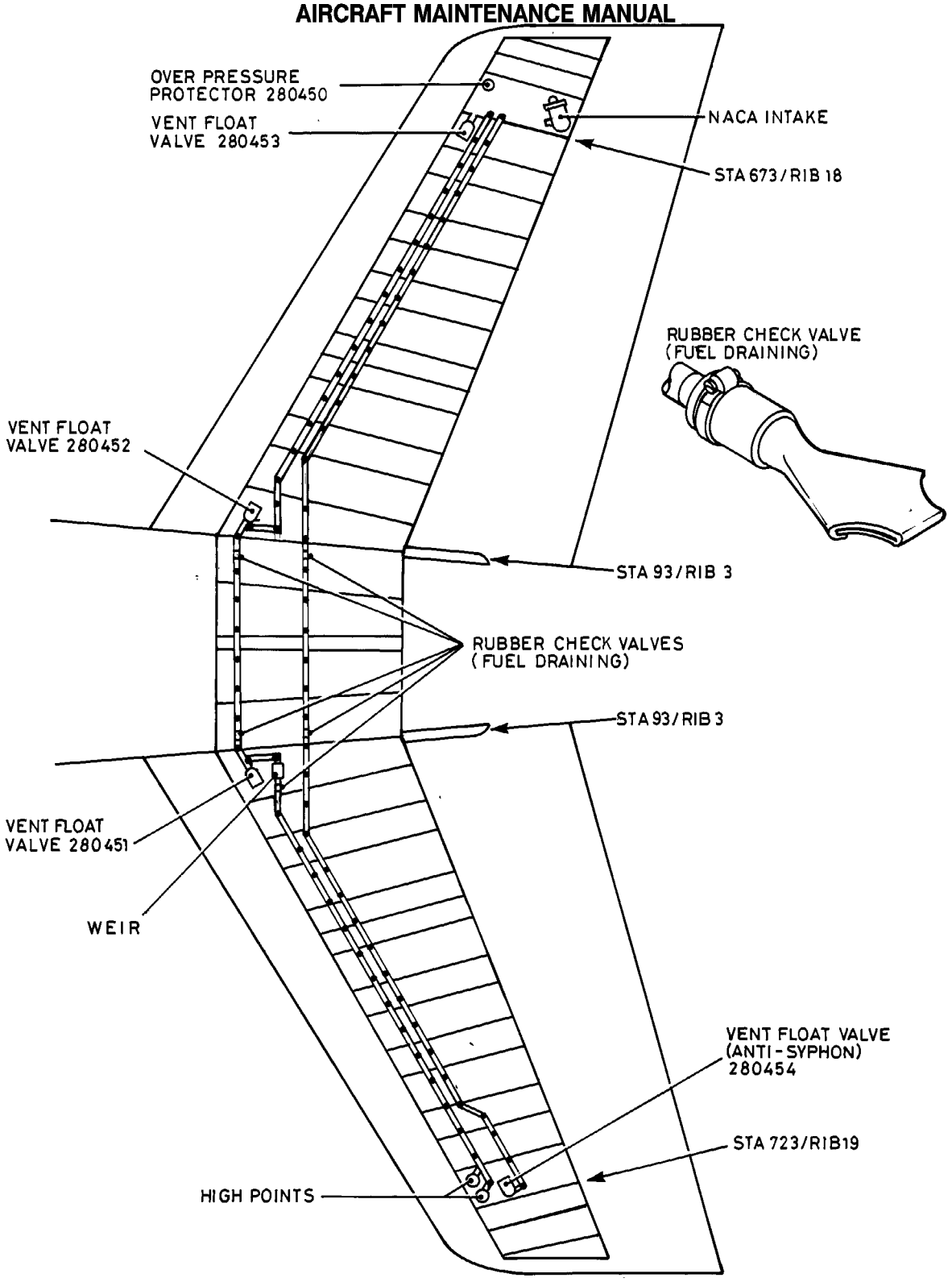
Venting System - Component Location
Figure 001



Venting System - Component Location
Figure 002

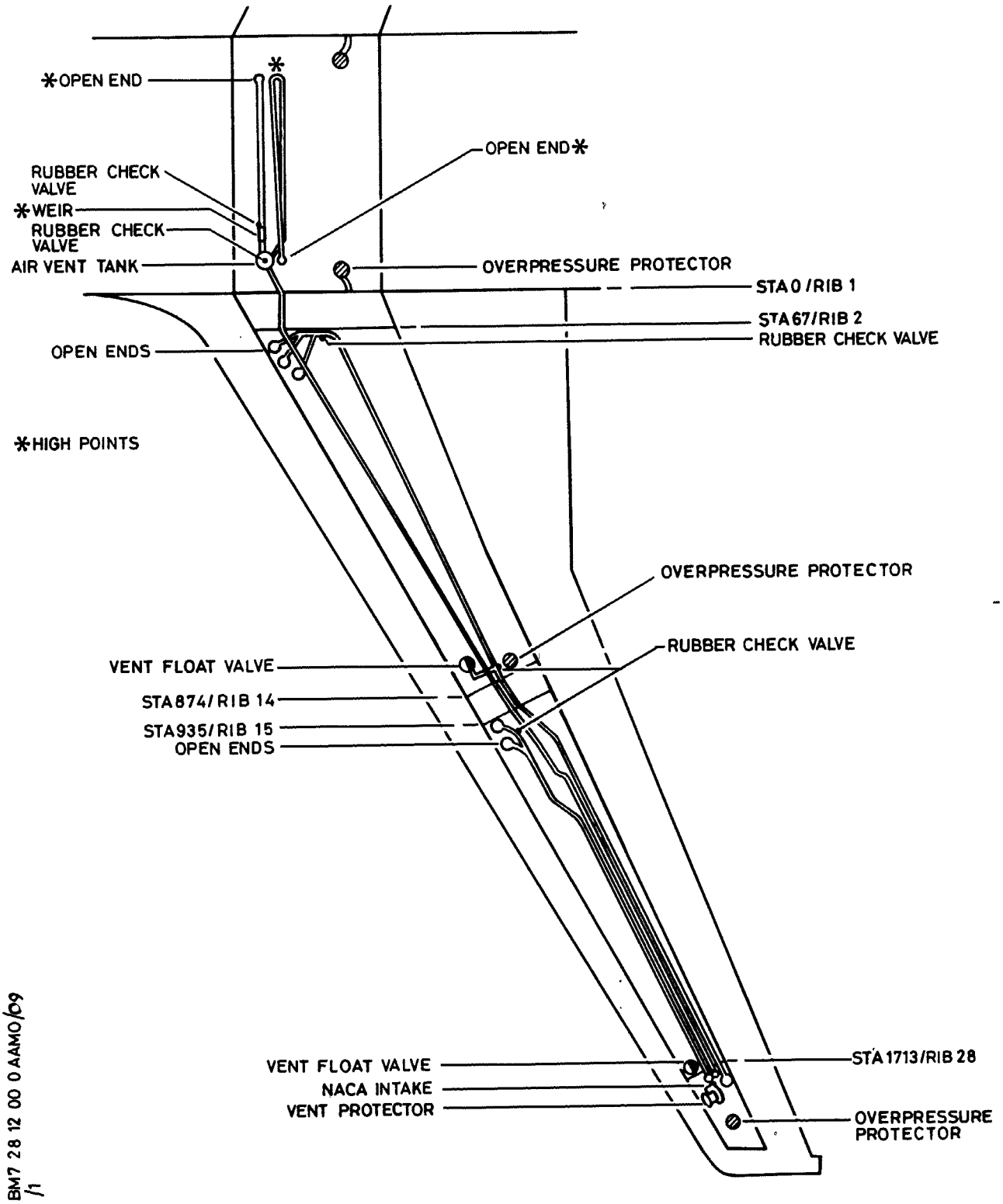


Venting System - Component Location
Figure 003

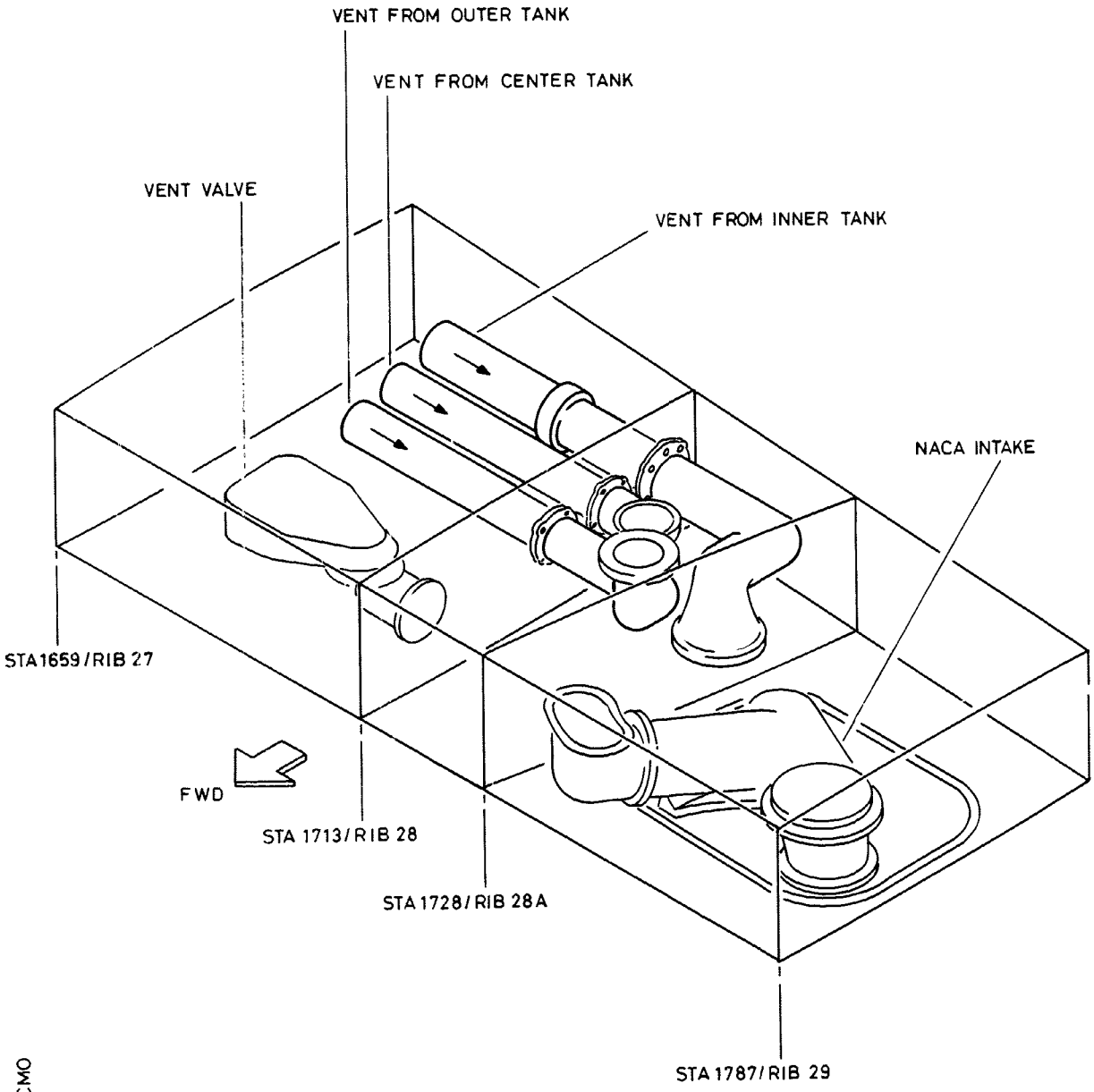


BM7 28 12 00 0 MCMO 24

Trim Tank Venting System - Component Location
Figure 004



Vent System Schematic
Figure 005



Vent Tank
Figure 006

(Ref. Fig. 007)
(Ref. Fig. 008)
(Ref. Fig. 009)
(Ref. Fig. 010)

**ON A/C 001-100,

Each main wing tank and center tank is connected by a vent gallery to a vent tank which is vented to atmosphere through a NACA intake. There is a vent tank located outboard of each wing outer tank. Each wing vent tank provides venting for the tanks in its respective wing; the center tank is vented through the left wing vent tank. Within each wing tank, the vent gallery extends to the higher point of the inboard section of the tank and terminates in one or more open upturned ends. Any fuel which overflows from the wing or center tanks will be contained in the vent surge tanks.

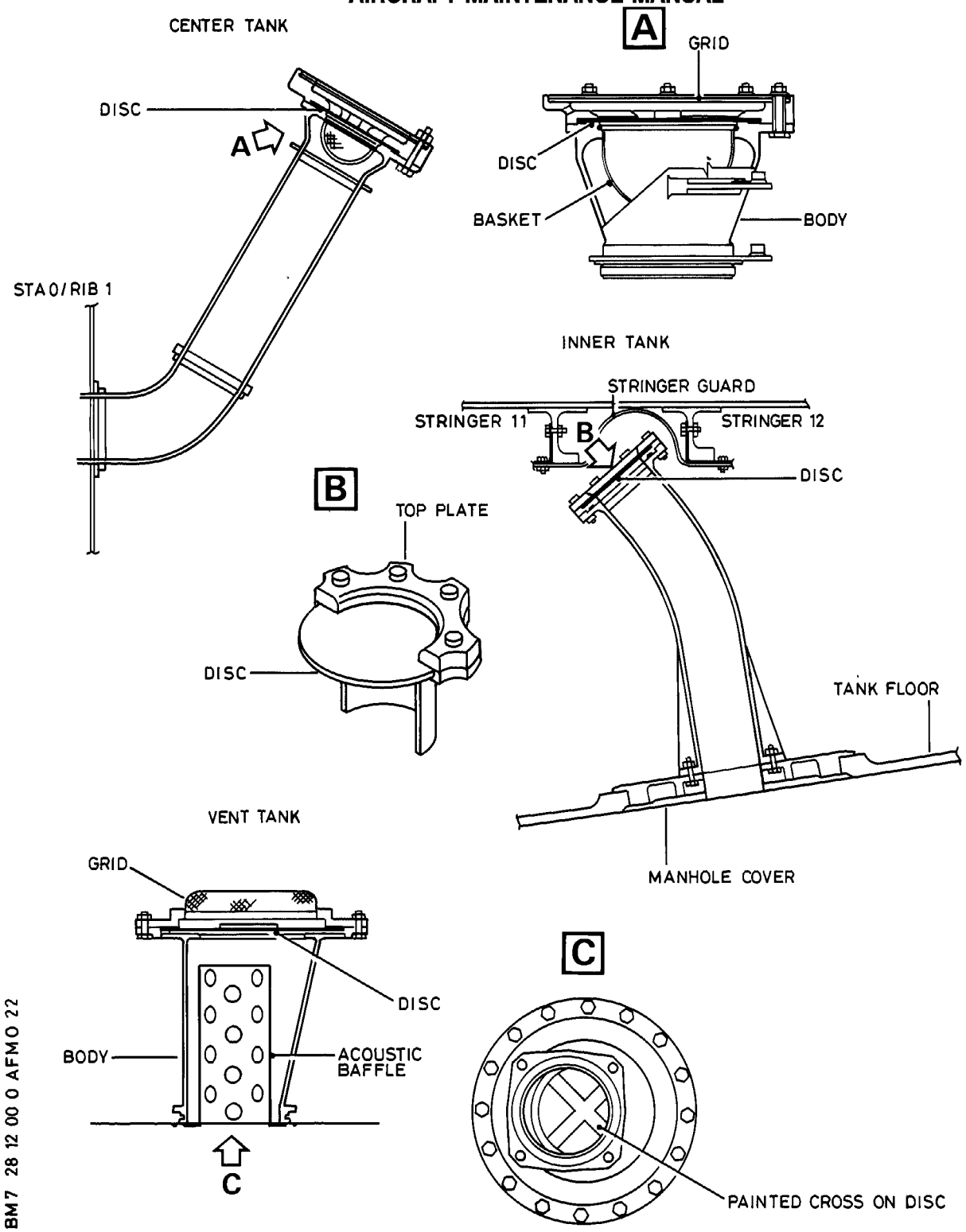
The center tank vent gallery is located at the forward end of the tank and terminates in two open ends, one each side of the tank. The gallery that terminates on the LH side, first crosses the tank to prevent spillage during wing down maneuvers.

**ON A/C 101-200,

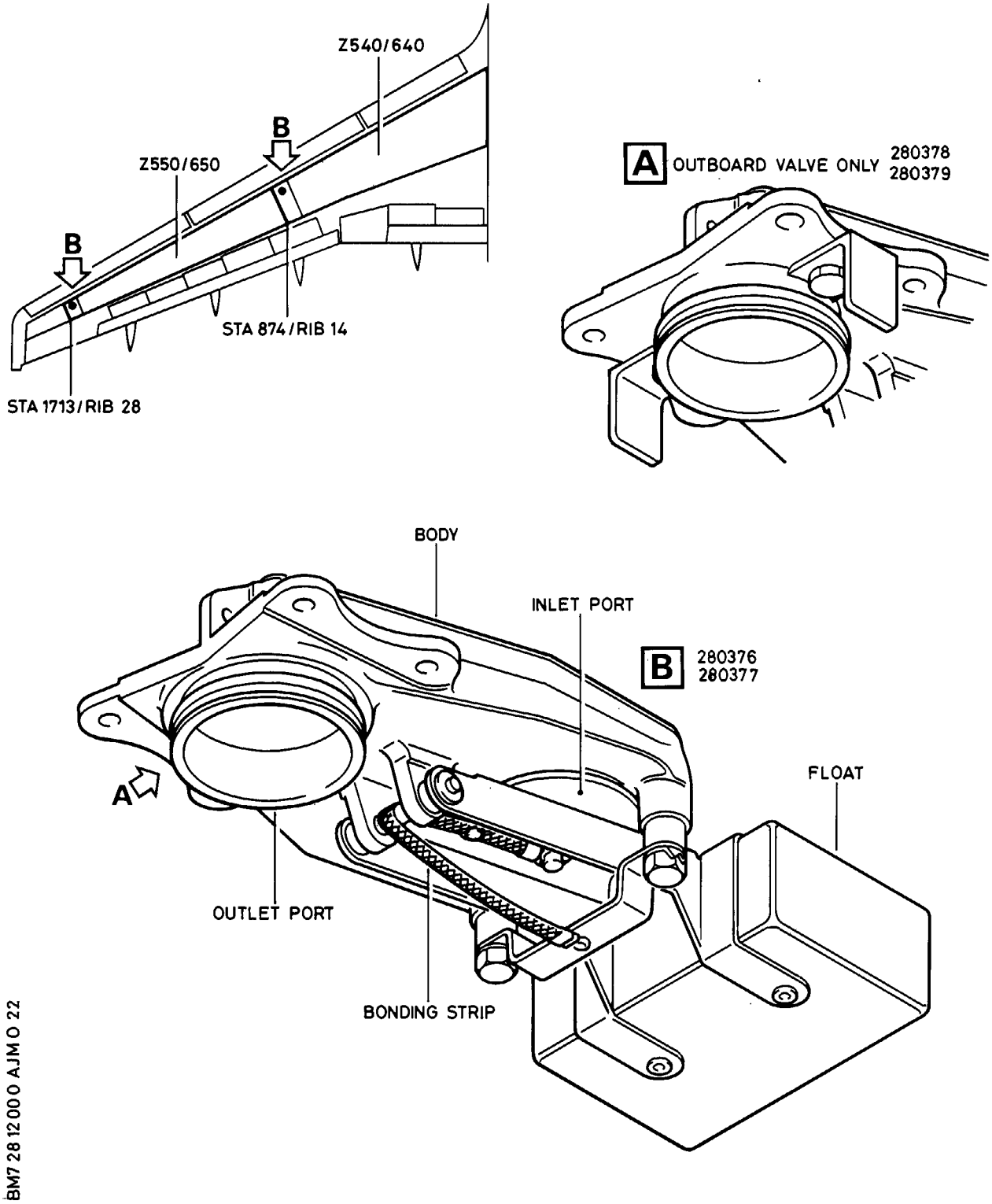
Each tank is connected by a vent line to a vent tank which is vented to atmosphere through a NACA intake. There is a vent tank located outboard of each wing outer tank and one in the RH horizontal stabilizer outboard of the trim tank. Each wing vent tank provides venting for the tanks in its respective wing; the center tank is vented through the left wing vent tank and the trim tank is vented through the vent tank in the RH horizontal stabilizer. Within each wing tank, the vent line extends to the higher point of the inboard section of the tank and terminates in one or more open upturned ends. Within the trim tank, the vent line extends to the LH side of the trim tank and terminates in two open upturned ends. A weir, a shaped pipe to assist the operation of the float valves in the vent tanks avoiding fuel spillage at certain flight configurations, is located in the vent line on the LH side outboard of Rib 3. A vent valve is located in the outboard end of each wing tank and on either side of the trim tank center box, outboard of Rib 3. This is the location of the finalair space when the tanks are fueled with the aircraft standing in the normal attitude. The valves allow air to vent but not fuel. The center tank vent line is located at the forward end of the tank and terminates in two open ends, one each side of the tank. The line that terminates on the left side, first corsses the tank to prevent spillage during wing down maneuvers.

**ON A/C ALL

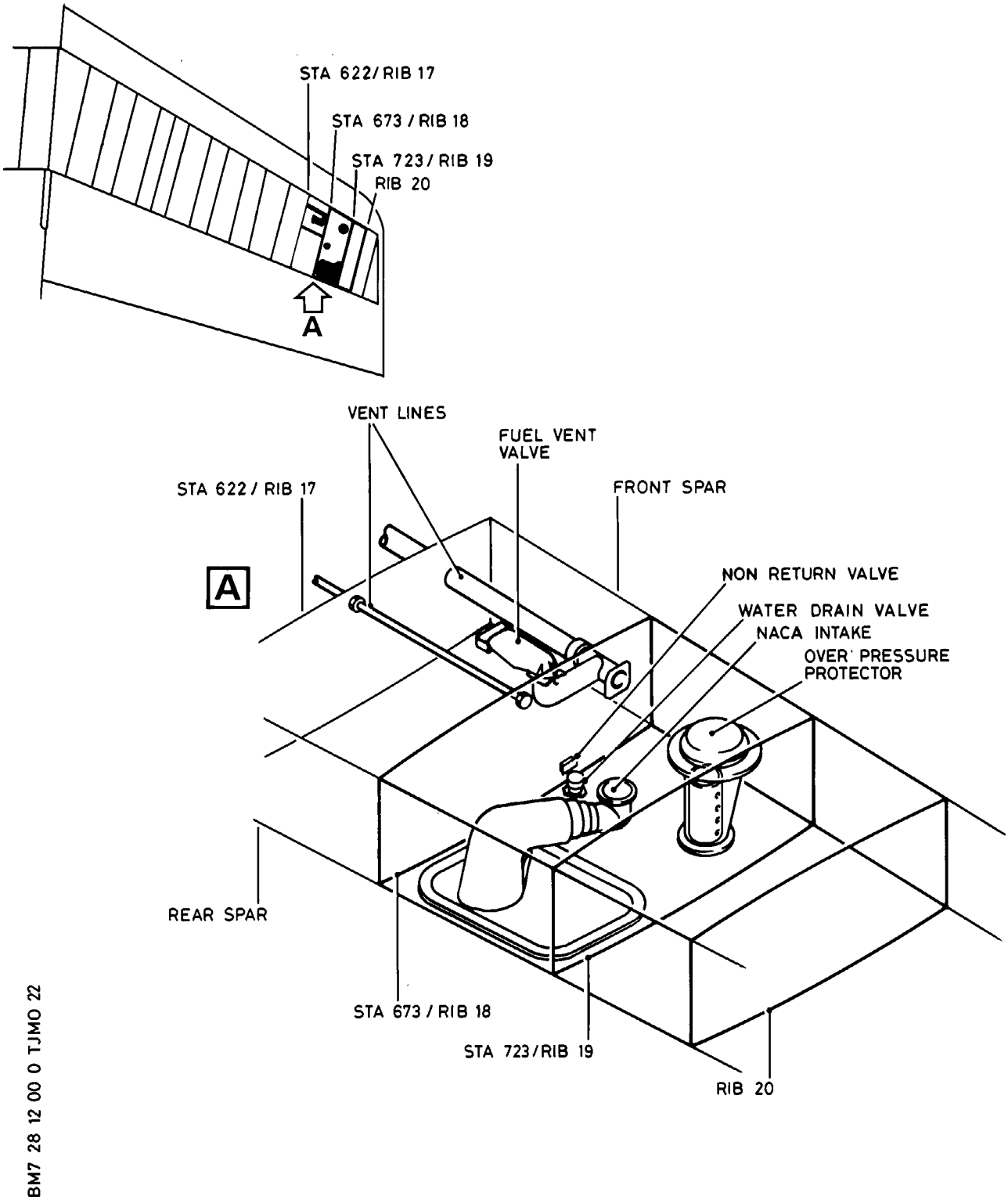
The outer tank vent float valve is designed to overcome possible malfunctioning due to pressure differentials. Baulking angles on the



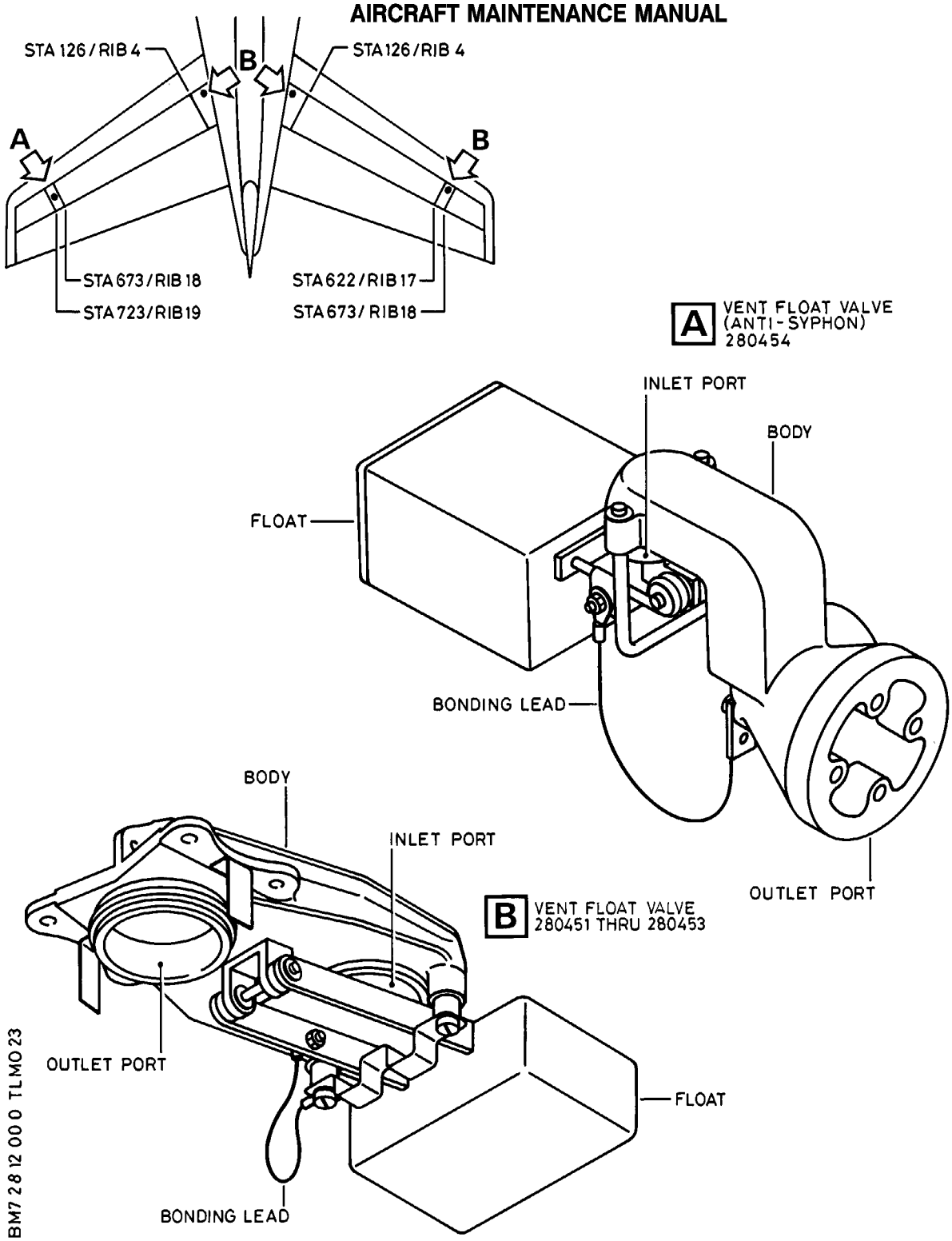
Details of Overpressure Protectors
Figure 007



Vent Float Valve
Figure 008



Vent Surge Tank - Trim Tank
Figure 009



Vent Float Valves - Trim Tank
Figure 010

valve and a roller dowel on the elbow to which the valve is installed prevent installation of an incorrect valve.

**ON A/C 101-200,

The ACT (if fitted) vents into the center tank. The ACT vent line joins the center tank vent line at the box junction in the forward left corner of the center tank. This minimizes the risk of fuel being siphoned from the center tank into the ACT when the tank is refueled to high level shut-off.

**ON A/C 101-200,

Post SB 28-2105 For A/C 101-200,

Post SB 28-2108 For A/C 101-200,

R Post SB 28-2126 For A/C 104-104,

Each ACT (if fitted) vents into the center tank through an ACT vent valve. Each valve is located in the vent line within the tank. The ACT(s) vent line joins the center tank vent line at the box junction in the forward left corner of the center tank. This minimizes the risk of fuel being siphoned from the center tank into the ACT(s) when the tank is refueled to high level shut-off.

**ON A/C 001-100,

Each wing tank vent gallery is fitted with rubber check valves at all low points. These valves allow any fuel that may be trapped in the wing tank vent galleries to drain back into the associated wing tanks.

The center tank vent gallery is fitted with rubber check valves and an air vent tank located at the lower most points. These allow fuel that may be trapped in the center tank vent galleries to drain back into the center tank.

The trim tank is connected by main and auxiliary vent galleries to a vent surge tank located outboard on the RH side which is vented to atmosphere through a NACA intake. Any fuel which overflows from the trim tank will be contained in the vent surge tank.

Within the trim tank the main vent gallery runs from a twin open ended pipe adaptor at the outboard end of the LH side to an open end in the vent surge tank outboard on the RH side. A weir, a shaped pipe to assist the operation of the float valves in the vent tanks avoiding fuel spillage at certain flight configurations, is located in the vent line on the LH side outboard of Rib 3. The auxiliary gallery runs

from a small float operated vent valve at the outboard end of the LH side to an open end in the vent surge tank. The purpose of this gallery is to prevent asymetric fuel usage from the left and right sides of the trim tank following wing down maneuvers which may flood the main gallery. Each gallery is fitted with rubber check valves which allow any fuel that may be trapped in the galleries to drain back into the trim tank. These valves are located inboard of each rib 3 on both galleries and inboard of Rib 4 on the LH side in the main gallery.

A vent float valve is located in the outboard end of each main wing tank at Rib 28. Two coventional float operated vent valves are teed into the main vent gallery either side of the trim tank center box outboard of each Rib 3. A third valve located on the dividing wall at Rib 18 on the RH side is connected directly to the vent tank. These are the locations of the final airspaces when the tanks are fueled with the aircraft standing in the normal attitude. The valves allow air to vent but not fuel.

The vent gallery joint assemblies in outer tanks from Rib 21, incorporate a connector which can be incorrectly installed, resulting in movement of a normally fixed line and clamping of the 'moving' line. To reduce the possibility of incorrect installation, by discouraging breakdown of the joint, the line and its end fittings are supplied as an assembly, which must be installed and removed as an assembly.

If when refueling, a refuel valve fails to close, the size of the vent pipe will allow fuel to overflow at a rate that will prevent the maximum pressure for the tank from being exceeded, or the bursting pressure of the overpressure protector being reached.

**ON A/C 101-200,

In the trim tank, two vent float valves are connected to the vent pipe and a third vent float valve, located on the dividing wall (Rib 18), is connected directly to the vent tank. The valves allow air to vent but not fuel.

The vent line joint assemblies incorporate a connector which can be incorrectly installed, resulting in movement of a normally fixed line and clamping of the 'moving' line. To reduce the possibility of incorrect installation, by discouraging breakdown of the joint, the line and its end fittings are supplied as an assembly, which must be installed and removed as an assembly.

If when refueling a refuel valve fails to close, the size of the vent pipe will allow fuel to overflow at a rate that will prevent the maximum pressure for the tank from being exceeded, or the bursting pressure of the overpressure protector being reached.

Rubber check valves and an air vent tank located in the center tank allow fuel trapped in the vent lines to drain back into the tanks. High points in the vent lines prevent siphoning of fuel.

Rubber check valves in the trim tank allow fuel trapped in the vent lines to drain back into the tank.

**ON A/C 001-100,

Any fuel that overflows from the tanks will be contained in the vent tanks. A stack pipe associated with the NACA intake of each wing vent tank allows 190 liters of fuel to be contained before fuel flows overboard. The stack pipe in the tail vent tank allows 160 liters of fuel to be contained before fuel flows overboard.

**ON A/C 101-200,

Any fuel that overflows from the tanks will be contained in the vent tanks. A stack pipe associated with the NACA intake of each wing vent tank allows 190 liters (50 US GAL) of fuel to be contained before fuel flows overboard. The tail vent tank will contain 160 liters (42 US GAL) of fuel before fuel flows overboard.

**ON A/C ALL

Within each wing vent tank, the inner tank vent gallery terminates in a downturned open end. Any fuel contained in a wing vent tank is syphoned back into the associated inner tank as the tank's fuel is used.

Within the trim tank, a drain valve is located on the RH side at the lower edge of Rib 18 and allows fuel to drain back into the trim tank from the vent surge tank as fuel is used.

The stack pipe in each vent tank is equipped with a vent protector to provide protection against flame propagation through the vent system, caused by ground fires.
An overpressure protector is installed on a stack pipe mounted on a manhole cover in the bottom skin of each inner tank. A carbon disc in the overpressure protector will burst if the pressure within the tank exceeds 1.4 Bar (20.30 psi) and will allow fuel to vent overboard; the quantity of fuel that vents overboard is limited by the stack pipe.

The center tank is connected to each inner wing tank by a pipe equipped with an overpressure protector. The overpressure protectors allow excess pressure in the center tank to relieve into the wing inner tanks. A carbon disc in each overpressure protector will burst at an outward pressure of 0.9 to 1.1 Bar (13.05 to 15.95 psi) or an inward pressure of 1.6 Bar (23.20 psi) minimum.
An overpressure protector is mounted on the NACA intake door of each vent tank. These overpressure protectors will allow venting of the main tanks if the vent protector or NACA intake becomes blocked.

The overpressure protector contains an acoustic baffle, a carbon disc incorporating an elastomeric damping pad and a debris grill. The acoustic baffle, together with the elastomeric damping pad on the carbon disc, attenuates reasonant pressure fluctuations in the stack pipe thereby preventing undue failure of the carbon disc. The carbon disc is designed to burst at an outward pressure of 0.45 to 0.50 Bar (6.50 to 7.25 psi) or an inward pressure of 0.20 to 0.30 Bar (2.90 to 4.35 psi).
The trim tank is connected by main and auxiliary vent galleries to a vent surge tank which is vented to atmosphere through a NACA intake. The vent tank is located in the RH horizontal stabilizer outboard of the trim tank. Any fuel which overflows trom the trim tank will be contained in the vent tank. A stack pipe associated with the NACA intake allows 160 liters (42 US gal) of fuel to-be contained before fuel flows overboard.

The main gallery runs from a twin open ended pipe adapter at the outboard end of the left side to an open end in the vent surge tank. Two conventional float operated vent valves are teed into the gallery. One valve outboard of each rib 3 and a third valve located at rib 18 on the right side is used for trim tank venting. These valves allow air to vent but not fuel.

The auxiliary gallery runs from a small float operated vent valve at the outboard end of the left side to an open end in the vent tank. The purpose of this gallery is to prevent asymmetric fuel usage from the left and right sides of the trim tank following wing down maneuvers which may flood the main gallery.

Each gallery is fitted with rubber check valves which allow any fuel which may be trapped in the galleries to flow back into the trim tank. These valves are located inboard of each rib 3 on both galleries and inboard of rib 4 on the left side in the main gallery.

The vent tank contains an overpressure protector fitted with a carbon disc designed to burst at an outboard pressure of 0.45 to 0.50 Bar (6.50 to 7.25 psi) or an inward pressure of 0.20 to 0.30 Bar (2.90 to 4.35 psi). This overpressure protector will allow venting of the trim tank should the vent protector or the NACA intake become blocked. A baffle assembly is contained within the stack pipe to prevent carbon disc failure caused by resonant pressure fluctuation in the stack pipe.

WARNING : LANDING GEAR - MAKE CERTAIN GROUND SAFETIES AND CHOCKS ARE IN POSITION.

FLIGHT CONTROLS - MAKE CERTAIN GROUND SAFETIES AND NOTICES ARE IN POSITION.

OBSERVE THE SAFETY PRECAUTIONS IN 28-00-00, P. BLOCK 301 AND 28-10-00, P. BLOCK 301.

MAKE CERTAIN THAT FIRE FIGHTING EQUIPMENT IS AVAILABLE AND ADEQUATE.

BEFORE POWER IS SUPPLIED TO THE AIRCRAFT MAKE CERTAIN THAT ELECTRICAL CIRCUITS UPON WHICH WORK IS IN PROGRESS ARE ISOLATED.

1. Reason for the Job
   A. To prove integrity of system pipelines after replacement of complete pipe lines.

2. Equipment and Materials

	ITEM	DESIGNATION
	A.	Access Platforms 2.5 m to 5 m (8 ft to 16 ft)
	B.	Warning Notices Prohibiting Energization of Electrical Network
	C. 6000 KTQ or 6200 KTQ	Ground Pressure Generator (GPG) Type APICS.
	or	
	D. 68001-400-2 or 68001-606-1	Ground Pressure Generator (GPG) Type GP120 or GP30.
	or	
	E.	Ground Pressure Generator (GPG) Type S10.
	F.	Leak Detecting Soap Solution
R	G.	Demineralized Water
R	H.	Warning Pennant
R	J.	Scotch Alu Protectia Tape 35 mm 1.4 in wide
R	K. 98A28104005000	Blank Adapter for Inner Tank Rib Adapter at STA139/Rib 3
R	L. 98A28104006000	Blank Assembly for Inner Tank Bellmouth Aperture in Vent Surge Tank
R	M. 98A28104007000	Blank Adapter for Outer Tank Rib Adapter at STA996/Rib 16
R	N. 98A28104008000	Blank Assembly for Outer Tank Bellmouth Aperture in Vent Surge Tank
R	P. 98A28104009000	Blank Assembly for Inner Tank Duct Drain Stub
R	Q. 98A28104010000	Blank Assembly for Inner Tank Vent Valve Stub Duct at STA874/Rib 14
R	R. 98A28104011000	Blank Adapter for Center Tank RH Inlet Duct
R	S. 98A28104012000	Blank Assembly for Center Tank LH Inlet Duct

ITEM	DESIGNATION
T. 98A28104013000	Blank Assembly for Center Tank Bellmouth Aperture in Vent Surge Tank

R **ON A/C 101-200,

ITEM	DESIGNATION
U.	Blanks for Ends of Center Tank Vent Pipe and for Center Tank Vent Drain.

R **ON A/C 001-100,

ITEM	DESIGNATION
U. Not applicable.	

R **ON A/C ALL

ITEM	DESIGNATION
V. 98A28104014000	Blank Adapter for Trim Tank Duct Adapter at STA673/Rib 18
W. 98A28104018000	Blank Assembly for Trim Tank Bellmouth Aperture in Vent Surge Tank
X. 98A28104009000	Blank Assemblies for Trim Tank Check Valve (Qty 2)
Y. 98A28104017000	Blank Adapter for Trim Tank Pipe Aperture in Vent Surge Tank
Z.	Clamps (Qty 3) - Suitable for Securing Vent Valve Floats

ITEM	DESIGNATION
Referenced Procedures	
- 12-11-28, P. Block 301	Replenishing of Fuel Tanks
- 20-28-11, P. Block 1	Electrical Bonding
- 28-00-00, P. Block 301	Fuel
- 28-00-00, P. Block 401	Fuel - General
- 28-10-00, P. Block 301	Storage
- 28-11-22, P. Block 401	Manhole Covers (Wings)
- 28-11-29, P. Block 401	Manhole Cover - Center Tank
- 28-11-33, P. Block 401	Trim Tank Manhole Cover
- 28-12-12, P. Block 401	Check Valve - Venting Air
- 28-12-21, P. Block 401	NACA Intake and Vent Protector
- 28-12-22, P. Block 401	Vent Valve (Inboard Tanks)
- 28-12-31, P. Block 401	Check Valve - Venting Air (Trim Tank System)

ITEM	DESIGNATION
- 28-12-33, P. Block 401	Trim Tank NACA Intake and Vent Protector
- 32-12-11, P. Block 301	Main Gear Main Door

3. Procedure
(Ref. Fig. 501)

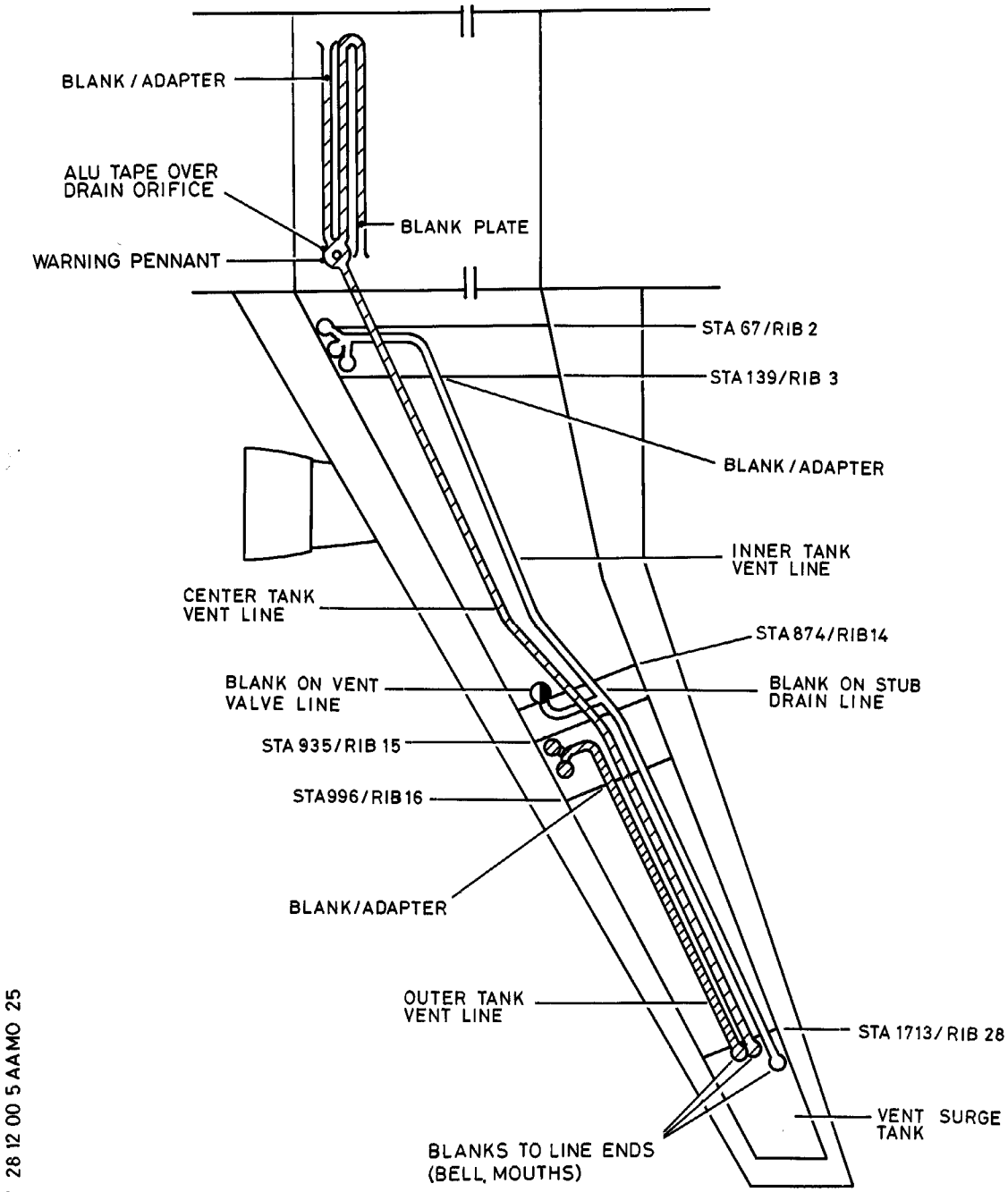
CAUTION: MAKE CERTAIN THAT TEST EQUIPMENT HAS A RELIEF SYSTEM TO PREVENT OVERPRESSURE

A. Job Set-Up
(1)Display warning notices.
(2)Position access platform.
(3)Remove manhole covers as applicable:
(a)Inner tank (Ref. 28-11-22, P. Block 401).
(b)Outer tank (Ref. 28-11-22, P. Block 401).
(c)NACA intake (Ref. 28-12-21, P. Block 401).
(d)Center tank (Ref. 28-11-29, P. Block 401).
(e)Trim tank (Ref. 28-11-33, P. Block 401 and 28-12-33, P. Block 401).

B. Vent Line Air Pressure Test - Outer Tanks
(1)Remove the vent duct between STA935/RIB15 and STA996/RIB16 (Ref. 28-00-00, P. Block 401).
(2)Install blank adapter PN98A28104007000 to the duct adapter at STA996/RIB16.
(3)Connect the GPG to the blank adapter at STA996/RIB16.
(4)Open the GPG control valve and adjust the pressure controller to give a moderate airflow.
(5)Ensure that there is a free flow of air from the bellmouth aperture in the vent tank at STA1713/RIB28.
(6)Turn the pressure controller to the fully decrease position and open the pressure isolating valve.
(7)Install blank assembly PN98A28104008000 to the bellmouth aperture in the vent surge tank.
(8)Slowly open the GPG control valve and adjust the pressure controller to pressurize the system to 0.7 bar (10 psi).
(9)Allow time for the air pressure to stabilize and then correct to 0.7 bar (10 psi). Close the control valve.
(10)Check that the air pressure remains stable at 0.7 bar (10 psi), without further input, for 15 minutes.

NOTE : If a leak is indicated, maintain the test pressure and apply soap solution sparingly around each joint. Rectify the leak then repeat the timed pressure test. Continue this procedure until operation (10) is satisfied.

(11)Slowly release the air pressure from the vent system.
(12)Remove all traces of leak detecting solution with demineralized water



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Check Valves - Vent System
Figure 501

and dry affected parts.

(13)Remove the blank assembly from the bellmouth aperture in the vent surge tank.

(14)Open the GPG control valve and adjust the pressure controller to give a moderate air flow.

(15)Ensure there is a free flow of air from the bellmouth aperture.

(16)Release all air pressure:

(a)Turn the pressure controller to the fully decrease position and open pressure isolating valve.

(b)Disconnect the GPG.

(17)Remove the blank adapter fitted to the duct adapter at STA996/RIB16 and install the vent duct removed in operation (2) (a) (Ref. 28-00-00, P. Block 401). Check:

(a)That the clearance between the bellmouthed open end of the duct and the roof of the tank is 0.5 to 0.6 in (12.7 to 15.2 mm).

(b)That the bonding strap between duct and structure is connected (Ref. 20-28-11, P. Block 1).

C. Vent Line Air Pressure Test - Inner Tank

(1)Remove the vent duct between STA67/RIB2 and STA139/RIB3 (Ref. 28-00-00, P. Block 401).

(2)Remove vent valve from STA874/RIB14 (Ref. 28-12-22, P. Block 401).

(3)Remove the check valve at the inner side of STA874/RIB14 (Ref. 28-12-12, P. Block 401).

(4)Install blank adapter PN98A28104005000 on rib adapter at STA139/RIB3.

(5)Connect the GPG to the blank adapter installed in Operation (4).

(6)Open the GPG control valve and adjust the pressure controller to give a moderate airflow.

(7)Ensure that there is a free flow of air from the vent line adapter at STA1713/RIB28, vent duct at STA874/RIB14 and the water drain stub.

(8)Turn the pressure controller to the fully decrease position and open the pressure isolating valve.

(9)Fit blank assembly PN98A28104006000 to inner tank bellmouthed vent line in vent surge tank.

(10)Install blank assembly PN98A28104009000 on the duct drain stub.

(11)Install blank assembly PN98A28104010000 on the vent valve stub duct STA874/RIB14.

(12)Slowly open the pressure controller and pressurize the system to 0.7 bar (10 psi).

(13)Allow time for the air pressure to stabilize and then correct to 0.7 bar (10 psi). Close the control valve.

(14)Ensure that the air pressure remains stable at 0.7 bar (10 psi), without further input, for 15 minutes.

NOTE : If a leak is indicated, maintain the test pressure and apply soap solution sparingly around each joint. Rectify the leak then repeat the timed pressure test. Continue this procedure until operation (14) is satisfied.

(15)Slowly release the air pressure from the vent system.

(16)Remove all traces of leak detecting solution with demineralized water and dry affected parts.
(17)Remove the blank adapter fitted to bellmouthed vent aperture in vent surge tank.
(18)Remove the blank assembly from vent valve stub duct at STA874/RIB14.
(19)Install vent valve (Ref. 28-12-22, P.Block 401).
(20)Remove the blank fitted to duct drain stub.
(21)Install check valve (Ref. 28-12-12, P. Block 401).
(22)Open the GPG control valve and adjust the pressure controller to give a moderate air flow.
(23)Ensure there is a free flow of air from the bellmouth and vent valve aperture.
(24)Release all air pressure:
(a)Turn the pressure controller to the fully decrease position and open the pressure isolating valve.
(b)Disconnect the GPG.
(25)Remove the blank adapter installed on STA139/RIB3 and install the vent duct between STA67/RIB2 and STA139/RIB3. Check:
(a)That the clearance between the bellmouthed open ends of the duct and the roof of the tank is between 0.63 and 0.73 in (16.00 and 18.5 mm)
(b)That the bonding strap between duct and structure is connected (Ref. 20-28-11, P. Block 1).

D. Vent Line Air Pressure Test - Center Tank
(1)Open LH main gear main door (Ref. 32-12-11, P. Block 301).
(2)Remove the inlet duct on the RH side of the tank and install blank adapter PN98A28104011000 for the GPG.
(3)Connect the GPG with manometer and pressure relief valve.
(4)Blank-off the drain hole in the vent duct at the LH side of the tank using Alu tape. Attach the warning pennant.
(5)Operate the GPG to give a moderate airflow and ensure that there is a free flow of air from the LH inlet duct, and the outlet duct in the vent surge tank.
(6)Remove the inlet duct on the LH side of the tank and install blank assembly PN98A28104012000.
(7)At STA1713/RIB 28 LH side, remove the center-tank vent-line bellmouthed-aperture and fit blank assembly PN98A28104013000.
(8)Slowly open the pressure controller and pressurize the system to 0.7 bar (10 psi).
(9)Allow time for the air pressure to stabilize and then correct to 0.7 bar (10 psi). Close the control valve.
(10)Ensure that the air pressure remains stable at 0.7 bar (10 psi), without further input, for 15 minutes.

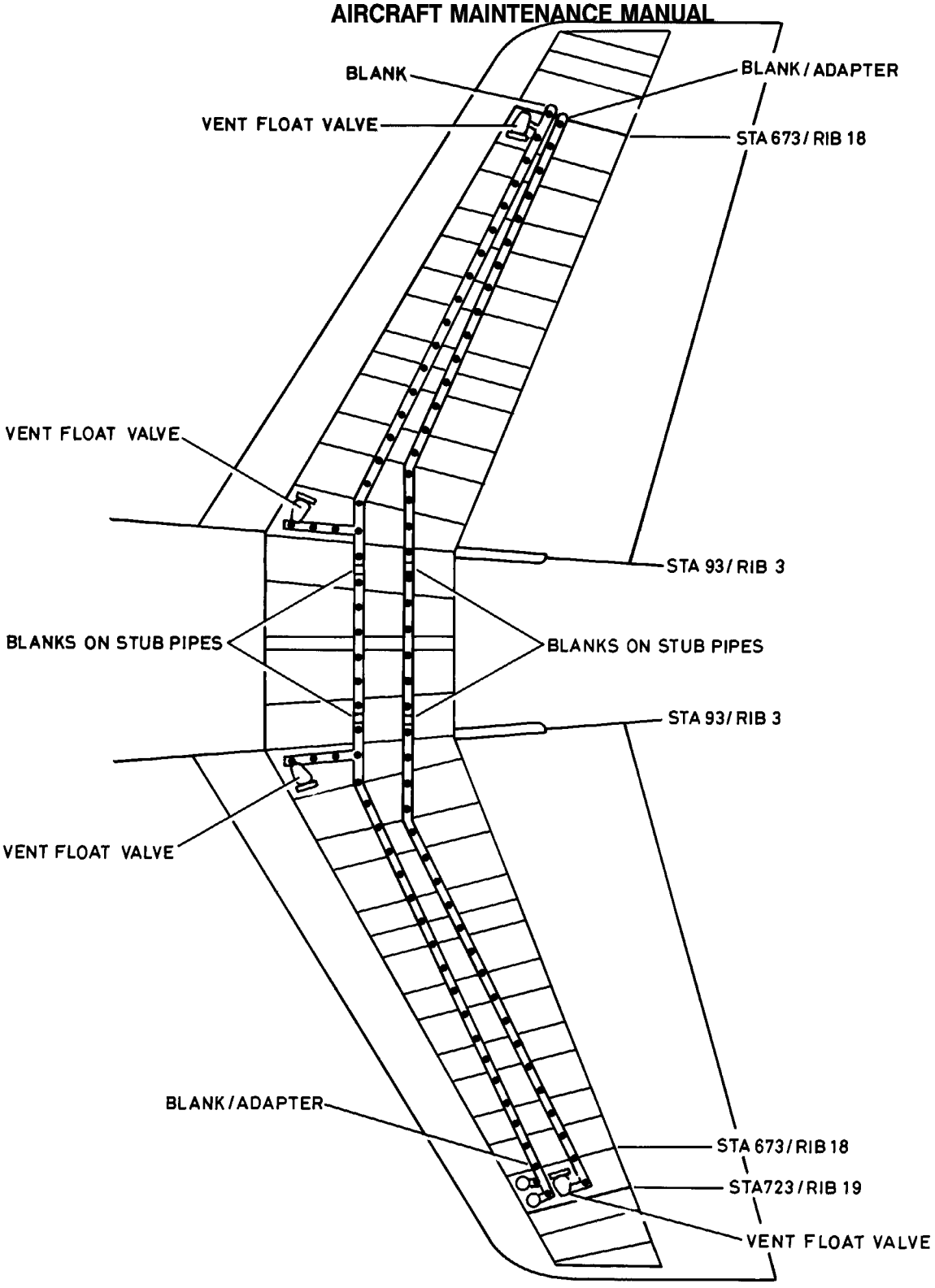
NOTE: If a leak is indicated, maintain the test pressure and apply soap solution sparingly around each joint.
Rectify the leak then repeat the timed pressure test.
Continue this procedure until the requirements of operation (10) are met.

(11)Slowly release the air pressure from the vent system.
(12)Disconnect GPG.
(13)Remove all traces of leak detecting solution with demineralized water and dry affected parts.
(14)Remove blank from vent duct at STA1713/RIB 28 and fit the center-tank vent-line bellmouthed-aperture.
(15)Remove the blanks on the LH side of the tank and install the inlet duct removed in operation (6).
(16)Remove the blank adapter on the RH side of the tank and install the inlet removed in operation (2).
(17)Remove the Alu tape and pennant from the drain hole.

E. Vent Line Air Pressure Test - Trim Tank
(Ref. Fig. 502)
(1)Forward Vent Line.
(a)Remove duct between STA673(RIB 18) and STA723(RIB 19) on LH side (Ref. 28-12-33, P. Block 401).
(b)Install blank adaptor PN98A281014000, to duct adaptor at STA673(RIB 18).
(c)Connect GPG to blank/adaptor at STA673(RIB18) and adjust pressure controller to give moderate air flow.
(d)Make certain there is free flow of air from the valves located as follows:

VALVE	LOCATION
Vent Float Valve	Outboard of STA93(RIB 3) RH
Vent Float Valve	Outboard of STA93(RIB 3) LH
Vent Float Valve	Inboard of STA673(RIB 18) RH
Check Valve	Inboard of STA93(RIB 3) RH
Check Valve	Inboard of STA93(RIB 3) LH
Check Valve	Inboard of STA126(RIB 4) LH

(e)Air should also flow freely from aperture in vent tank at STA673 (RIB 18).
(f)Turn pressure controller to fully decrease position and open pressure isolating valve.
(g)Install blank assembly PN98A28104018000 to bellmouth aperture in vent surge tank.
(h)Remove the three rubber check valves:
- Inboard of STA 93(RIB 3) LH side
- Inboard of STA 93(RIB 3) RH side
- Inboard of STA 126(RIB 4) LH side
- fit blank assemblies PN98A28104009000 to stub pipes
(j)Close vent valves by securing floats with suitable clamps at following locations:
- Outboard of STA93(RIB 3) LH and RH.
- Inboard of STA673(RIB 18) RH.
(k)Slowly open pressure controller and pressurize system to 0.7 bar (10 psi).
(l)Allow time for air pressure to stabilize and correct to 0.7 bar



Vent System Lines (Trim Tank) - Fitting of Blanks
Figure 502

(10 psi).
(m)Make certain air pressure does not decay below 0.66 bar (9.5 psi) for 15 minutes.

NOTE: If a leak is indicated, maintain test pressure and apply soap solution sparingly around each joint. Rectify leak, and repeat timed pressure test. Continue operation until step (m) is satisfactory.

(n)Slowly release air pressure from vent line.
(p)Remove all traces of leak detecting solution with demineralized water and dry affected parts.
(q)Remove blank assembly from aperture in vent surge tank.
(r)Remove blanks from the three stub pipes and install rubber check valves (Ref. 28-12-31, P. Block 401).
(s)Remove clamps securing floats on the three vent valves.
(t)Open GPG control valve and adjust pressure controller to give moderate air flow.
(u)Satisfy conditions in step (d).
(v)Turn pressure controller to fully decrease position and open pressure isolating valve.
(w)Disconnect GPG.
(x)Remove blank fitted to duct adaptor at STA673(RIB 18) and install duct between STA673(RIB 18) and STA723(RIB 19).
(y)Check clearance between duct bellmouthed open ends and tank roof is between 0.63 and 0.73 ins (16.0 and 18.5 mm). Make certain all bonding straps are properly connected (Ref. 20-28-11, P. Block 1).

(2)Aft Vent Line
(a)Install blank adaptor PN98 A28104017000, to pipe aperture located in vent surge tank at STA673(RIB 18) RH side.
(b)Connect GPG to adaptor and adjust pressure controller to give a moderate air flow.
(c)Make certain there is free flow of air from the three rubber check valves inboard of STA93(RIB 3) LH and RH, and also from vent float valve inboard of STA723(RIB 19) LH.
(d)Turn pressure controller to fully decrease position and open pressure isolating valve.
(e)Disconnect GPG.
(f)Remove the three rubber check valves inboard of STA93(RIB 3) LH and RH and fit blank assemblies PN98A28104009000 to the stub pipes (Ref. 28-12-31, P. Block 401).
(g)Close the vent valve inboard of STA723(RIB 19) LH by securing float with suitable clamps.
(h)Slowly open pressure controller and pressurize system to 0.7 bar (10 psi).
(j)Allow time for air pressure to stabilize and correct to 0.7 bar (10 psi).
(k)Make certain air pressure does not decrease below 0.66 bar (9.5 psi) for 15 minutes.

NOTE: If a leak is indicated, maintain test pressure and apply soap solution sparingly around each joint. Rectify leak, and repeat timed pressure test. Continue operation until step (k) is satisfactory.

(l)Slowly release air pressure from vent line.
(m)Remove all traces of leak detecting solution with demineralized water and dry affected parts.
(n)Remove clamp from vent float valve inboard of STA723(RIB 19) LH.
(p)Remove the two blanks from stub pipes and install rubber check valves (Ref. 28-12-31, P. Block 401).
(q)Open GPG control valve and adjust pressure controller to give moderate air flow.
(r)Satisfy conditions in step (c).
(s)Turn pressure controller to fully decrease position and open pressure isolating valve.
(t)Disconnect GPG.
(u)Remove blank/adaptor from pipe aperture in vent surge tank.

**ON A/C 001-100,

F. Not applicable

**ON A/C 101-200,

F. Leak Test of the Vent System Between the Center Tank and the ACT Interface. (For A/C having ACT provisions but ACT(S) not installed).
(1)Make sure that the center tank is open and vented.
(2)Install suitable blanks at the two open ends of the center tank vent pipe and the vent drain.
(3)Connect the GPG to the center tank vent-pipe outlet in the vent surge tank.
(4)Slowly open the GPG control valve and adjust the pressure controller to pressurize the system to 0.7 bar (10 psi).
(5)Allow time for the air pressure to become stable. Correct the air pressure to 0.7 bar (10 psi). Close the control valve.
(6)Make sure that the air pressure remains stable at 0.7 bar (10 psi), without further input, for 15 minutes.

NOTE : If a leak is indicated, maintain the test pressure and apply soap solution sparingly around each joint. Rectify the leak, and repeat the timed pressure test. Continue this procedure until operation (6) is satisfied.

(7)Slowly release the air pressure.
(8)Remove all traces of leak detecting solution with demineralized water and dry the affected parts.
(9)Remove the GPG.
(10)Remove the blanks from the center tank vent-pipe and the vent drain.

R **ON A/C ALL

G. Close-Up
(1)Make certain that working area is clean and clear of tools and miscellaneous items of equipment.
(2)Install NACA intake and vent protector panel 560 (660) AB in vent surge tank (Ref. 28-12-21,P. Block 401).
(3)Install outer tank manhole covers (Ref. 28-11-22, P. Block 401).
(4)Install inner tank manhole covers (Ref. 28-11-22, P. Block 401).
(5)Install trim tank manhole covers (Ref. 28-11-33, P. Block 401).
(6)Install center tank manhole cover 147AZ (Ref. 28-11-29, P. Block 401).
(7)Refuel tanks (Ref. 12-11-28, P. Block 301). Monitor sealing of manhole covers.
(8)Remove access platforms.
(9)Close main landing gear door (Ref. 32-12-11, P. Block 301).
(10)Remove warning notices.
(11)Remove all ground handling and maintenance equipment, standard and special tools, together with replenishing equipment all access equipment and miscellaneous items.

WARNING : LANDING GEAR - MAKE SURE THAT THE GROUND SAFETIES AND CHOCKS ARE IN POSITION.

FLIGHT CONTROLS - MAKE SURE THAT THE GROUND SAFETIES AND NOTICES ARE IN POSITION.

OBEY THE SAFETY PRECAUTIONS IN 28-00-00, P. BLOCK 301 AND 28-10-00, P. BLOCK 301.

MAKE SURE THAT THE FIRE FIGHTING EQUIPMENT IS AVAILABLE AND ADEQUATE.

MAKE SURE THAT YOU ISOLATE THE ELECTRICAL CIRCUITS UPON WHICH WORK IS IN PROGRESS.

1. Reason for the Job

A. To check the integrity of the tank venting system.

**ON A/C 001-100,

R 2. Tank Venting System

R A. Equipment and Materials

ITEM	DESIGNATION
A.	Access Platforms - For Wing Tanks 4.5 m (15 ft) - For Center Tank 2 m (6.5 ft) - For Trim Tank 5 m (16 ft) (If applicable)
B.	Ground Air Supply (to deliver moisture free air at maximum pressure 2 psi)
C. 98A28104005000	Blank/adaptor for inner tank rib adaptor at STA139 (Rib 3).
D. 98A28104007000	Blank/adaptor for outer tank rib adaptor at STA996 (Rib 16).
E. 98A28104011000	Blank/adaptor for center tank RH inlet duct.
F. 98A28104014000	Blank/adaptor for trim tank duct dapator at STA673 (Rib 18).
G. 98A28104017000	Blank/adaptor for trim tank pipes aperture in vent surge tank.
Referenced Procedures	
- 12-11-28, P. Block 301	Replenishing of Fuel Tanks
- 20-28-11, P. Block 1	Electrical Bonding
- 28-00-00, P. Block 301	Fuel - General
- 28-00-00, P. Block 401	Fuel - General
- 28-10-00, P. Block 301	Fuel - Storage
- 28-11-22, P. Block 401	Manhole Covers (Wings)
- 28-11-29, P. Block 401	Center Tank Manhole Cover

ITEM	DESIGNATION
- 28-11-33, P. Block 401	Trim Tanks Manhole Covers (If applicable)
- 28-12-21, P. Block 401	NACA Intake and Vent Protector
- 28-12-33, P. Block 401	NACA Trim Tank and Vent Protector Intake (If applicable).
- 28-12-12, P. Block 401	Check Valve, Venting Air
- 28-25-00, P. Block 301	Refuel/Defuel System
- 32-12-11, P. Block 301	Main Gear Main Door

R B. Procedure

**ON A/C 101-200,

R 2. Tank Venting System

R A. Equipment and Materials

ITEM	DESIGNATION
A.	Access Platforms - For Wing Tanks 4.5 m (15 ft) - For Center Tank 2 m (6.5 ft) - For Trim Tank 5m (16 ft) - For ACT(s) 2.7m (9 ft)
B.	Ground Air Supply (to deliver moisture free air at maximum pressure 2 psi (0.14 bar)
C. 98A28104005000	Blank/adaptor for inner tank rib adaptor at STA139 (Rib 3).
D. 98A28104007000	Blank/adaptor for outer tank rib adaptor at STA996 (Rib 16).
E. 98A28104011000	Blank/adaptor for center tank RH inlet duct.
F. 98A28104014000	Blank/adaptor for trim tank duct adaptor at STA673 (Rib 18).
G. 98A28104017000	Blank/adaptor for trim tank pipes aperature in vent surge tank.
E.	Blanking Plugs/Caps
Referenced Procedures	
- 12-11-28, P. Block 301	Replenishing of Fuel Tanks
- 20-28-11, P. Block 1	Electrical Bonding
- 25-52-00, P. Block 1	Semi-Automatic Cargo Loading System
- 28-00-00, P. Block 301	Fuel - General
- 28-00-00, P. Block 401	Fuel - General
- 28-10-00, P. Block 301	Fuel - Storage
- 28-11-22, P. Block 401	Manhole Cover Wings
- 28-11-29, P. Block 401	Manhole Cover, Center Tank
- 28-11-33, P. Block 401	Trim Tanks Manhole covers
- 28-12-12, P. Block 401	Check Valve, Venting Air
- 28-12-21, P. Block 401	NACA Intake and Vent Protector
- 28-12-33, P. Block 401	NACA Trim Tank and Vent Protector, Intake

ITEM	DESIGNATION
- 28-25-00, P. Block 301	Refuel/Defuel System
- 32-12-11, P. Block 301	Main Gear Main Door
- 52-30-00, P. Block 1	Cargo Compartment Doors

R B. Procedure

**ON A/C 001-100,

(Ref. Fig. 601)

**ON A/C 101-200,

(Ref. Fig. 602)

**ON A/C 101-200,

Post SB 28-2105 For A/C 101-200,

Post SB 28-2126 For A/C 104-104,

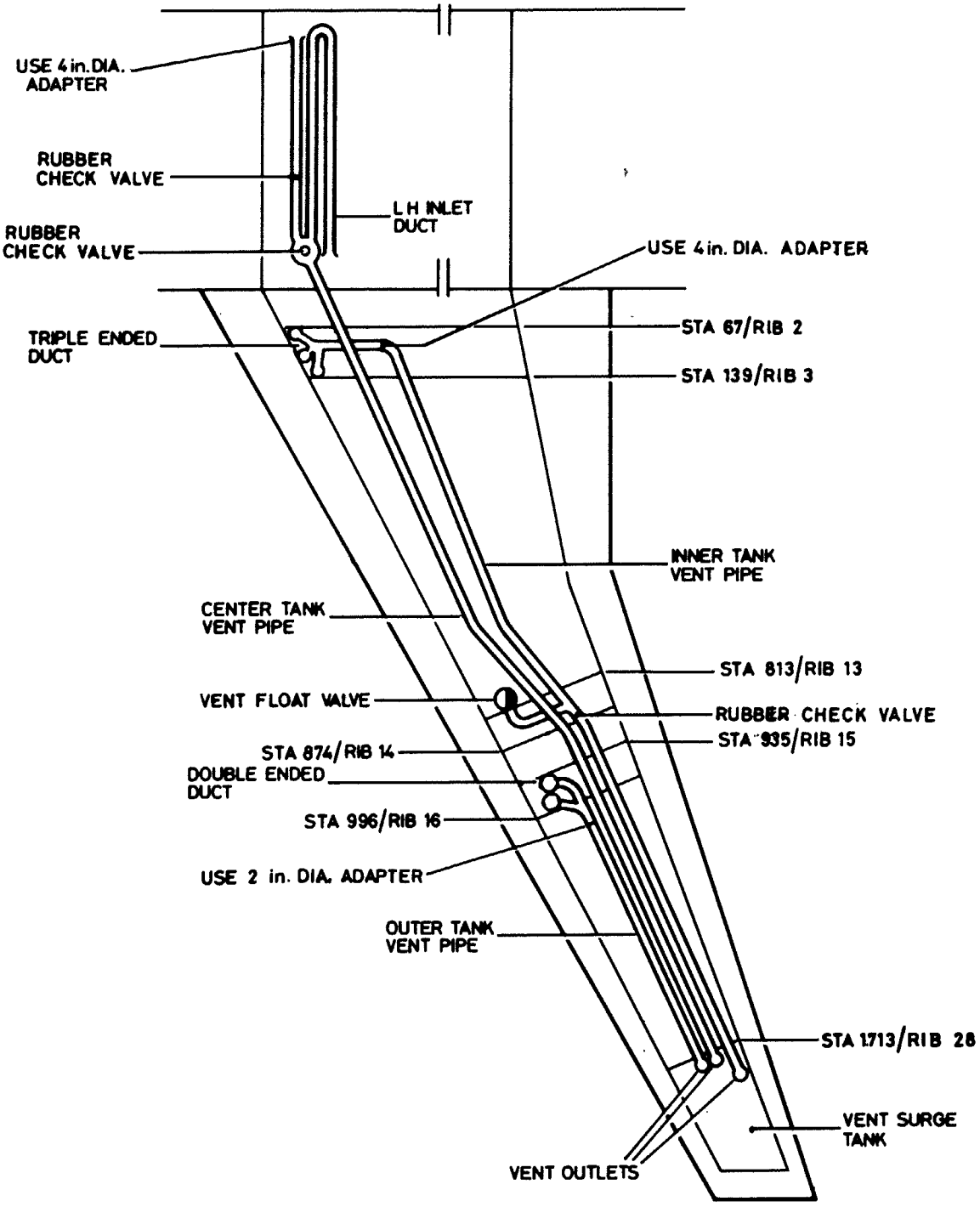
(Ref. Fig. 603)

**ON A/C ALL

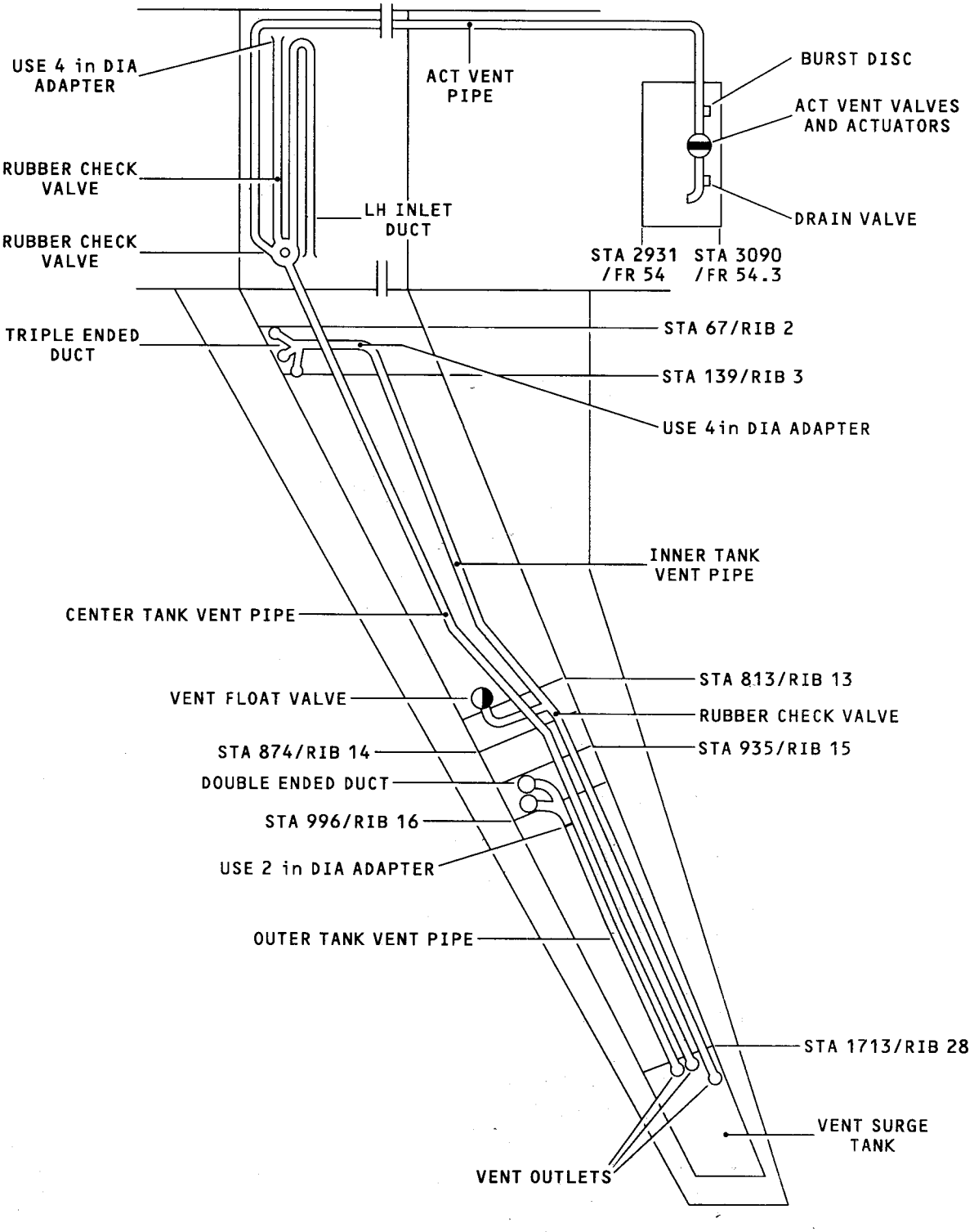
CAUTION : TO AVOID ANY POSSIBILITY OF DAMAGE TO THE VENT LINE IN THE PROCEDURE, HOLD THE ADAPTOR TO WHICH THE AIR PRESSURE LINE IS
R CONNECTED, IN POSITION BY HAND. THIS WILL PREVENT EXCESS PRESSURE
R SHOULD THE VENT LINE BE BLOCKED.

R C. Outer Tank(s)
(1)Job Set-Up
(a)Defuel outer tank(s) (Ref. 28-25-00, P. Block 301).
(b)Position access platform.
(c)Remove NACA intake door 560(660)AB (Ref. 28-12-21, P. Block 401).
(d)Remove manhole cover 550(650)BB (Ref. 28-11-22, P. Block 401).
(e)Remove double ended section of vent line between STA935 (RIB15) and STA996 (RIB16) (Ref. 28-00-00, P. Block 401).
(f)Connect ground air supply line to blank/adaptor FN98A28104007000.
(g)Position blank/adaptor (for 2 in (50.8 mm) dia.) on end of vent line.

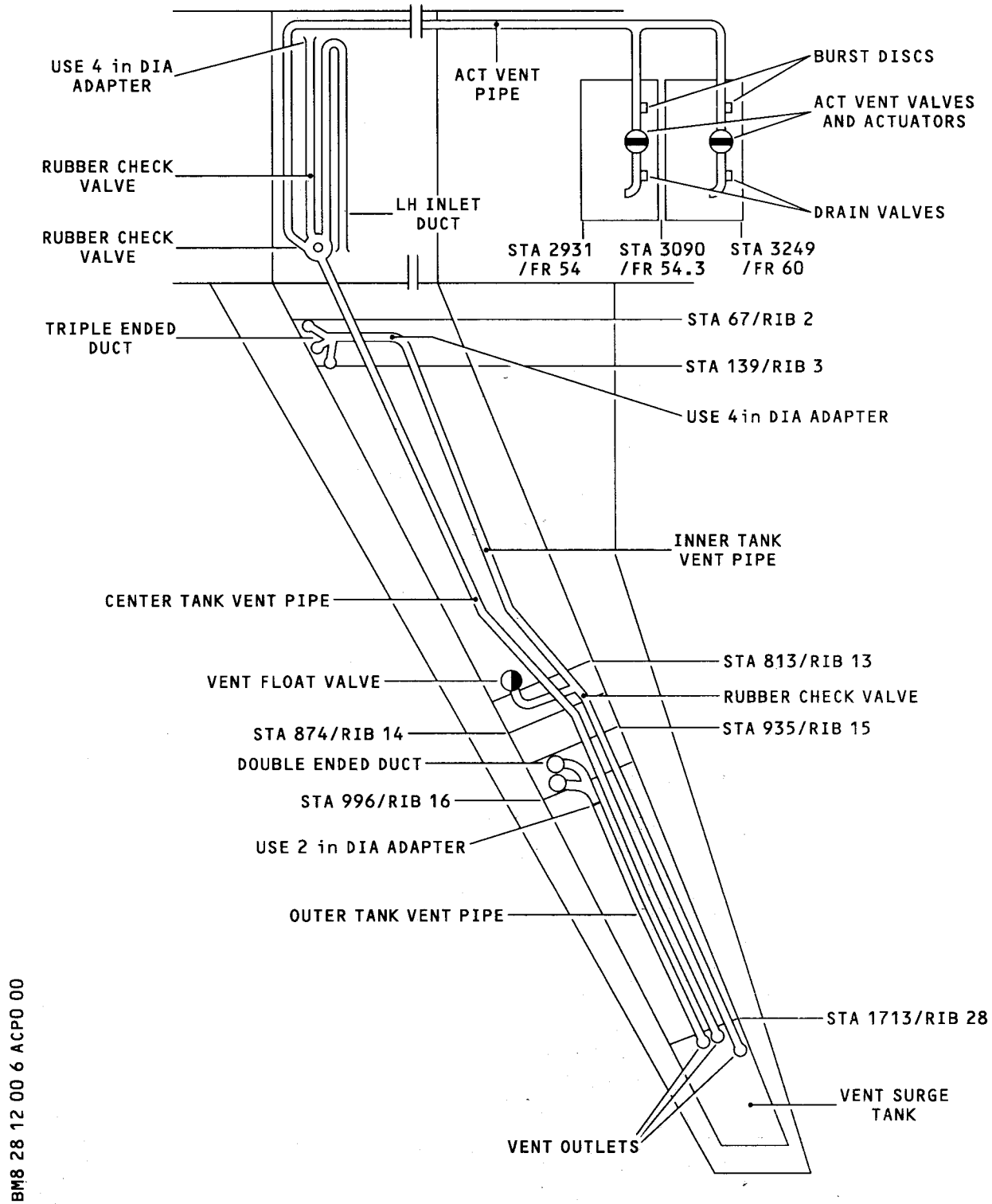
(2)Check
(a)Hold the blank/adaptor in place by hand and lightly pressurize vent line.
(b)Make certain that air flows freely from end of line in vent tanks.



Vent System Lines
Figure 601



Vent System Lines
Figure 602



Vent System Lines
Figure 603

(3)Close-Up
(a)Reduce air pressure to zero and remove blank/adaptor from vent line.
(b)Disconnect ground air supply from blank/adaptor.
(c)Install vent line removed in operation (1) (e)
1 Make certain section is free from obstruction.
2 Install section (Ref. 28-00-00, P. Block 401).
3 Check that clearance between bell-mouthed ends of section and tank roof is 0.5 to 0.6 in (12.7 to 15.2 mm).
4 Connect bonding lead between section and structure (Ref. 20-28-11, P. Block 1).
(d)Make certain that work area is clean and clear of tools and miscellaneous items of equipment.
(e)Install manhole cover 550(650)BB (Ref. 28-11-22, P. Block 401).
(f)Install NACA intake door 560(660)AB (Ref. 28-12-21, P. Block 401).
(g)Remove access platform.
R (h)Refuel aircraft to required fuel load (Ref. 12-11-28, P. Block 301).

R D. Inner Tank(s)
(1)Job Set-Up
(a)Defuel inner tank(s) (Ref. 28-25-00, P. Block 301).
(b)Position access platform.
R (c)Remove NACA intake door 560(660)AB from vent surge tank
R (Ref. 28-12-21, P. Block 401).
R (d)Remove manhole covers 540(640)AB and HB (Ref. 28-11-22, P. Block 401).
(e)Remove the rubber check valve from its stub pipe between STA813 (RIB13) and STA 874 (RIB14) (Ref. 28-12-12, P. Block 401).
(f)Remove triple-ended vent line section between STA67 (RIB2) and STA139 (RIB3)
(g)Connect ground air supply to blank/adaptor PN98A28104005000.
(h)Position at blank/adaptor to end of vent line at STA139 (RIB3).

(2)Check
R (a)Hold the blank/adaptor in place by hand and lightly pressurize the
R vent line.
(b)Make certain that air flows freely from:
1 End of line in vent surge tank.
2 Vent float valve between Ribs 13 and 14.
3 Check valve stub pipe between Ribs 13 and 14.

(3)Close Up
(a)Reduce air pressure to zero and remove blank/adaptor from vent line.
(b)Disconnect ground air supply from blank/adaptor.
(c)Install triple-ended vent line section:
1 Check that section is free from obstruction.
2 Install section to vent line (Ref. 28-00-00, P. Block 401).
3 Check that clearance between bell-mouthed ends of section and tank roof is 0.63 to 0.73 in (16.00 to 18.5 mm).
4 Connect bonding lead between section and structure (Ref. 20-28-11, P. Block 1).
(d)Install rubber check valve (Ref. 28-12-12, P. Block 401).
(e)Make certain that work area is clean and clear of tools and

miscellaneous items of equipment.
(f)Install manhole covers 540(640)AB and HB (Ref. 28-11-22, P. Block 401).
(g)Install NACA intake door 560(660)AB (Ref. 28-12-21, P. Block 401).
(h)Remove access platform.
R (j)Refuel aircraft to required fuel load (Ref. 12-11-28, P. Block 301).

**ON A/C 001-100,

R E. Center Tank
(1)Job Set-Up
(a)Defuel center tank (Ref.28-25-00, P. Block 301).
R (b)Open LH(RH) main landing gear main door (Ref. 32-12-11, P. Block 301)
R and position access platform.
(c)Remove access doors 147(148)AZ (Ref. 28-11-29, P. Block 401).

**ON A/C 101-200,

R E. Center Tank
(1)Job Set-Up
(a)Defuel center tank (Ref. 28-25-00, P. Block 301).
R (b)Open LH main landing gear door (Ref. 32-12-11, P. Block 301) and
R position access platform.
(c)Remove access doors 147AZ (Ref. 28-11-29, P. Block 401).

**ON A/C ALL

(d)Remove the rubber check valves from stub pipes on vent line on LH side of center tank (Ref. 28-12-12, P. Block 401).
(e)Remove vent line inlet duct on RH side of tank (Ref. 28-00-00, P. Block 401).
(f)Connect ground air supply to blank/adaptor PN98A28104011000.
(g)Position blank/adaptor on vent line.
(h)Remove NACA intake door 560AB from vent surge tank (Ref. 28-12-21, P. Block 401).

(2)Check
(a)Hold the blank/adaptor in place by hand and lightly pressurize vent line with air.
(b)Make certain that air flows freely from:
1 End of line in vent surge tank.
2 LH vent opening in center tank.
3 Check-valve stub pipes.

(3)Close-Up
(a)Reduce air pressure to zero and remove blank/adaptor from vent line.
(b)Disconnect ground air supply from blank/adaptor.
(c)Install rubber check valves (Ref. 28-12-12, P. Block 401).
(d)Install vent line inlet section:

1 Make certain section is free from obstruction.
2 Install section to vent line (Ref. 28-00-00, P. Block 401).
3 Connect bonding lead between section and structure (Ref. (Ref. 20-28-11, P. Block 1).

(e)Make certain that work area is clean and clear of tools and miscellaneous items of equipment.
(f)Install NACA intake door 560(660)AB (Ref. 28-12-21, P. Block 401).

**ON A/C 001-100,

(g)Install access doors 147(148)AZ (Ref. 28-11-29, P. Block 401).
(h)Remove access platform.
(j)Close LH(RH) main landing gear door (Ref. 32-12-11, P. Block 301).
R (k)Refuel aircraft to required fuel load (Ref. 12-11-28, P. Block 301).

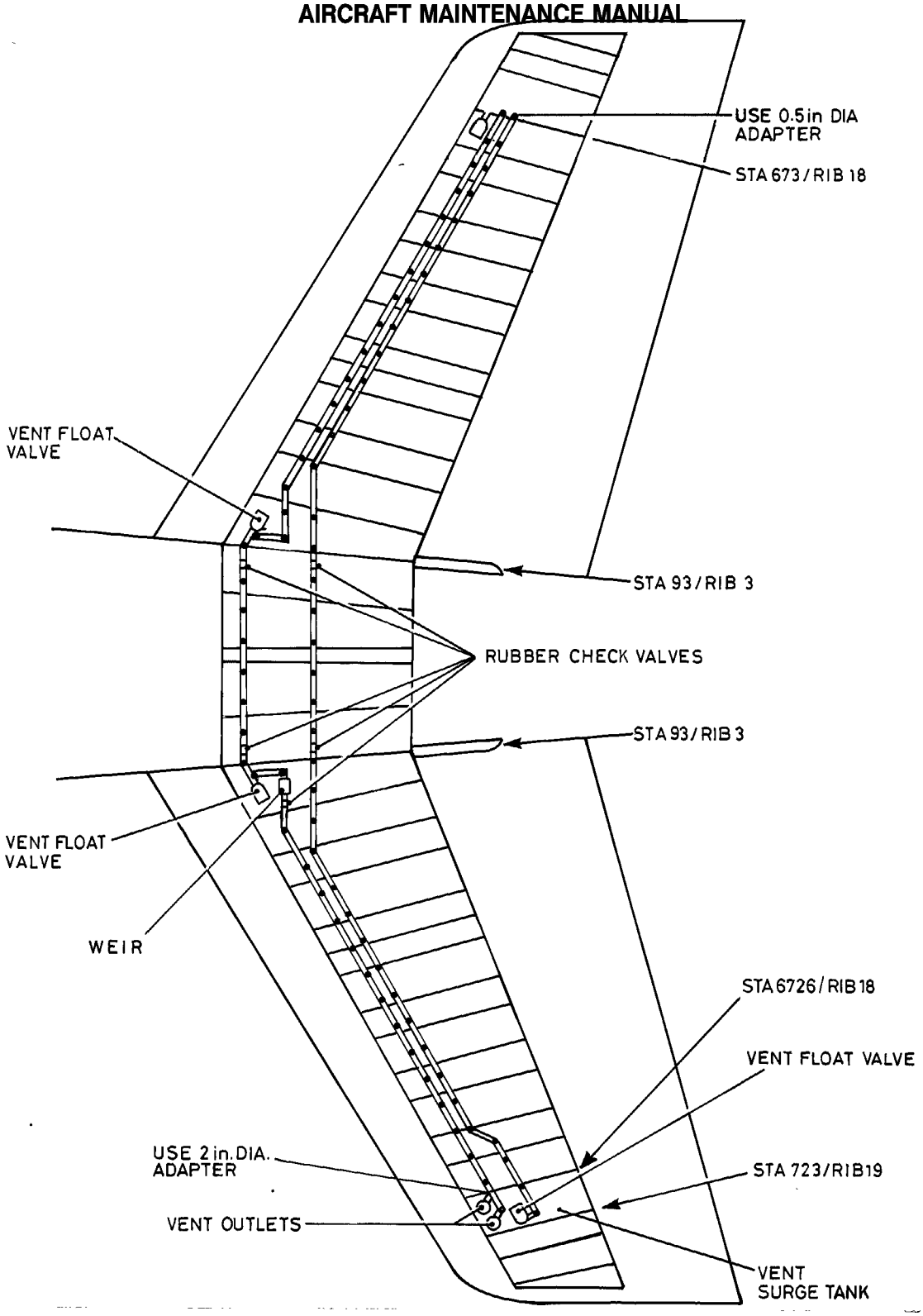
**ON A/C 101-200,

(g)Install access doors 147AZ (Ref. 28-11-29, P. Block 401).
(h)Remove access platform.
(j)Close LH main landing gear door (Ref. 32-12-11, P.Block 301).
R (k)Refuel aircraft to required fuel load (Ref. 12-11-28, P. Block 301).

**ON A/C ALL

R F. Trim Tank
(Ref. Fig. 604)
(1)Job Set-up
R (a)Defuel horizontal stabilizer trim tank (Ref. 28-25-00, P. Block 301).
(b)Position access platform.
(c)Remove NACA intake and vent protector panel 346 AB (Ref. 28-12-33, P. Block 401).
R (d)Remove manhole covers 333GB, 333BB, 343GB and 343BB (Ref. 28-11-33,
R P. Block 401).
(e)Remove double ended section of forward vent line between Ribs 18 and 19 of LH stabilizer (Ref. 28-00-00, P. Block 401).
(f)Connect air supply to blank/adaptor PN98A28104014000

(2)Check
(a)Position blank/adaptor on end of forward vent line at RIB 18 LH.
R (b)Hold the blank/adaptor in place by hand and lightly pressurize forward
R vent line.
R (c)Make certain that air flows freely from the forward vent line aperture
R in the vent surge tank and from the:
R - vent float valve inboard of Rib 18 RH
R - vent float valves outboard of Rib 3 LH and RH
R - rubber check valve outboard of Rib 3 LH
R - rubber check valves inboard of Rib 3 LH and RH.
(d)Reduce air pressure to zero and remove blank/adaptro from forward vent line.
(e)Disconnect air supply from blank/adaptor PN98A28104014000.



Vent System - Trim Tanks
Figure 604

(f)Connect air supply to blank/adaptor PN98A28104017000.
(g)Position blank/adaptor on the aft vent outlet in vent surge tank.
(h)Hold the blank/adaptor in place by hand and lightly pressurize aft vent line.
(j)Make certain that air flows freely from vent float valve inboard of Rib 19 LH and from rubber check valves inboard of Rib 3 LH and RH.
(k)Reduce air pressure to zero and remove blank/adaptor from aft vent line aperture in vent surge tank.

(3)Close-Up
(a)Disconnect air supply from blank/adaptor.
(b)Disconnect ground air supply from adaptor(s).
(c)Install previously removed double ended forward vent line section
1 Make certain sections are free from obstruction.
2 Install vent line sections (Ref. 28-00-00, P. Block 401).
R 3 Check clearance between duct bell-mouthed open ends and tank roof is
R between 16.0 and 18.5 mm (0.63 and 0.73 in).
R 4 Connect bonding leads between sections and structure (Ref. 20-28-11,
R P. Block 1).
(d)Make certain that work area is clean and clear of tools and miscellaneous items of equipment.
(e)Install manhole covers 333GB, 333BB, 343GB, 343BB, 319AZ and 319BZ (Ref. 28-11-33, P. Block 401).
(f)Install NACA intake door 344GB (Ref. 28-12-33, P. Block 401).
(g)Remove access platform.
(h)Refuel the aircraft to the required fuel load (Ref. 12-11-28, P. Block 301).

**ON A/C 101-200,

R G. ACT (If Installed)
(Ref. Fig. 605)

**ON A/C 101-200,

Post SB 28-2105 For A/C 101-200,

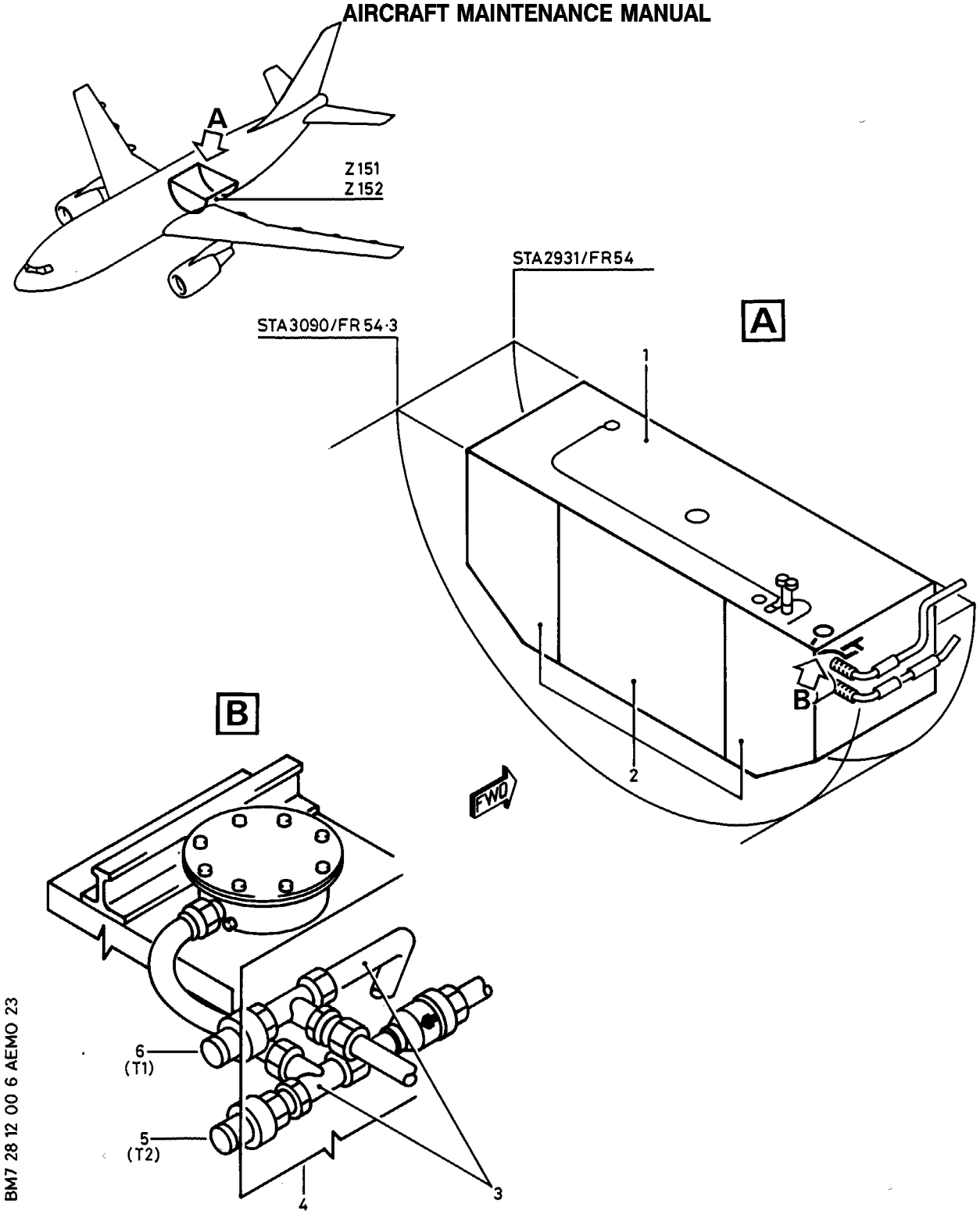
Post SB 28-2126 For A/C 104-104,

(Ref. Fig. 606)

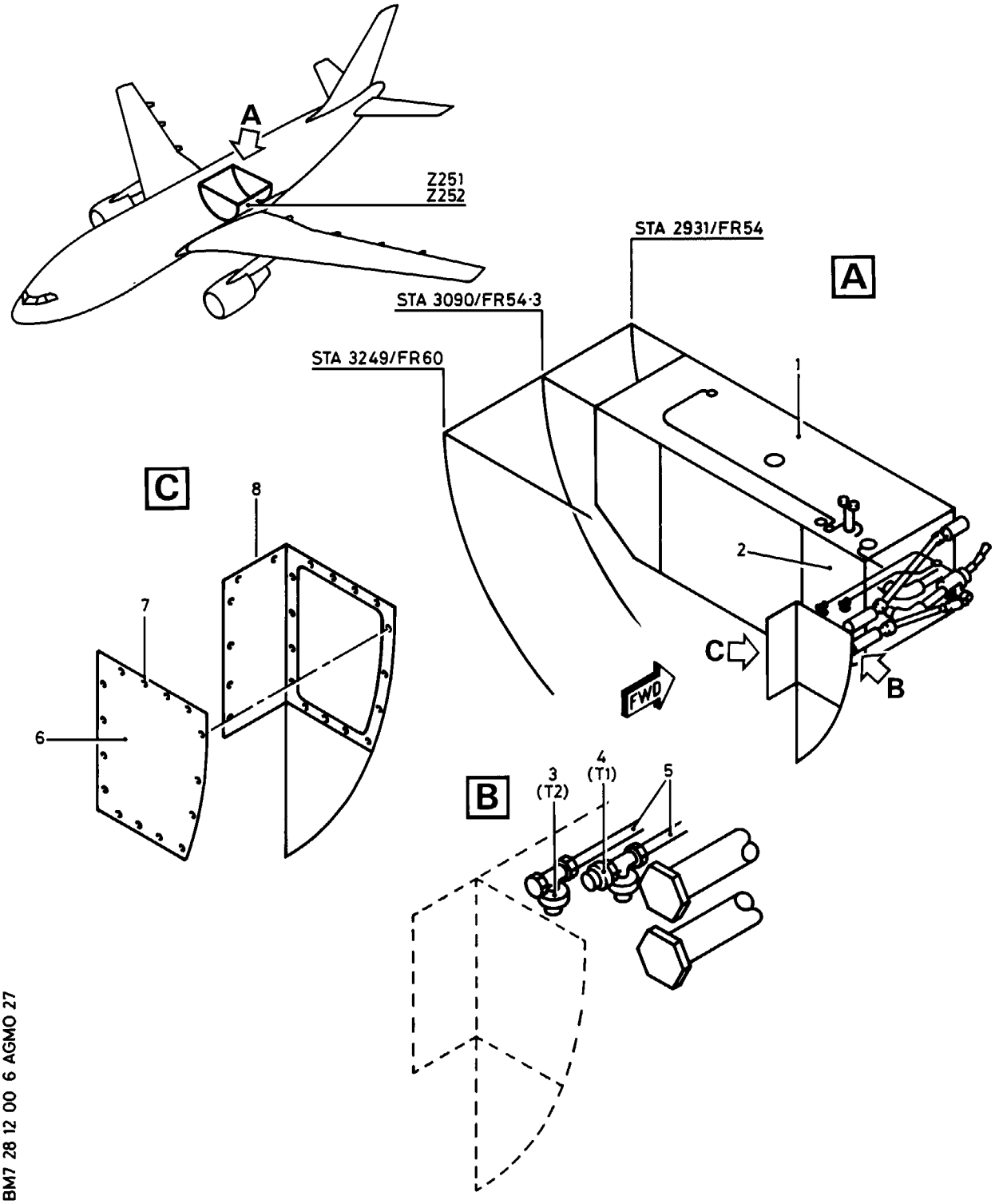
**ON A/C 101-200,

Post SB 28-2105 For A/C 101-200,

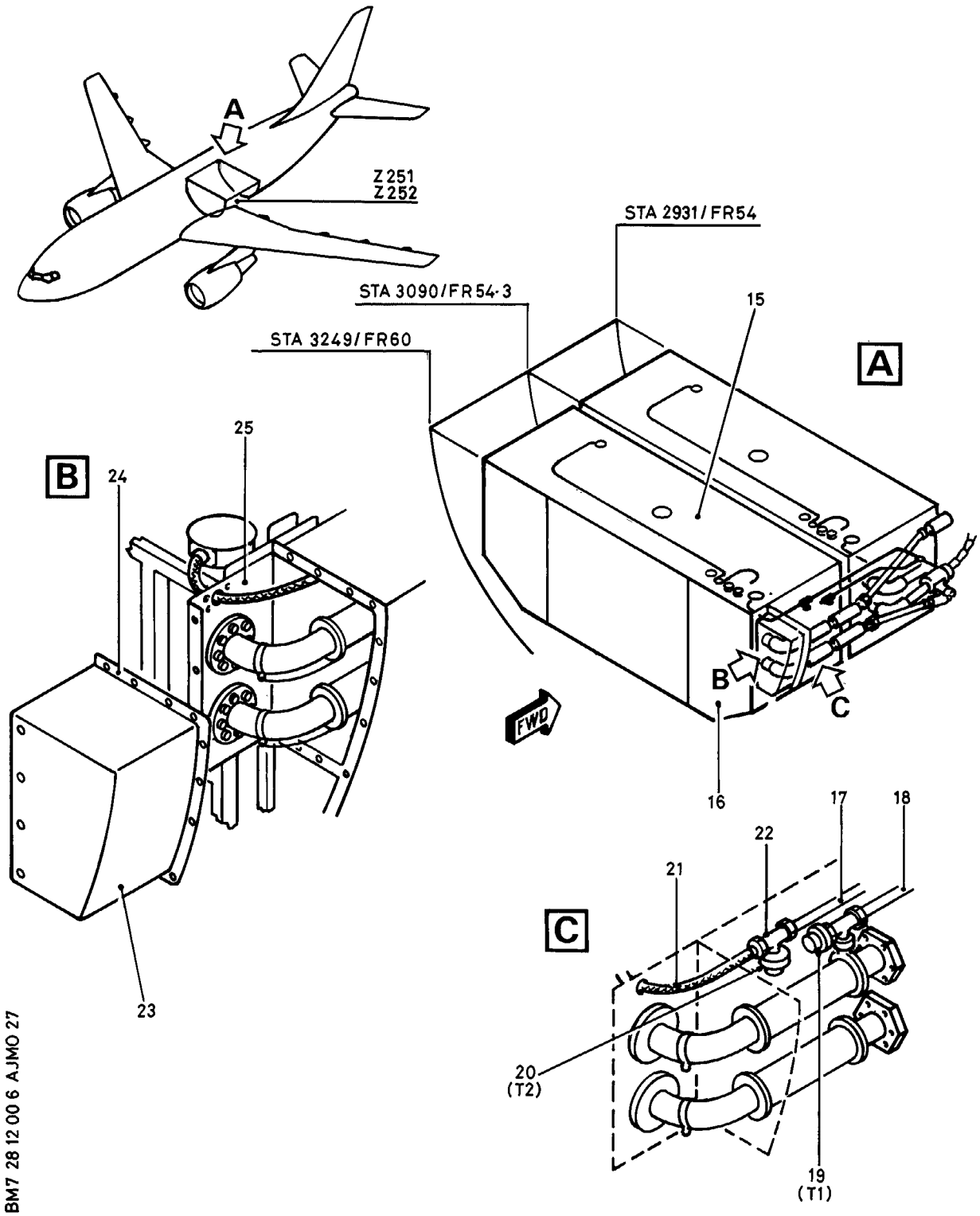
(Ref. Fig. 607)



Vent System Check - ACT
Figure 605



Vent System Check - 1 ACT fitted
Figure 606



Vent System Check - 2 ACT fitted
Figure 607

**ON A/C 101-200,

(1)Job set-up.
(a)Defuel the ACT (Ref. 28-25-00, P. Block 301).
(b)Open the LH main-landing-gear door (Ref. 32-12-11, P. Block 301).
(c)Put the access platform in position below zone 140. Remove the access door 147AZ (Ref. 28-11-29, P. Block 401).
(d)Remove the rubber check valves from the stub pipes on the vent line in the LH side of the center tank (Ref. 28-12-12, P. Block 401).
(e)Put the access platform in position below zone 560 (660). Remove the NACA intake door 560AB (660AB) from the vent surge tank (Ref. 28-12-21, P. Block 401).
(f)Put the access platform in position below the aft cargo-compartment
R door. Open the aft cargo-compartment door (Ref. 52-30-00,
R P. Block 1).
(g)If necessary, remove the cargo container(s) installed behind the ACT (Ref. 25-52-00, P. Block 1).
(h)Unlock the quick release fasteners and remove the RH section of the heat shield (2) from the rear wall of the ACT (1).
(j)Connect the ground air supply to the self-sealing test point T2 (5).

(2)Do the check of the vent system.
(a)With the ground air supply, carefully pressurize the vent system at 2 psi (0.14 bar) maximum.
(b)Make sure that air flows freely from the:
- end of the line in the vent surge tank
- LH and RH vent openings in the center tank
- check valve stub-pipes in the center tank.

(3)Close-up.
(a)Decrease the pressure of the ground air supply to zero. Disconnect the ground air supply from the self sealing coupling T2 (5).
(b)Make sure that the work area is clean and clear of tools and other items.
(c)Install the RH section of the heat shield (2) on the rear wall of the ACT (1) and lock the quick release fasteners.
(d)If necessary, install the container(s) behind the ACT (Ref. 25-52-00. P. Block 1).
(e)Close the aft cargo compartment door (Ref. 52-30-00, P. Block 1). Remove the access platform.
(f)Install the rubber check valves on the stub pipes of the vent line in the LH side of the center tank (Ref. 28-12-12, P. Block 401).
(g)Install the access door 147AZ (Ref. 28-11-29, P. Block 401). Remove the access platform
(h)Close the LH main-landing-gear door (Ref. 32-12-11, P. Block 301).
(j)Install the NACA intake door 560AB (660AB) (Ref. 28-12-21, P. Block 401). Remove the access platform.
(k)Refuel the aircraft to the required fuel load (Ref. 12-11-28, P. Block 301).

**ON A/C 101-200,

Post SB 28-2105 For A/C 101-200,

Post SB 28-2126 For A/C 104-104,

(1)If 1 ACT is installed.
(Ref. Fig. 606)

(a)Job set-up.
1 Defuel the ACT (Ref. 28-25-00, P. Block 301).
2 Open the LH main-landing-gear door (Ref. 32-12-11, P. Block 301).
3 Put the access platform in position below zone 140. Remove the access door 147AZ (Ref. 28-11-29, P. Block 401).
4 Remove the rubber check valves from the stub pipes on the vent line in the LH side of the center tank (Ref. 28-12-12, P. Block 401).
5 Put the access platform in position below zone 560 (660). Remove
R the NACA intake door 560AB (660AB) from the vent surge tank
R (Ref. 28-12-21, P. Block 401).
6 Put the access platform in position below the aft cargo-compartment door. Open the aft cargo-compartment door (Ref. 52-30-00, P. Block 1).
7 If necessary, remove the cargo container(s) installed behind the ACT (Ref. 25-52-00, P. Block 1).
8 Unlock the quick release fasteners (7) and remove the panel (6) from the sidewall lining (8).
9 Connect the ground air supply to the self-sealing test point T2 (3).

(b)Do the check of the vent system.
1 With the ground air supply, carefully pressurize the vent system at 2 psi (0.14 bar) maximum.
2 Make sure that air flows freely from the:
- end of the line in the vent surge tank
- LH and RH vent openings in the center tank
- check valve stub-pipes in the center tank.

(c)Close-up.
1 Decrease the pressure of the ground air supply to zero.
2 Disconnect the ground air supply from the self-sealing test point T2 (3).
3 Make sure that the work area is clean and clear of tools and other items.
4 Install the panel (6) on the sidewall lining (8) and lock the quick release fasteners (7).
R 5 If necessary, install the container(s) behind the ACT (Ref. 25-52-00,
R P. Block 1).

6 Close the aft cargo-compartment door (Ref. 52-30-00, P. Block 1). Remove the access platform.
7 Install the rubber check valves on the stub pipes of the vent line in the LH side of the center tank (Ref. 28-12-12, P. Block 401).
8 Install the access door 147AZ (Ref. 28-11-29, P. Block 401). Remove the access platform.
9 Close the LH main-landing-gear door (Ref. 32-12-11, P. Block 401).
10 Install the NACA intake door 560AB (660AB) (Ref. 28-12-21, P. Block 401). Remove the access platform.
11 Refuel the aircraft to the required fuel load (Ref. 12-11-28, P. Block 301).

(2)If 2 ACT's are installed.
(Ref. Fig. 607)

(a)Job set-up
1 Defuel the two ACT's (Ref. 28-25-00, P. Block 301).
2 Open the LH main-landing-gear door (Ref. 32-12-11, P. Block 301).
3 Put the access platform in position below zone 140. Remove the access door 147AZ (Ref. 28-11-29, P. Block 401).
4 Remove the rubber check valves from the stub pipes on the vent line in the LH side of the center tank (Ref. 28-12-12, P. Block 401).
R 5 Put the access platform in position below zone 560 (660).
R Remove the NACA intake door 560AB (660AB) from the vent surge tank
R (Ref. 28-12-21, P. Block 401).
6 Put the access platform in position below the aft cargo-compartment door. Open the aft cargo-compartment door (Ref. 52-30-00, P. Block 1).
7 If necessary, remove the cargo container(s) installed behind the ACT (Ref. 25-52-00, P. Block 1).
8 Unlock the quick release fasteners and remove the RH section of the heat shield (16) from the rear wall of ACT 2 (15).
9 Unlock the quick release fasteners (24) and remove the panel (23) from the sidewall lining (25).
10 Connect the ground air supply to the self-sealing test point T2 (20).

(b)Do the check of the vent system.

1 To check the vent lines of ACT 1:
a Disconnect the line (21) from the T-piece (22). Put caps on the open ends of the line (21) and the T-piece (22).
b With the ground air supply, carefully pressurize the vent system to 2 psi (0.14 bar) maximum.
c Make sure that air flows freely from the:
- end of the line in the vent surge tank
- LH and RH vent openings in the center tank
- check valve stub-pipes in the center tank.
d Decrease the pressure of the ground air supply to zero.
e Remove the caps from the line (21) and the T-piece (22). Connect the line (21) to the T-piece (22).

2 To check the vent lines of ACT 2:
a Disconnect the line (17) from the T-piece (22). Put caps on the open ends of the line (17) and the T-piece (22).
b With the ground air supply, carefully pressurize the vent system to 2 psi (0.14 bar) maximum.
c Make sure that air flows freely from the:
- end of the line in the vent surge tank
- LH and RH vent openings in the center tank
- check valve stub-pipes in the center tank.
d Decrease the pressure of the ground air supply to zero.
e Remove the caps from the line (17) and the T-piece (22). Connect the line (17) to the T-piece (22).

(c)Close-up
1 Disconnect the ground air supply from the self-sealing test point T2 (20).
2 Make sure that the work area is clean and clear of tools and other items.
3 Install the panel (23) on the sidewall lining (25) and lock the quick release fasteners (24).
4 Install the RH section of the firewall (16) on the rear of ACT 2 (15) and lock the quick release fasteners.
5 If necessary, install the container(s) behind ACT 2 (Ref. 25-52-00, P. Block 1).
6 Close the aft cargo-compartment door (Ref. 52-30-00, P. Block 1). Remove the access platform.
7 Install the rubber check valves on the stub pipes of the vent line in the LH side of the center tank (Ref. 28-12-12, P. Block 401).
8 Install the access door 147AZ (Ref. 28-11-29, P. Block 401). Remove the access platform.
9 Close the LH main-landing-gear door (Ref. 32-12-11, P. Block 401).
10 Install the NACA intake door 560AB (660AB) (Ref. 28-12-21, P. Block 401). Remove the access platform.
11 Refuel the aircraft to the required fuel load (Ref. 12-11-28, P. Block 301).

CHECK VALVE, VENTING AIR - REMOVAL/INSTALLATION

WARNING : LANDING GEAR - MAKE CERTAIN GROUND SAFETIES AND CHOCKS ARE IN POSITION.

FLIGHT CONTROLS - MAKE CERTAIN GROUND SAFETIES AND NOTICES ARE IN POSITION.

OBSERVE THE SAFETY PRECAUTIONS IN 28-00-00, P. BLOCK 301 AND 28-10-00, P. BLOCK 301.

MAKE CERTAIN THAT FIRE FIGHTING EQUIPMENT IS AVAILABLE AND ADEQUATE.

1. Equipment and Materials

ITEM	DESIGNATION
A.	Access Platform 4 m (13 ft)
Referenced Procedures	
- 28-00-00, P. Block 301	Fuel - General
- 28-10-00, P. Block 301	Storage
- 28-11-22, P. Block 401	Manhole Covers (Wings)

2. Procedure

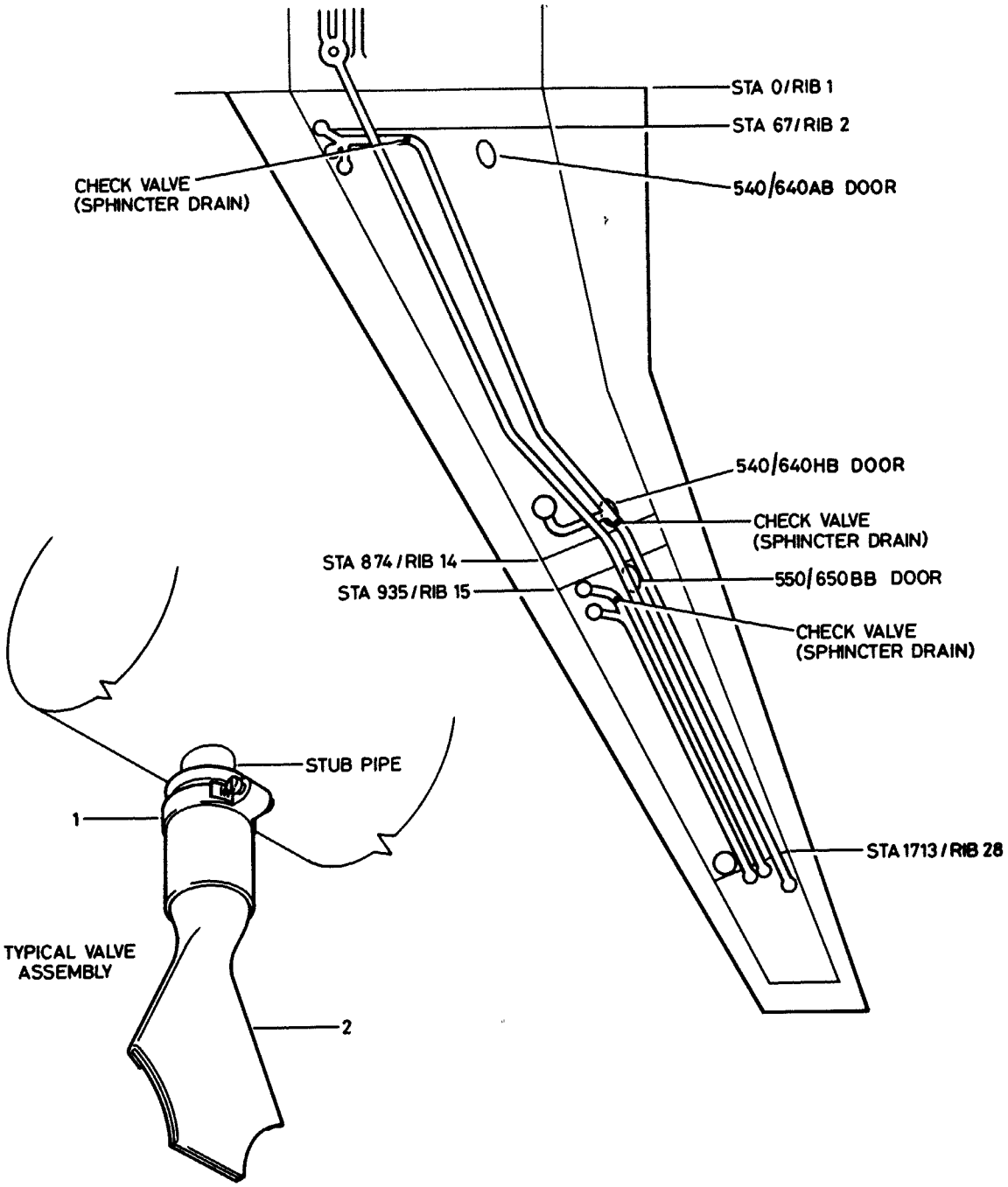
(Ref. Fig. 401)

A. Job Set-Up
(1)Remove the appropriate manhole cover (Ref. 28-11-22, P. Block 401).

B. Removal
(1)Sufficiently slacken clip (1) and remove valve (2).

C. Installation
(1)Position clip (1) on valve (2) and slide both on to stub pipe.
(2)Tighten clip (1).

D. Job Close-Up
(1)Make certain that working area is clean and clear of tools and miscellaneous items of equipment.
(2)Install manhole cover (Ref. 28-11-22, P. Block 401).



Check Valves - Vent System
Figure 401

OVERPRESSURE PROTECTOR, VENT SURGE TANK - REMOVAL/INSTALLATION

WARNING : FLIGHT CONTROLS - MAKE CERTAIN GROUND SAFETIES AND NOTICES ARE IN POSITION.

LANDING GEAR - MAKE CERTAIN GROUND SAFETIES AND CHOCKS ARE IN POSITION.

OBSERVE THE SAFETY PRECAUTIONS IN 28-00-00, P. BLOCK 301 AND 28-10-00 P. BLOCK 301

MAKE CERTAIN THAT FIRE FIGHTING EQUIPMENT IS AVAILABLE AND ADEQUATE.

BEFORE POWER IS SUPPLIED TO THE AIRCRAFT MAKE CERTAIN THAT ELECTRICAL CIRCUITS UPON WHICH WORK IS IN PROGRESS ARE ISOLATED.

1. Equipment and Materials

ITEM	DESIGNATION
A.	Overpressure Protector
B.	O-ring Seal
C. Material No. 11-004	Cleaning Agent (Ref. 20-31-00)
D. Material No. 01-001	Fuels (Ref. 20-31-00)
E. Material No. 09-007	Sealants (Ref. 20-31-00)
F. Material No. 09-023	Sealants (Ref. 20-31-00)
Referenced Procedures	
- 28-00-00, P. Block 301	Fuel - General
- 28-10-00, P. Block 301	Storage
- 28-12-21, P. Block 401	NACA Intake and Vent Protector

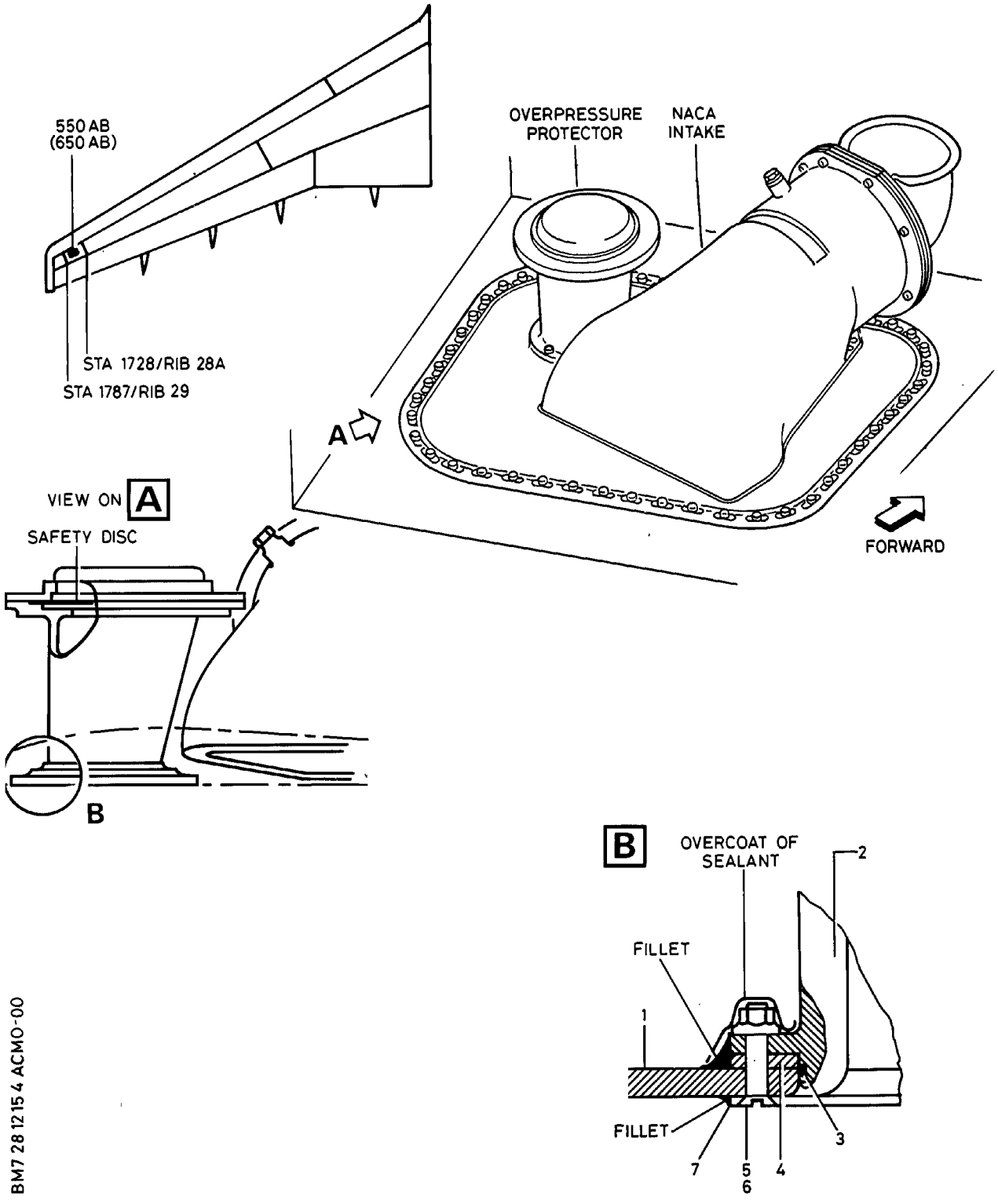
2. Procedure

(Ref. Fig. 401)

A. Job Set-Up
(1)Remove NACA intake and vent protector panel 560 (660) AB from vent tank (Ref. 28-12-21, P. Block 401).

B. Removal
(1)Remove nuts and bolts (5 and 6), overpressure protector (2), packing ring (4) and, where fitted, baffle (7) from NACA intake door (1).
(2)Remove and discard O-ring (3) from overpressure protector.
(3)Remove baffle assembly (4) from overpressure protector.
(4)Remove O-ring seals (5) from baffle assembly (4).

C. Installation



Overpressure Protector - Installation
Figure 401

(1)Using a soft lint free cloth and cleaning agent (Material No. 11-004) remove all traces of sealant and foreign matter from mating surfaces of NACA intake and vent protector panel 560 (660) AB door(1), packing ring (4), overpressure protector (2) and, where fitted, baffle (7).
(2)Lubricate new O-ring seal (3) with fuel (Material No. 01-001) and fit to overpressure protector.
(3)Assemble overpressure protector (2), packing ring (4) and, where fitted, baffle (7), to NACA intake door (1), and secure with nuts and bolts (5 and 6).
(4)Seal around overpressure protector outside flange, and where baffle is fitted, around baffle flange, with continuous fillet of sealant (Material No. 09-023). Overcoat the overpressure protector outer flange fillet with sealant (Material No. 09-007).
(5)Overcoat nuts (5) with Material NO. 09-007.

D. Close-Up
(1)Install NACA intake and vent protector panel 560 (660) AB (Ref. 28-12-21, P. Block 401).

(2)Remove all ground handling and maintenance equipment, standard and special tools, together with ground power and replenishment equipment, all access equipment and miscellaneous items.

VENT SURGE TANK OVERPRESSURE PROTECTOR - INSPECTION/CHECK

WARNING : LANDING GEAR - MAKE CERTAIN GROUND SAFETIES AND CHOCKS ARE IN POSITION.

FLIGHT CONTROLS - MAKE CERTAIN GROUND SAFETIES AND NOTICES ARE IN POSITION.

1. Vent Surge Tank Overpressure Protector (Safety Disc) - Visual Inspection

A. Reason for the Job

(1)To check that safety disc in vent surge tank is intact.

B. Equipment and Materials

ITEM	DESIGNATION
A.	Access Platform 4 m (13 ft)

C. Procedure

(1)Job set-up

(a)Position access platform.

(2)Inspect

(a)Visually inspect, through aperture adjacent to NACA intake 560(660)AB, that safety disc is intact. Do not prod or apply pressure to the bursting disc.

NOTE: A cross is painted on safety disc to facilitate inspection.

(3)Close-Up

(a)Remove access platform.

OVERPRESSURE PROTECTOR INNER TANK REMOVAL/INSTALLATION

WARNING: FLIGHT CONTROLS - MAKE CERTAIN GROUND SAFETIES AND NOTICES ARE IN POSITION.

LANDING GEAR - MAKE CERTAIN GROUND SAFETIES AND CHOCKS ARE IN POSITION.

OBSERVE THE SAFETY PRECAUTIONS IN 28-00-00, P. BLOCK 301. AND 28-10-00, P. BLOCK 301.

MAKE CERTAIN THAT FIRE FIGHTING EQUIPMENT IS AVAILABLE AND ADEQUATE.

1. Equipment and Materials

ITEM	DESIGNATION
A. Material No. 01-001	Fuels (Ref. 20-31-00)
B. Material No. 09-007	Sealants (Ref. 20-31-00)
C. Material No. 09-014	Sealants (Ref. 20-31-00)
D. Material No. 16-006	Structure Paints (Ref. 20-31-00)
E.	O-ring Seals
F.	Carbon Safety Disc
Referenced Procedure	
- 28-00-00, P. Block 301	Fuel - General
- 28-10-00, P. Block 301	Storage
- 28-11-22, P. Block 401	Manhole Covers (Wings)

2. Procedure

A. Job Set-Up

(1) Remove manhole cover 540 HB (640 HB) from between STA813 (RIB 13) and STA874(RIB 14) (Ref. 28-11-22, P. Block 401).

B. Removal

(Ref. Fig. 401)

(1) Remove nuts (6), washers (5) and bolts (2) securing top plate (1), safety disc (7) and housing (3) to stack pipe.

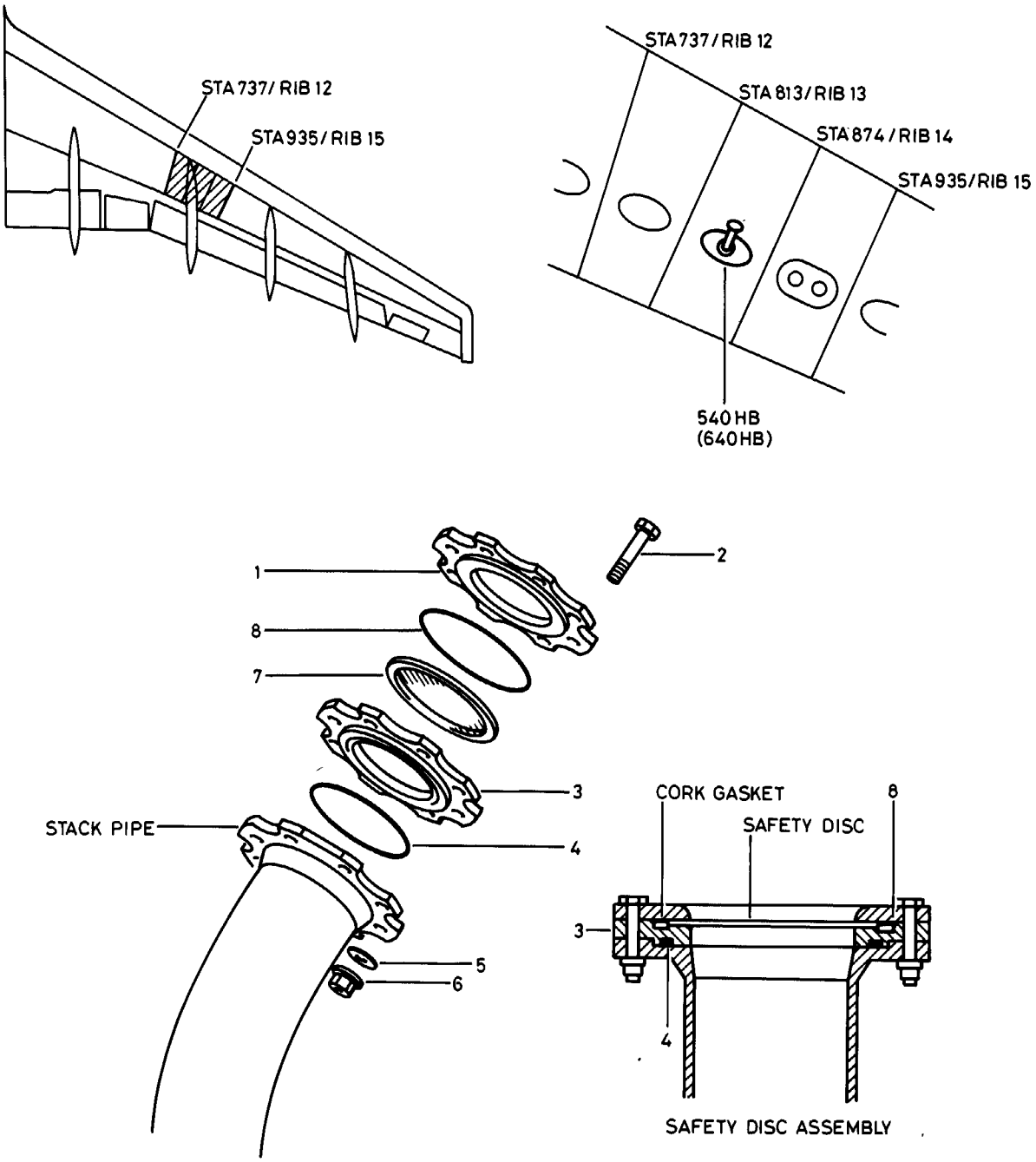
(2) Remove top plate (1), safety disc (7), housing (3) and O-ring seals (4, 8) from stack pipe. Discard seals and safety disc.

C. Preparation of Replacement Component

CAUTION: THE CARBON SAFETY DISC IS FRAGILE.

(1) Make certain that the seal grooves of top plate (1) and housing (3) are clean and in correct condition.

(2) Make certain that the interfaces between safety disc (8), top plate (1) and housing (3) are clean and in correct condition.



Overpressure Protector - Installation
Figure 401

D. Installation
(1)Place O-ring seal (4) in bottom groove of housing (3) and install housing on stack pipe.
(2)Install safety disc (7) with cork gasket located in groove of housing (3).

NOTE: Correct installation of item (7) is essential.

(3)Locate O-ring seal (8) in chamfer on housing (3).
(4)Position top plate (1) on housing (3) to ensure correct engagement with O-ring seal (8).
(5)Install bolts (2), washers (5) and nuts (6). Tighten in diametrically opposite sequence, to avoid damage to safety disc (7).
(6)Coat the bolt heads/tails and nuts with Material No.16-006, Material No. 09-007 or Material No. 09-014.

E. Tests
(1)Half fill stack pipe with Material No. 01-001 and make certain that there are no leaks past the safety disc.

F. Close-Up
(1)Install manhole cover (Ref. 28-11-22, P. Block 401).
(2)Remove all ground handling and maintenance equipment, standard and special tools, all access equipment and miscellaneous items.

R CENTER TANK OVERPRESSURE PROTECTOR (280052), (280053) - REMOVAL/INSTALLATION

WARNING : BEFORE AND DURING MAINTENANCE OPERATIONS TO BE UNDERTAKEN ON FUEL SYSTEM, THE PRESCRIBED SAFETY PRECAUTIONS MUST BE RIGOROUSLY OBSERVED (REF. 28-00-00, P. BLOCK 301 AND 28-10-00, P. BLOCK 301) MAKE CERTAIN THAT FIRE FIGHTING EQUIPMENT IS READILY AVAILABLE AND IN PROXIMITY TO WORK AREA.
- MAKE CERTAIN THAT LANDING GEAR SAFETIES INCLUDING WHELL CHOCKS ARE IN POSITION.

1. Equipment and Materials

ITEM	DESIGNATION
A. Material No.P16-001	Structure Paints (Ref. 20-31-00)
R B.	Access Platform 2.5 m (8.3 ft.)
Referenced Procedures	
- 12-11-28, P. Block 1	Fuel Tank Replenishing
- 28-00-00, P. Block 301	Fuel
- 28-11-29, P. Block 401	Center Tank Manhole Cover
- 28-25-00, P. Block 301	Refuel/Defuel System
- 32-12-11, P. Block 301	Main Gear Main Door (Ground Door(s) opening)

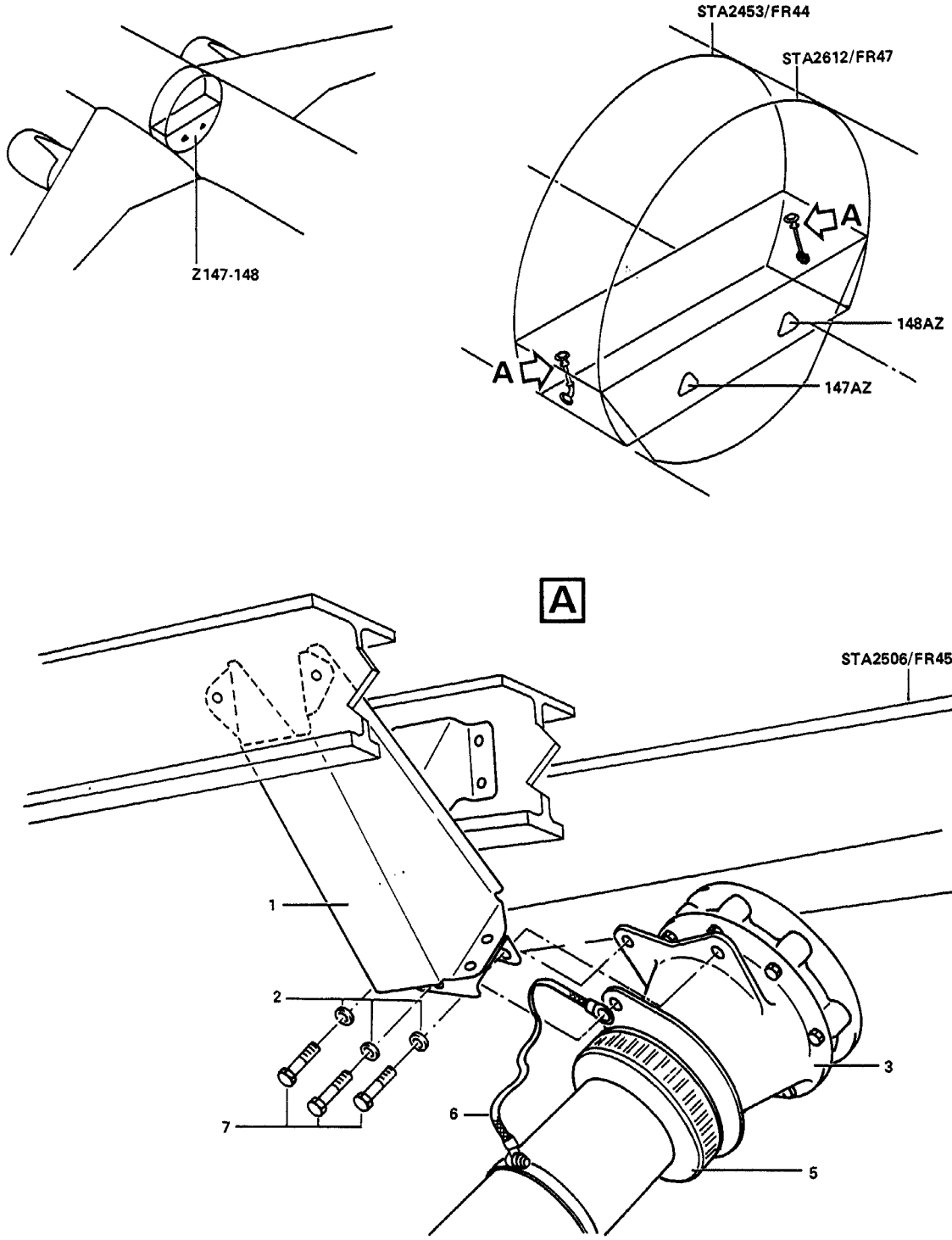
2. Procedure
(Ref. Fig. 401)

A. Job Set-Up
(1)Defuel center tank (Ref. 28-25-00, P. Block 301).
(2)Open main gear door (Ref. 32-12-11, P. Block 301).
(3)Position access platform.
(4)Open center tank manhole cover (147AZ or 148AZ) corresponding to overpressure protector to be removed (Ref. 28-11-29, P. Block 401).
(5)Gain access to center tank and observe prescribed safety precautions (Ref. 28-00-00, P. Block 301 and 28-10-00, P. Block 301.).

B. Removal
(1)Unscrew knurled nut (5).
(2)Loosen and remove bolts (7) and washers (2) and bonding lead (6).
(3)Remove overpressure protector (3).

C. Preparation of Replacement Component
(1)Check for correct condition of safety disc.

D. Installation
(1)Position overpressure protector (3) on bracket (1). Install washers (2) and bolts (7) and bonding lead (6). Do not tighten at this stage.
(2)Hand-tighten knurled nut (5).
(3)Tighten bolts (7).
(4)Apply a coat of paint (Material No.P16-001) on bolts (7).



Center Tank Overpressure Protector
Figure 401

E. Close-Up
(1)Make certain that working area is clean and clear of tools and miscellaneous items of equipment.
(2)Close manhole cover (147AZ or 148AZ) (Ref. 28-11-29, P. Block 401).
(3)Refuel center tank (Ref. 12-11-28, P.Block 1).
(4)Remove access platform.
(5)Close main gear door (Ref. 32-12-11, P. Block 301).

CHECK VALVE - VENT DUCT, ADDITIONAL CENTER TANK - REMOVAL/INSTALLATION

WARNING : OBEY THE SAFETY PRECAUTIONS IN 28-00-00, P. BLOCK 301 AND 28-10-00, P. BLOCK 301, BEFORE AND DURING MAINTENANCE OPERATIONS IN A FUEL TANK.
MAKE SURE THAT THE FIRE FIGHTING EQUIPMENT IS AVAILABLE AND NEAR TO THE WORK AREA, BEFORE YOU START THE MAINTENANCE OPERATIONS.
MAKE SURE THAT THE ELECTRICAL CIRCUITS, ON WHICH THE WORK IS IN PROGRESS, ARE ISOLATED BEFORE YOU SUPPLY POWER TO THE AIRCRAFT.

1. Equipment and Materials

ITEM	DESIGNATION
A.	Access Platform, 2.7 m (9 ft.)
B.	Fluorescent Lamp - Explosion Proof
C.	Blanking Caps

Referenced Procedures

- 28-00-00, P. Block 301	Fuel - General
- 28-10-00, P. Block 301	Storage
- 28-11-00, P. Block 301	Tanks
- 28-11-37, P. Block 401	Manhole Cover - Additional Center Tank
- 28-25-00, P. Block 301	Refuel/Defuel System
- 52-30-00, P. Block 1	Cargo Compartment Doors

**ON A/C 101-200,

Post SB 28-2105 For A/C 101-200,

Referenced Procedures

- 28-00-00, P. Block 301	Fuel - General
- 28-10-00, P. Block 301	Storage
- 28-11-00, P. Block 301	Tanks
- 28-11-36, P. Block 401	Additional Center Tank
- 28-11-37, P. Block 401	Manhole Cover - Additional Center Tank
- 28-25-00, P. Block 301	Refuel/Defuel System
- 52-30-00, P. Block 1	Cargo Compartment Doors

**ON A/C 101-200,

2. Procedure

A. Job Set-Up

(1)Make sure that the aircraft is statically grounded.
(2)Make the additional center tank (ACT) empty (Ref. 28-25-00, P. Block 301).
(3)Put the access platform in position.
(4)Open the AFT cargo-compartment door (Ref. 52-30-00, P. Block 1).

**ON A/C 101-200,

Post SB 28-2105 For A/C 101-200,

(5)Do this step if it is necessary to remove a check valve from the fwd ACT (only if two ACT are installed).
(a)Remove the aft ACT (Ref. 28-11-36, P. Block 401).
NOTE : The removal/installation of the check valves is the same in the fwd and the aft ACT.
The removal/installation of a check valve from one ACT only is given.

**ON A/C 101-200,

B. Removal
(Ref. Fig. 401)

**ON A/C 101-200,

Post SB 28-2105 For A/C 101-200,

(Ref. Fig. 402)

**ON A/C 101-200,

(1)Remove the center section of the heat shield (2) from the rear wall of the ACT (1).
(a)Disconnect the quick-release fasteners.
(b)Remove the center section of the heat shield (2).
(2)Remove the manhole cover (3) from the rear wall of the ACT (1) (Ref. 28-11-37, P. Block 401).
WARNING : DO NOT GO INTO A FUEL TANK UNTIL IT IS PURGED AND/OR USE THE CORRECT SAFETY EQUIPMENT.
(3)Purge the ACT (1) as necessary (Ref. 28-11-00, P. Block 301).
(4)Use an explosion-proof fluorescent lamp to light the internal area of the ACT (1).
(5)Remove the check valve (4) from the duct pipe (7).
(a)Loosen the clip (5) which safeties the check valve (4) on the stub pipe (6).
(b)Remove the check valve (4) complete with the clip (5).
(c)Put a blanking cap on the stub pipe (6).

C. Preparation for Installation
(Ref. Fig. 401)

**ON A/C 101-200,

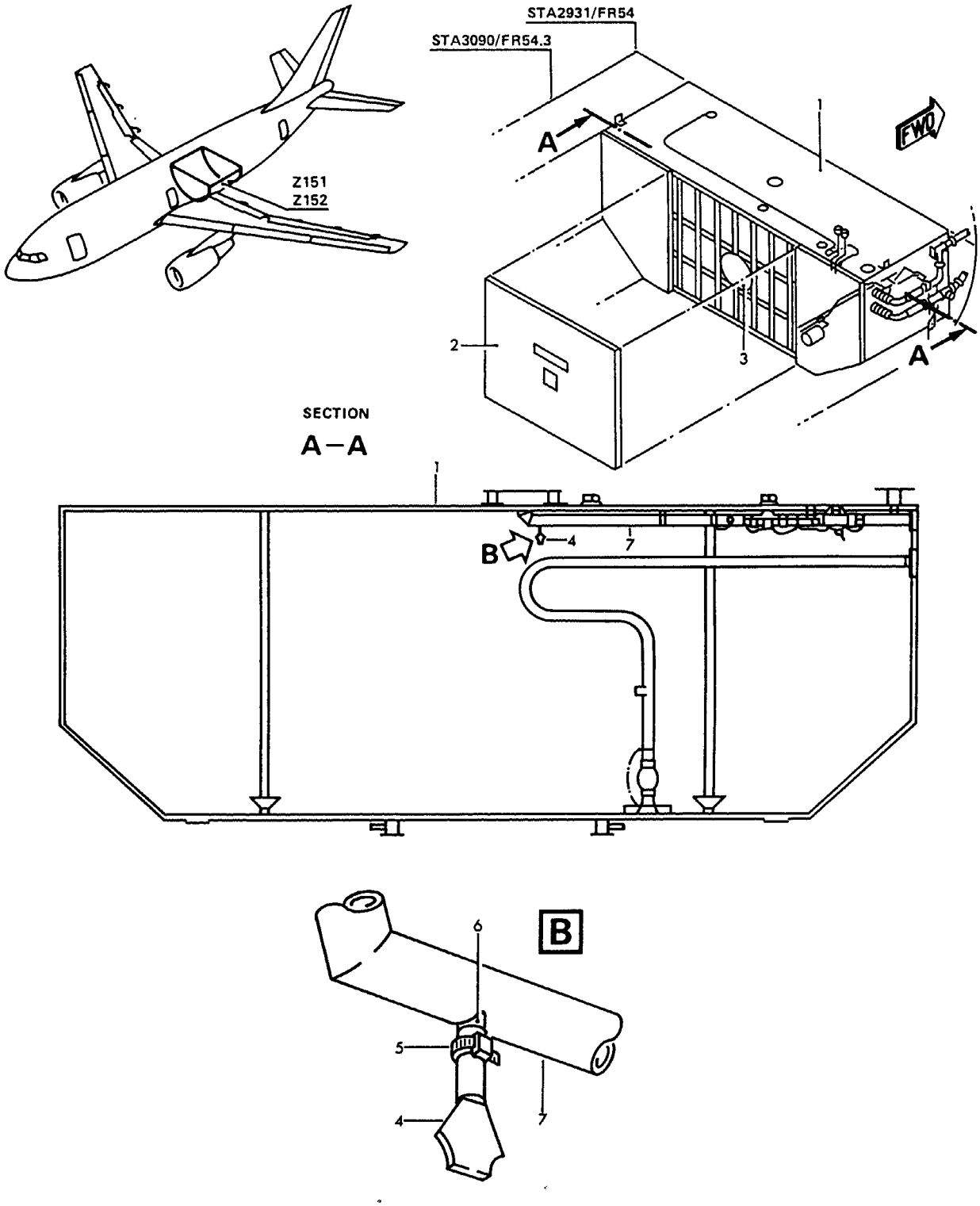
Post SB 28-2105 For A/C 101-200,

(Ref. Fig. 402)

**ON A/C 101-200,

Post SB 28-2105 For A/C 101-200,

(1)Preparation for installation of the check valve (5) on the duct pipe (11).



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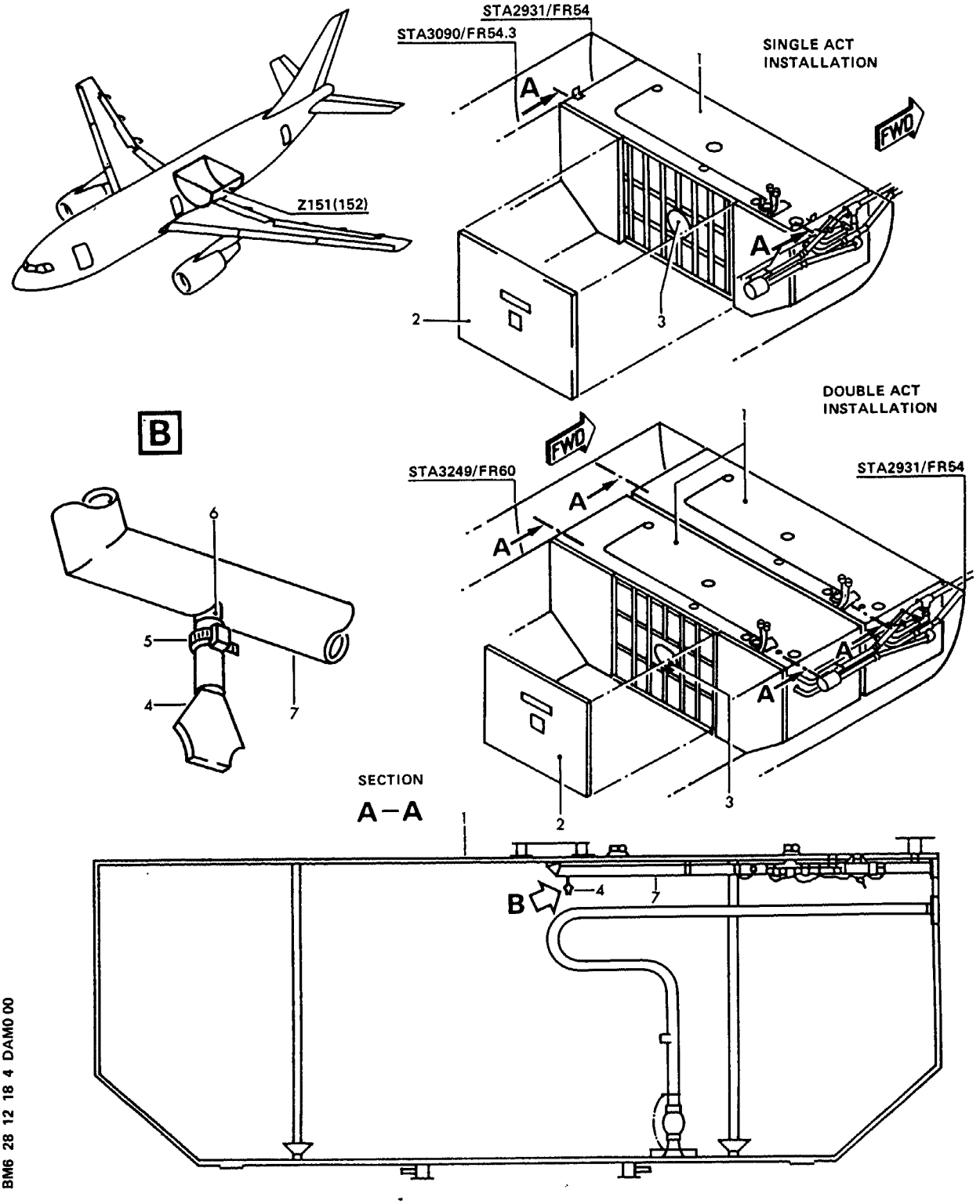
Check Valve - Vent Duct
Figure 401



Check Valve - Vent Duct
Figure 402

(a)Make sure that the pressure relief valve 280283 (280284) (4):
- is clean,
- has no damage,
- is correctly attached to the ACT (1).

(b)Make sure that the duct pipe (11):
- is clean,
- has no damage,
- is correctly attached to the pressure relief valve 280283 (280284) (4).

(c)Make sure that the stub pipe (10) on the duct pipe (11):
- is clean,
- has no damage.

(2)Preparation for installation of the check valve (8) on the vent pipe (7).

(a)Make sure that the vent pipe (7):
- is clean,
- has no damage,
- is correctly attached to the ACT (1),
- is correctly attached to the vent valve 280268 (280269) (6).

(b)Make sure that the stub pipe (13) on the vent pipe (7):
- is clean,
- has no damage.

D. Installation

**ON A/C 101-200,

(1)Preparation for installation of the check valve (4) on the ventilation pipe (7).
(a)Make sure that the ventilation pipe (7):
- has no damage,
- is correctly attached to the ACT (1).
(b)Make sure that the stub pipe (6) on the ventilation pipe (7):
- is clean,
- has no damage.

D. Installation
(Ref. Fig. 401)

**ON A/C 101-200,

Post SB 28-2105 For A/C 101-200,

(Ref. Fig. 402)

**ON A/C 101-200,

(1)Install the check valve (4) on the ventilation pipe (7).
(a)Remove the blanking cap from the stub pipe (6).
(b)Put the check valve (4) complete with the clip (5) on the stub pipe (6).
(c)Tighten the clip (5).
(2)Make sure that no tools or other equipment are in the ACT (1).
(3)Remove the fluorescent lamp.
R (4)Make sure that there are no unwanted objects and materials, tools
R or other equipment in the tank.
R (5)Install the manhole cover (3) on the rear wall of the ACT (1) (Ref. 28-11-37, P. Block 401).
(5)Install the center section of the heat shield (2) on the rear wall of the ACT (1).
(a)Put the center section of the heat shield (2) on the rear wall of the ACT (1).
(b)Connect the quick-release fasteners.

**ON A/C 101-200,

Post SB 28-2105 For A/C 101-200,

(5)Do this step if it was necessary to remove the check valve (4) in the fwd ACT (1) (only if two ACT are installed).
(a)Install the aft ACT (1) (Ref. 28-11-36, P. Block 401).

(6)Install the center section of the heat shield (2) on the rear wall of the ACT (1).
(a)Put the center section of the heat shield (2) in position at the rear wall of the ACT (1).
(b)Connect the quick-release fasteners.

**ON A/C 101-200,

E. Test
Not applicable.

F. Close-Up
(1)Make sure that the work area is clean and clear of tools and other items.
(2)Close the AFT cargo-compartment door (Ref. 52-30-00, P. Block 1).
(3)Remove the access platform.
(4)Refuel the aircraft as required.
NOTE : Keep a minimum of 50 litres (13.21 U.S.gal) of fuel in the ACT. This will prevent cracks in the inner lining of the bladder tank of the ACT.

NACA INTAKE AND VENT PROTECTOR REMOVAL/INSTALLATION

R **WARNING** : THIS PROCEDURE USES A FUEL SYSTEM ITEM THAT IS IN A CATEGORY KNOWN AS
R A CRITICAL DESIGN CONFIGURATION CONTROL LIMITATION (CDCCL).
R CDCCL IDENTIFIES AN ITEM THAT CAN BE THE SOURCE OF A POSSIBLE FUEL
R TANK IGNITION. YOU MUST KEEP ALL CDCCL ITEMS IN THE APPROVED
R CONFIGURATION. DAMAGE, WEAR OR CHANGES TO A CDCCL ITEM CAN CAUSE A
R POSSIBLE FUEL TANK EXPLOSION.

R LANDING GEAR - MAKE SURE THAT THE GROUND SAFETIES AND CHOCKS ARE IN POSITION.

FLIGHT CONTROLS - MAKE SURE THAT THE GROUND SAFETIES AND NOTICES ARE IN POSITION.

OBEY THE SAFETY PRECAUTIONS IN 28-00-00, P. Block 301.

MAKE SURE THAT THE FIRE FIGHTING EQUIPMENT IS AVAILABLE AND ADEQUATE.

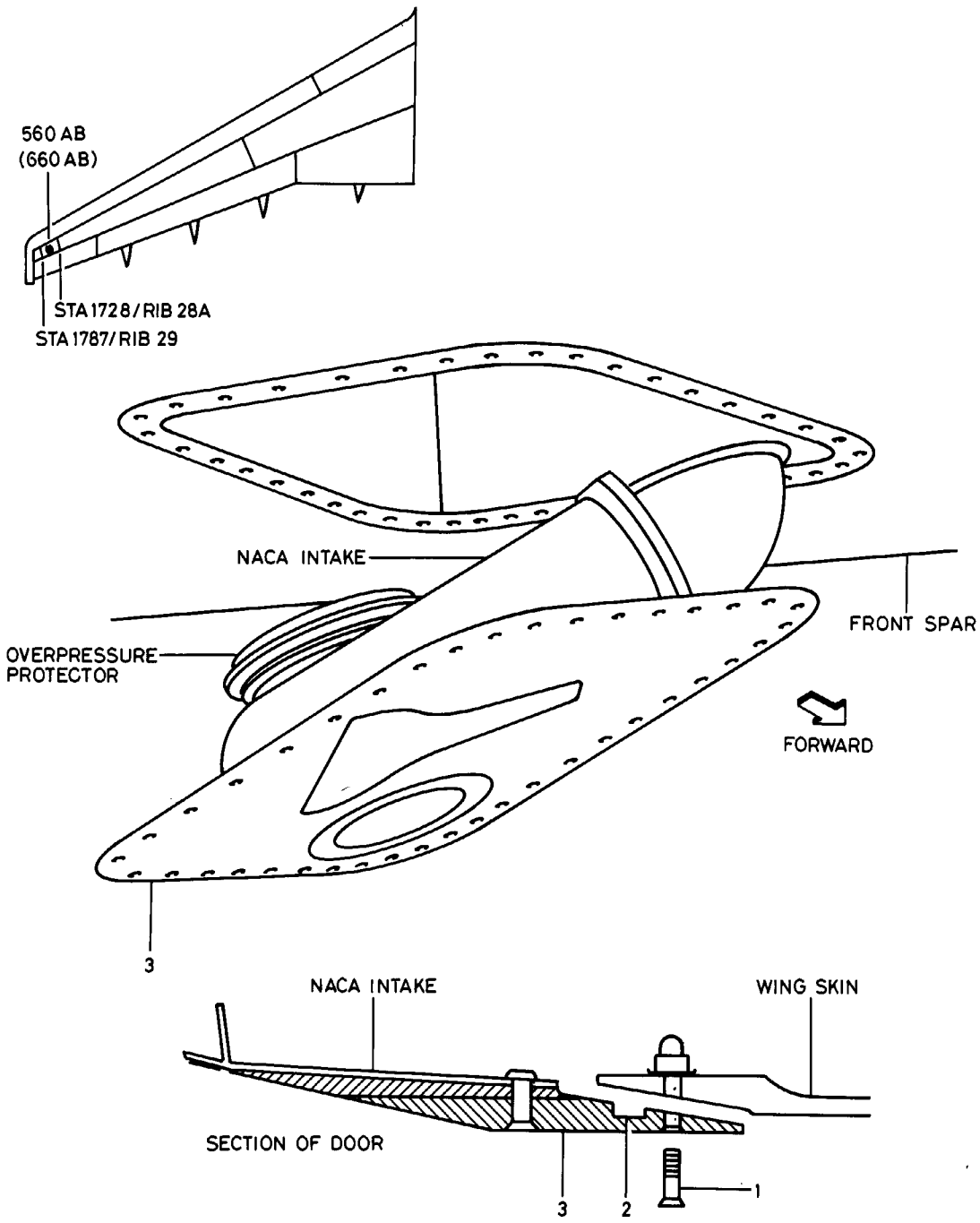
1. Equipment and Materials

ITEM	DESIGNATION
A.	Access Platform 5 m (16.5 ft)
B.	Containers
C. 98A57304002001	Manhole Bolt Extraction Tool
D. 98A57304012000	Protective Seal
E.	Torq-set Driver No. 4
F.	Torque Wrenches set at: 25 to 30 lbf.in (0.282 to 0.339 m.daN) 90 to 100 lbf.in (1.017 to 1.13 m.daN)
G.	Sealing Ring
H.	Lint-free Cloth
J. Material No. 04-004	Common Greases (Ref. 20-31-00)
K. Material No. 09-007	Sealants (Ref. 20-31-00)
L. Material No. 11-026	Cleaning Agents (Ref. 20-31-00)
L. Material No. 09-023	Sealants (Ref. 20-31-00)
Referenced Procedures	
- 12-11-28, P. Block 301	Fuel Tank Replenishing
- 12-32-28, P. Block 301	Fuel Sampling for Water Contamination
- 20-28-11, P. Block 1	Electrical Bonding
- 24-41-00, P. Block 301	AC External Power Control
- 28-00-00, P. Block 301	Fuel - General
- 28-12-15, P. Block 401	Overpressure Protector
- 28-25-00, P. Block 301	Refuel/Defuel System

2. Procedure

(Ref. Fig. 401)

A. Job Set-Up



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NACA Intake Installation
Figure 401

(1)Position access platform at L (R) wing tip.
(2)Drain any fuel from the vent surge tank via the water drain valve (Ref. 12-32-28, P. Block 301).

B. Removal
(1)Slacken bolts (1), securing intake door (3), in a diametrically opposite sequence. If bolts prove difficult to remove, use manhole bolt extraction tool PN98A57304002001.
(2)Withdraw bolts (1) and remove intake door (3).
(3)Remove overpressure protector (Ref. 28-12-15, P. Block 401).
(4)Check the sealing ring (2) for correct condition, discard if necessary.
(a)If the sealing ring (2) is discarded:
- use a clean lint-free cloth moistened with cleaning agent (Material No. 11-026) to remove all traces of sealant and foreign matter from the intake door and the aperture flange on the wing skin.
(5)Install protective seal to aperture.

NOTE: If new flame trap cartridge is to be installed, take the intake door to an overhaul workshop.

C. Preparation of Replacement Component
(1)Install overpressure protector (Ref. 28-12-15, P. Block 401).

D. Installation (Ref. Fig. 401)
(1)Where applicable, use a clean lint-free cloth moistened with cleaning agent (Material No. 11-026) to remove all traces of grease from the sealing ring groove on the intake.
(2)Where applicable, apply a thin film of sealant (Material No. 09-007) to intake sealing ring groove and allow it to dry for 15 minutes.
(3)Where applicable, install new seal (2) in groove, with large ridge nearest to center of intake.

NOTE: Exercise care when fitting seal, do not work it around the groove with the finger tips as this may stretch the seal and cause leaks.

R (4)Make sure that the inside of the tank is clean.
R (5)Make sure that there are no unwanted objects and materials, tools or other equipment in the wing.
R (6)Remove the protective seal.
R (7)Apply a thin film of grease (Material No. 04-004) to the threads of the retaining bolts (1).

CAUTION : TO AVOID DAMAGING SEALING RING (2), DO NOT SLIDE INTAKE DOOR ABOUT DURING INSTALLATION.

R (8)Align the intake door (3) and install and engage the threads of all the bolts (1). Tightening them in a diametrical sequence to 25 to 30 lbf.in (0.282 to 0.339 m.daN), then in the same sequence to 90 to 100 lbf.in (1.017 to 1.13 m.daN).

WARNING : THIS INSTRUCTION IS APPLICABLE TO A CRITICAL DESIGN CONFIGURATION CONTROL LIMITATION (CDCCL) ITEM. CAREFULLY OBEY ALL GIVEN INSTRUCTIONS WHEN YOU DO THIS STEP. IF YOU DO NOT OBEY THESE INSTRUCTIONS, A DANGEROUS CONDITION CAN OCCUR THAT CAN CAUSE A POSSIBLE FUEL TANK EXPLOSION.

R (9)Check electrical bonding between intake door and nearest grounding point (Ref. 20-28-11, P. Block 1).

E. Preparation for Test
(1)Energize the aircraft electrical network and make certain that electronics racks are ventilated (Ref. 24-41-00, P. Block 301).
(2)Fill appropriate outer tank until high-level sensors cut off fuel supply (Ref. 12-11-28, P. Block 301). Leave tanker connected.
(3)Position containers, on access platform, under NACA door and vent surge tank water drain valve.
(4)Open water drain valve for vent surge tank (Ref. 12-32-28, P. Block 301).

NOTE: It is important to establish a line of communication between refuel/defuel panel operator and tanker operator.

F. Test
(1)Perform the following

ACTION	RESULT
1. On panel 110VU: - Raise guards and place all REFUEL/DEFUEL VALVE switches in SHUT position CAUTION: WHEN MODE SELECTOR SWITCH IS SET TO DEFUEL. ALL TANK HIGH LEVEL SENSORS ARE INHIBITED	
2. On panel 110VU: - Raise guard and place MODE SELECTOR switch in DEFUEL position	
3. Set tanker to minimum pressure and flow rate	
4. On panel 110VU: - place L (R) outer tank REFUEL-DEFUEL-VALVE switch in the OPEN position	- fuel overflows from outer tank into vent surge tank, then from open water drain valve
- place L (R) outer tank REFUEL-DEFUEL=VALVE switch in the SHUT position	- fuel flow from water drain valve decreases and stops

ACTION	RESULT
5. Close water drain valve	
**ON A/C 001-100,	
6. On panel 110VU: - Put the L(R) outer tank REFUEL-DEFUEL-VALVE switch in the OPEN position and allow approximately 50 liters (13 US gals), measured on the tanker, to flow into the vent surge tank.	- fuel overflows from the outer tank into the vent surge tank.
**ON A/C 101-200,	
6. On panel 110VU: - Put the L(R) outer tank REFUEL-DEFUEL-VALVE switch in the OPEN position and allow approximately 13 US gals (50 liters), measured on the tanker, to flow into the vent surge tank.	- fuel overflows from the outer tank into the vent surge tank.
**ON A/C ALL	
- place L (R) outer tank REFUEL-DEFUEL-VALVE switch in SHUT position	
7. Shut down tanker	
8. Inspect NACA door surround for leakage	- no leaks permitted
9. Defuel or transfer fuel from outer tank until below high level (Ref. 28-25-00, P. Block 301)	
10. On panel 110VU: - place MODE SELECTOR switch in OFF position and guarded	
- place all REFUEL-DEFUEL-VALVE switches in NORM position and guarded.	

G. Close-Up
(1)Drain surge tank using water drain (Ref. 12-32-28, P.Block 301).
(2)Make sure that the water drain is closed and remove the container.
(3)Remove access platform.
(4)De-energize the aircraft electrical network (Ref. 24-41-00, P. Block 301).
(5)Disconnect refuel hose(s) and replace refuel/defuel coupling cap(s) (Ref. 12-11-28, P. Block 301).
(6)Remove all ground handling and maintenance equipment, standard and special tools, all access equipment and special items.

VENT SURGE TANK NACA INTAKE - INSPECTION/CHECK

WARNING: LANDING GEAR - MAKE CERTAIN GROUND SAFETIES AND CHOCKS ARE IN POSITION.

FLIGHT CONTROLS - MAKE CERTAIN GROUND SAFETIES AND NOTICES ARE IN POSITION.

1. Wing Vent Surge TANK NACA Intake - Visual Inspection

A. Reason for the Job

(1) To check that the cartridge mesh in the fuel vent protector is clear of ice and debris.

B. Equipment and Materials

	ITEM	DESIGNATION
	A.	Access Platform 4 m (13 ft)
R	B.	Inspection mirror
R	C.	Suitable light source

C. Procedure

R (Ref. Fig. 601)

(1) Job Set-Up

(a) Position access platform at Zone 560 (660) below wing vent surge tank NACA intake.

(2) Inspect

R (a) Visually inspect, using an inspection mirror and suitable light source through NACA intake aperture, that the cartridge mesh in the fuel vent protector is clear of ice and debris.

(3) Close-up

(a) Remove access platform.

2. Trim Tank Vent Surge NACA Intake - Visual Inspection

A. Reason for the Job

(1) To check that the cartridge mesh in the fuel vent protector is clear of ice and debris.

B. Equipment and Materials

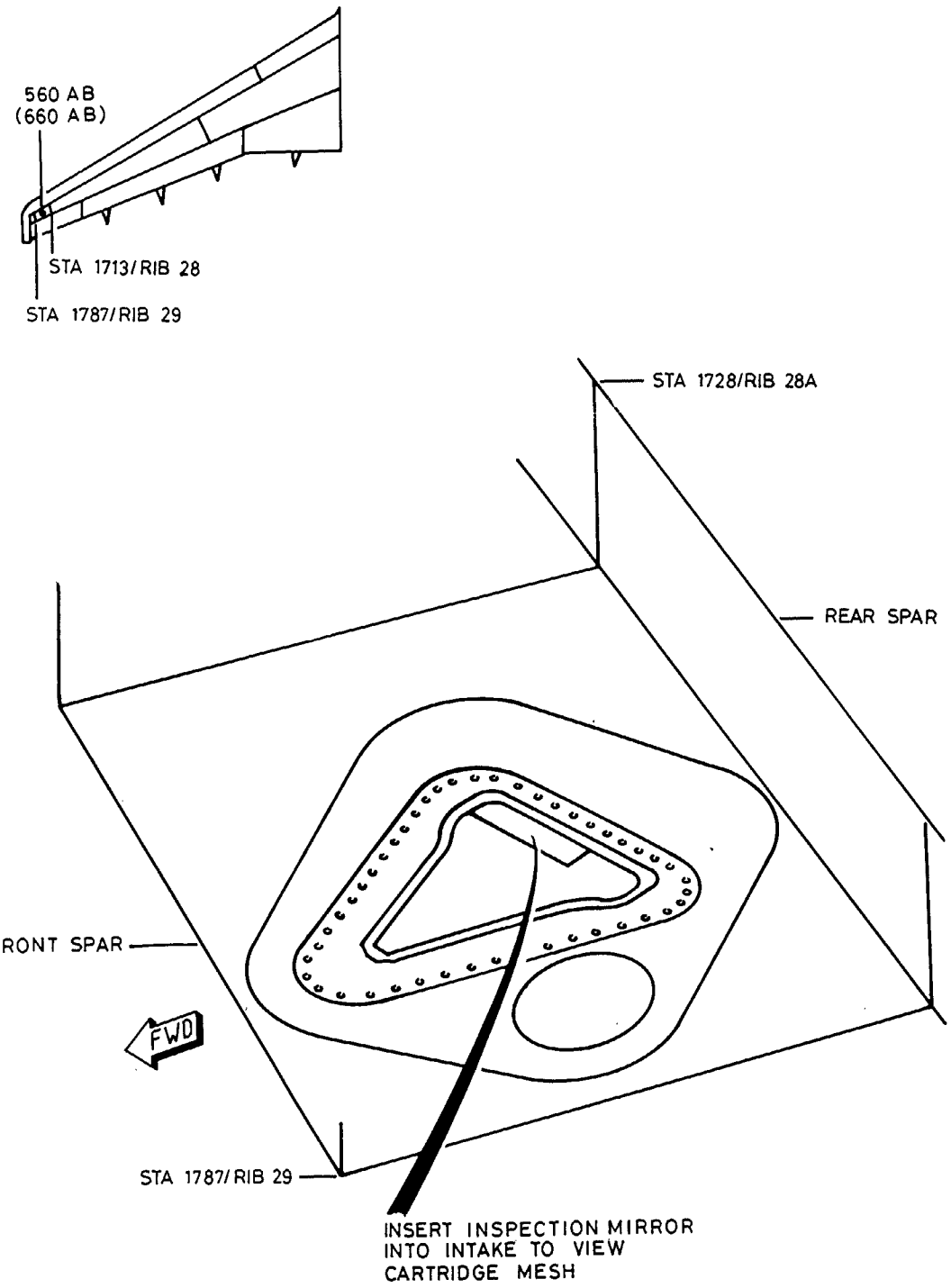
	ITEM	DESIGNATION
	A.	Access Platform 6 m (19 ft 8 in)
R	B.	Inspection mirror
R	C.	Suitable light source

C. Procedure

R (Ref. Fig. 602)

(1) Job Set-Up

(a) Position access platform at STA673 below trim tank vent surge



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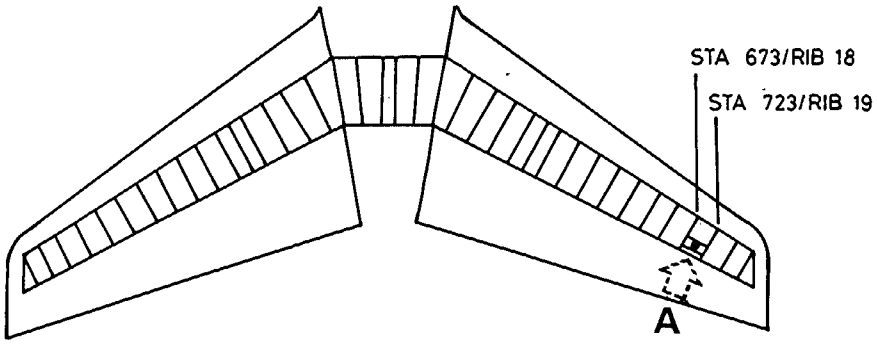
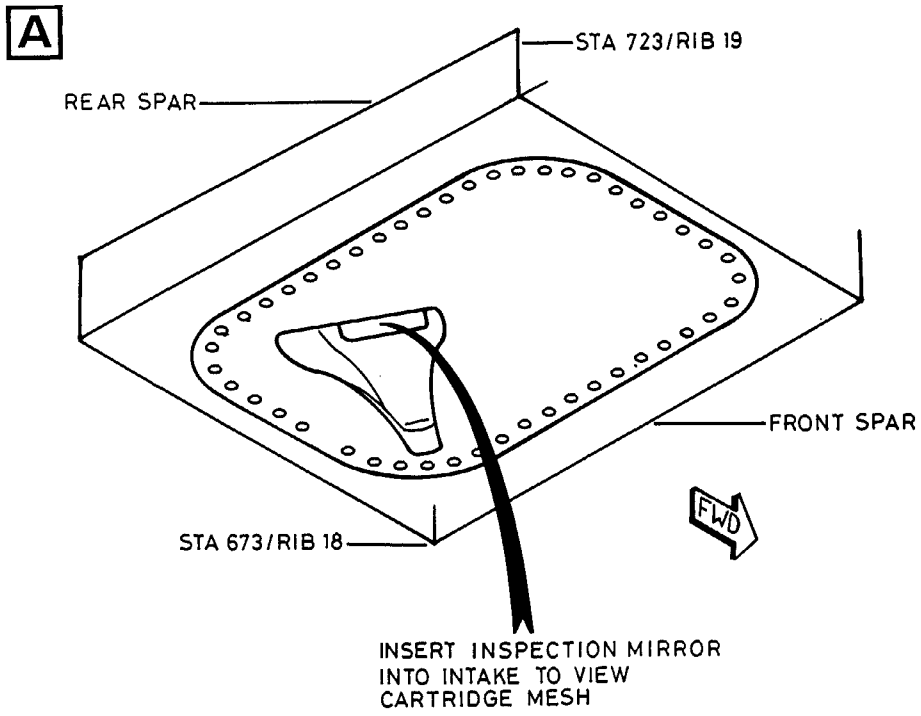
Visual Inspection - NACA Intake
Figure 601

R





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R

Visual Inspection - NACA Intake
Figure 602

tank NACA intake.

(2)Inspect

R (a)Visually inspect, using an inspection mirror and suitable light source through NACA intake aperture, that the cartridge mesh in the fuel vent protector is clear of ice and debris.

(3)Close-up

(a)Remove access platform.

FLOAT OPERATED VENT VALVES - REMOVAL/INSTALLATION

WARNING : LANDING GEAR - MAKE CERTAIN GROUND SAFETIES AND CHOCKS ARE IN POSITION.

FLIGHT CONTROLS - MAKE CERTAIN GROUND SAFETIES AND NOTICES ARE IN POSITION.

OBSERVE THE SAFETY PRECAUTIONS IN 28-00-00, P. BLOCK 301.

MAKE CERTAIN THAT FIRE FIGHTING EQUIPMENT IS AVAILABLE AND ADEQUATE.

BEFORE POWER IS SUPPLIED TO THE AIRCRAFT MAKE CERTAIN THAT ELECTRICAL CIRCUITS UPON WHICH WORK IS IN PROGRESS ARE ISOLATED.

1. Outer Tanks Vent Valve

A. Equipment and Materials

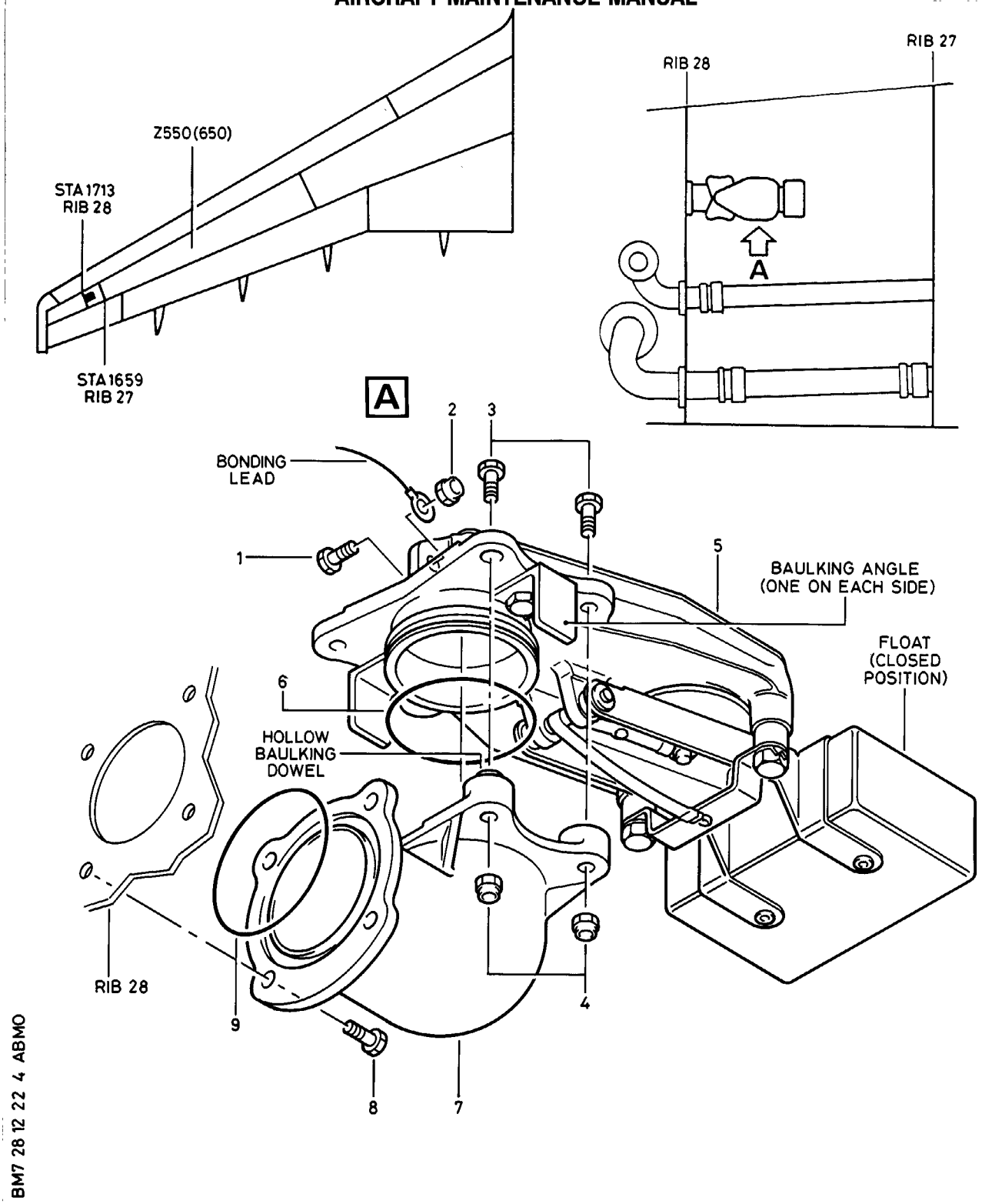
ITEM	DESIGNATION
A.	O-ring (Elbow Flange)
B.	O-ring (Vent Valve Mounting)
C. Material No. 01-001	Fuels (Ref. 20-31-00)
D. Material No. 16-006	Structure Paints (Ref. 20-31-00)
E. Material No. 09-017	Sealants (Ref. 20-31-00)
Referenced Procedures	
- 20-28-11, P. Block 1	Electrical Bonding
- 28-00-00, P. Block 301	Fuel - General
- 28-11-22, P. Block 401	Manhole Covers (Wings)

B. Procedure
(Ref. Fig. 401)

(1)Job Set-Up
(a)Remove manhole cover 550(650)PB (Ref. 28-11-22, P. Block 401).

(2)Removal
(a)Remove nut (1) and bolt (2) and disconnect bonding strip.
(b)Remove four bolts (8) and withdraw elbow (7) complete with vent valve (5). Discard O-ring (9).
(c)Remove four nuts (3) and bolts (4). Separate elbow (7) from vent valve (5). Discard O-ring (6).
(d)Clean and inspect component interface and adjacent area. Cap open ends of elbow and vent valve. Secure vent valve float in the closed position.

(3)Preparation of Replacement Component
(a)Lubricate new O-ring (6) with Material No.01-001 and place in position on vent valve (5).
(b)Clean elbow (7) and make certain that it is in good condition.



Outer Tanks Vent Valve
Figure 401

(c)Install vent valve (5) on elbow (7) making certain the hollow baulking dowel on the elbow locates in the corresponding hole in the vent valve, and the baulking angles on the vent valve clear the flange on the elbow. Secure vent valve (5) to elbow (7) with four bolts (3) and nuts (4). Repaint bolt heads and tails, and nuts with structure paint Material No. 16-006.

(4)Installation
(a)Lubricate new O-ring (9) with fuel Material No.01-001 and position in flange groove on elbow (7).
(b)Install elbow (7), complete with vent valve (5), on rib 28 with four bolts (8). Overcoat the bolt heads with sealant Material No.09-017 (Ref. 51-76-10, P. Block 1).
(c)Connect bonding strip with bolt (1) and nut (2) (Ref. 20-28-11, P. Block 1).

(5)Test
Make certain that float valve operates freely.

(6)Close-Up
(a)Make certain that working area is clean and clear of tools and miscellaneous items of equipment.
(b)Install manhole cover 550(650)PB (Ref. 28-11-22, P. Block 401).

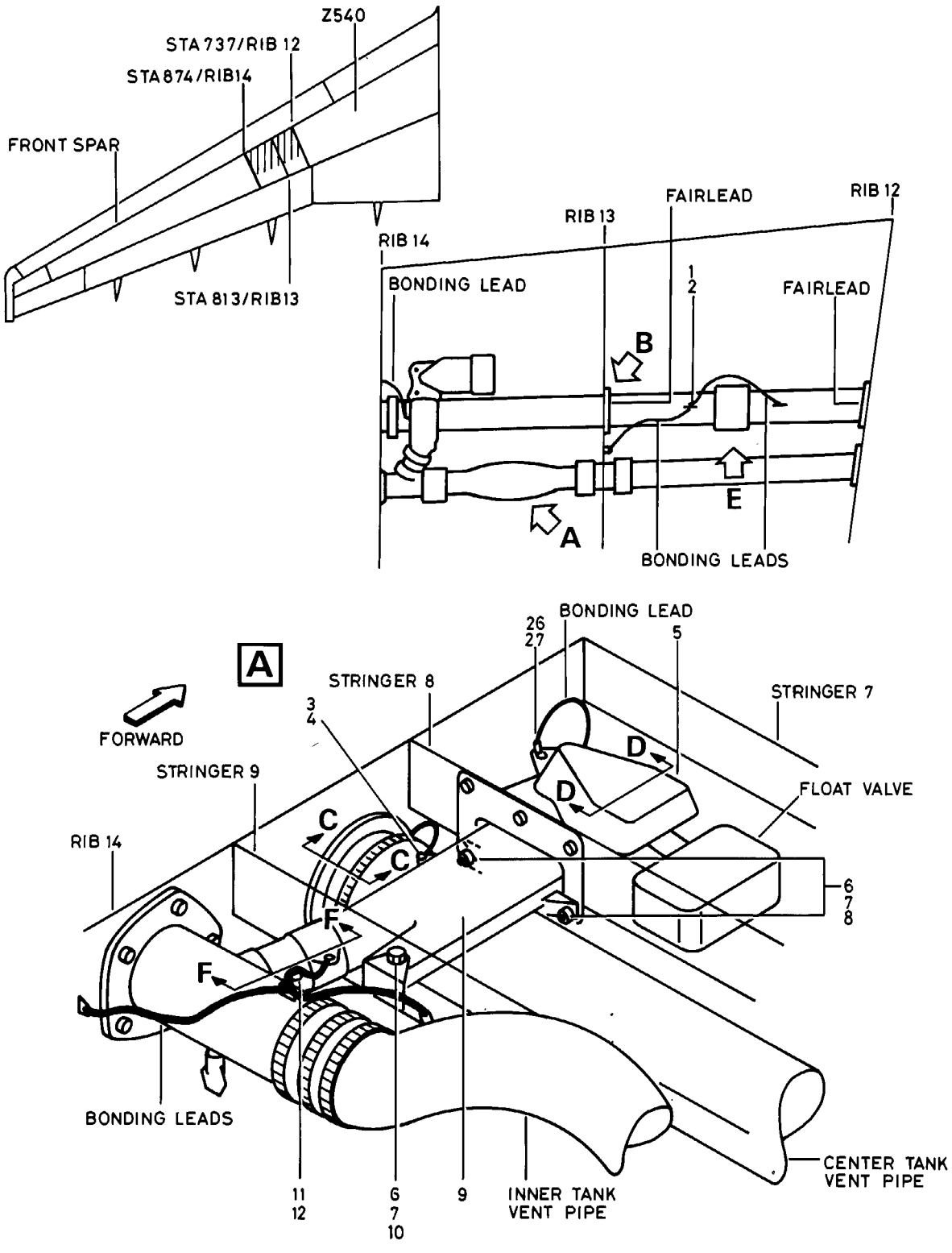
2. Left Inner Tank Vent Valve

A. Equipment and Materials

ITEM	DESIGNATION
A.	O-ring (Center Tank Vent Pipe)
B.	O-ring (Joint Pipe, Inner Tank Vent)
C.	O-ring (Vent valve)
D. Material No. 01-001	Fuels (Ref. 20-31-00)
E. Material No. 16-006	Structure Paints (Ref. 20-31-00)
Referenced Procedures	
- 20-28-11, P. Block 1	Electrical Bonding
- 28-00-00, P. Block 301	Fuel
- 28-11-22, P. Block 401	Manhole Covers (Wings

B. Procedure
(Ref. Fig. 402)
(Ref. Fig. 403)
(1)Job Set-Up
(a)Remove manhole covers 540HB and 540GB (Ref. 28-11-22, P. Block 401).

(2)Removal
(a)Remove nuts (1,3) and screws (2,4) and disconnect bonding strips from center tank vent pipe.
(b)Remove nuts (14) and bolts (13) and withdraw half-fairlead (15).



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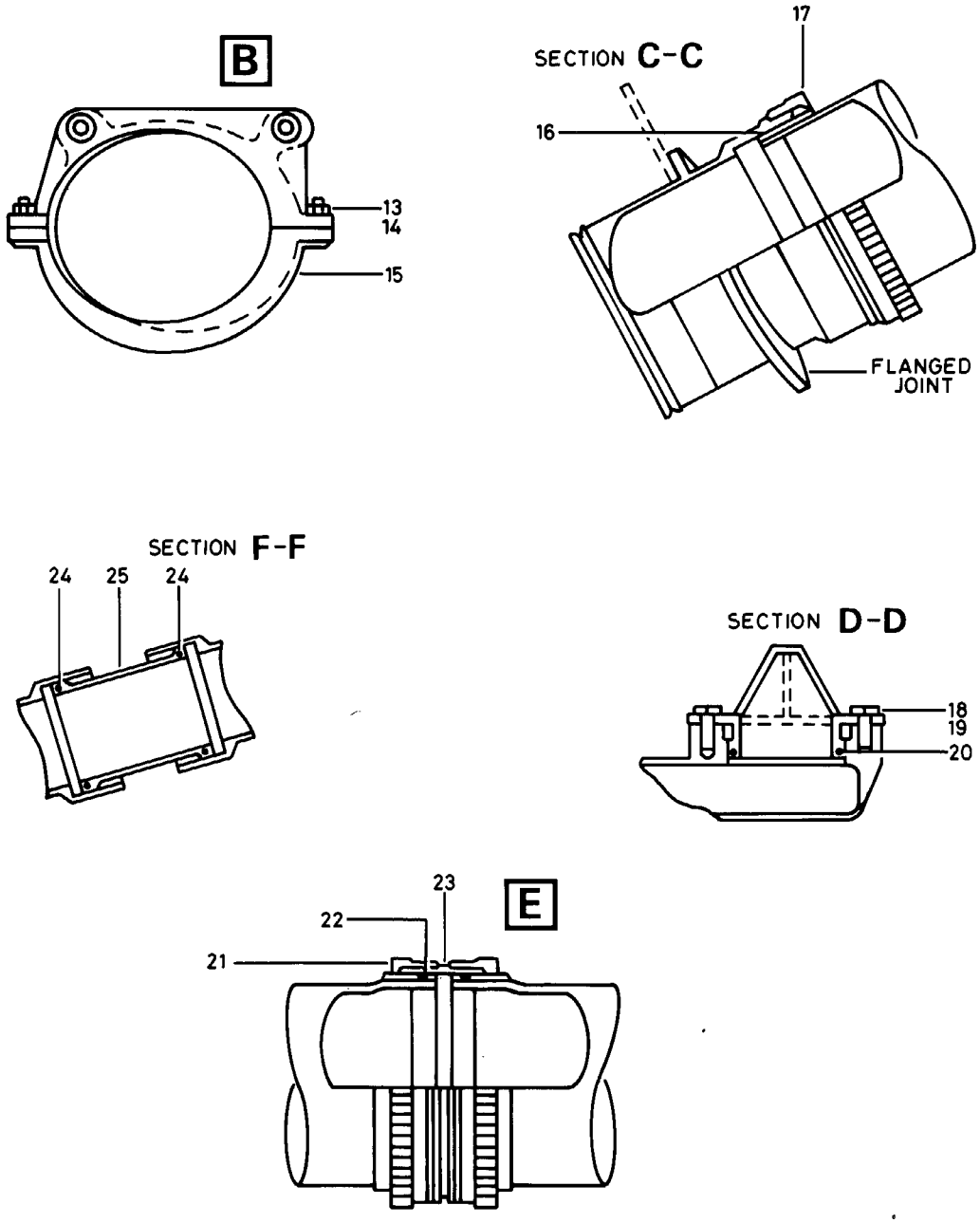
Left Inner Tank Vent Valve
Figure 402



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Left Inner Tank Vent Valve - Sectional Details
Figure 403

Slacken the fairlead on rib 12.

(c)Unscrew retaining nut (17). Push center tank vent pipe inboard to take up axial float in the joints between ribs 11 and 12, and ribs 12 and 13.

NOTE : If necessary, further axial movement may be obtained by removing manhole cover 540FB (Ref. 28-11-22, P. Block 401) and releasing fairlead on rib 11.

(d)Unscrew retaining nut (21) then slide union (23) inboard along center tank vent pipe until flush with pipe end. Pull disconnected pipe section free from flanged joint on rib 14, then maneuver the pipe between ribs 12 and 13 until it is clear of manifold (9). Discard O-rings (16,22).

(e)Remove nut (11) and screw (12) and disconnect bonding strips from joint pipe (25).

(f)Remove three nuts (6), six washers (7), two bolts (8) and one bolt (10). Tilt manifold (9) and vent valve (5) downwards to clear stringers 7 and 8, then maneuver the vent valve, manifold and joint pipe (25) towards the front spar, until free from inner tank vent pipe.

(g)Remove joint pipe (25) from manifold (9). Discard O-rings (24).

(h)Remove nut (26) and screw (27) and disconnect bonding strip from vent valve (5).

(j)Remove four bolts (18) and washers (19). Separate vent valve (5) from manifold (9). Discard O-ring (20).

(k)Clean and inspect component interface, and check vent pipe connections for correct condition. Cap open line ends and vent valve orifice. Secure vent valve float in the closed position.

(3)Preparation of Replacement Component

(a)Lubricate new O-ring (20) with Material No.01-001 and place it in position on vent valve (5).

(b)Clean manifold (9) and make certain that it is in good condition. Install vent valve (5) on manifold with four washers (19) and bolts (18). Repaint bolt heads with Material No.16-006.

(c)Connect bonding strip to vent valve (5) with screw (27) and nut (26) (Ref. 20-28-11, P. Block 1).

(d)Clean joint pipe (25) and make certain that it is in good condition. Lubricate two new O-rings (24) with Material No.01-001 and install one on each end of the joint pipe.

(e)Install joint pipe (25) in the end of manifold (9).

(4) Installation

(a)Insert open end of joint pipe (25) in the branch of the inner tank vent pipe, then secure manifold (9) to stringers 8 and 9 with two bolts (8), one bolt (10), six washers (7) and three nuts (6). Repaint bolt heads and tails, and nuts with Material No.16-006.

(b)Connect bonding strips to joint pipe (25) with screw (12) and nut (11) (Ref 20-28-11, P. Block 1).

(c)Lubricate new O-rings (16,22) with Material No.01-001 and install on the disconnected section of center tank vent pipe.
(d)Reinstall disconnected section of center tank vent pipe, and tighten retaining nuts (17) and (21). Check that the accessible sections of the center tank vent pipe each have an axial float of not less than 0.2 in (5.08 mm) with retaining nuts fully tightened. Leave pipe sections at approximately mid-travel.
(e)Install half-fairlead (15) with bolts (13) and nuts (14), then tighten fairlead on rib 12. Adjust position of fairleads to obtain a uniform clearance between pipes and holes in ribs.
(f)Reconnect bonding strips to center tank vent pipe with screws (2,4) and nuts (1,3) (Ref. 20-28-11, P. Block 1).

(5)Test
Make certain that float valve operates freely.

(6)Close-Up
(a)Make certain that working area is clean and clear of tools and miscellaneous items of equipment.
(b)Install manhole covers 540HB and 540GB (Ref. 28-11-22, P. Block 401).

3. Right Inner Tank Vent Valve

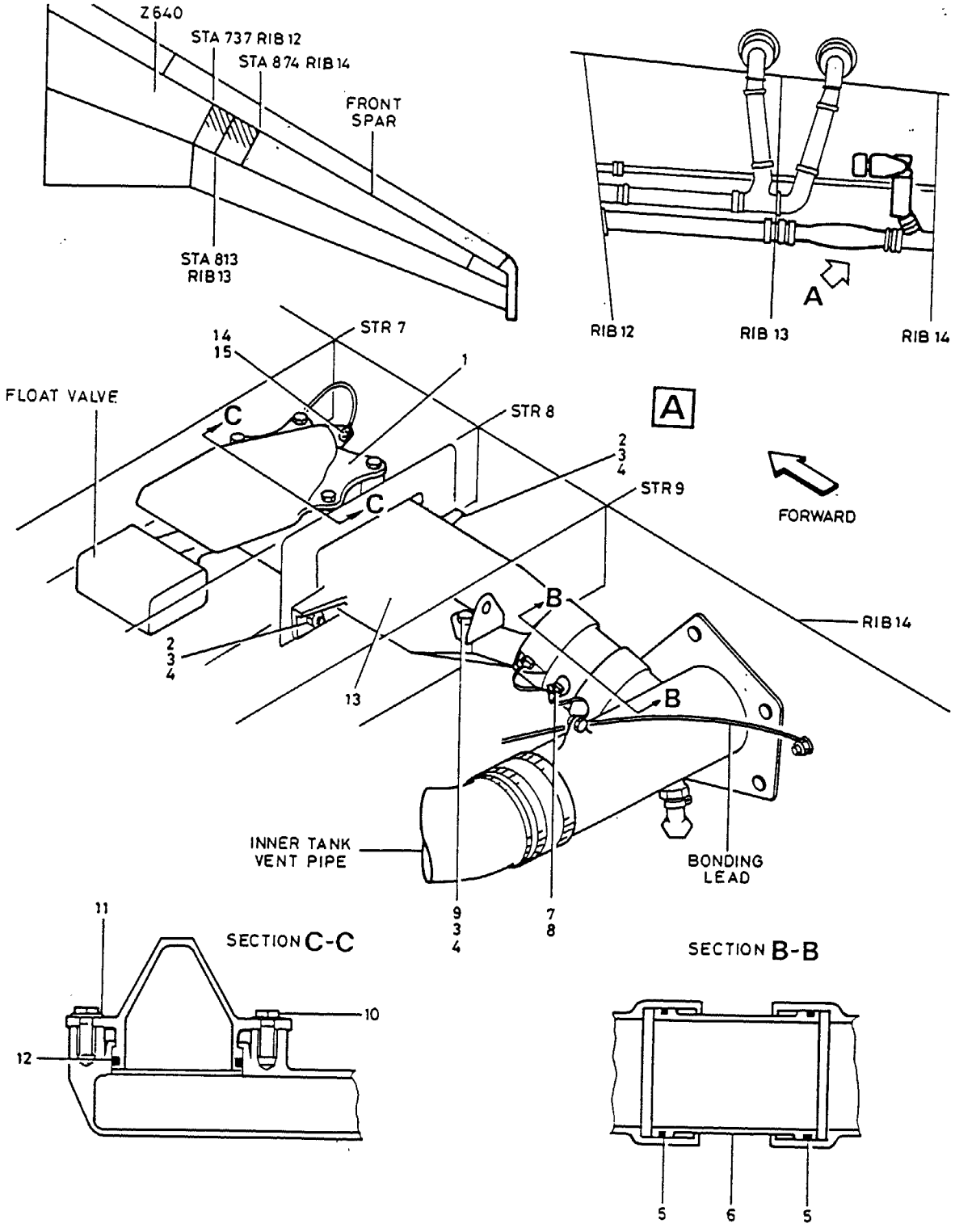
A. Equipment and Materials

ITEM	DESIGNATION
A.	O-ring (Vent Valve)
B.	O-ring (Joint Pipe, Inner Tank Vent)
C. Material No. 01-001	Fuels (Ref. 20-31-00)
D. Material No. 16-006	Structure Paints (Ref. 20-31-00)
Referenced Procedures	
- 20-28-11, P. Block 1	Electrical Bonding
- 28-00-00, P. Block 301	Fuel - General
- 28-11-22, P. Block 401	Manhole Covers (Wings)

B. Procedure
(Ref. Fig. 404)

(1)Job Set-Up
(a)Remove manhole cover 640HB (Ref. 28-11-22, P. Block 401).

(2)Removal
(a)Remove nut (7) and screw (8) and disconnect bonding strips from joint pipe (6).
(b)Remove three nuts (4), two bolts (2), one bolt (9), and six washers (3), tilt manifold (13) and vent valve (1) downwards to clear stringers 7 and 8, then maneuver vent valve, manifold and joint pipe (6) towards the front spar until free from inner tank vent pipe.
(c)Remove joint pipe (6) from manifold (13). Discard O-rings (5).



Right Inner Tank Vent Valve
Figure 404

(d)Remove nut (14) and screw (15) and disconnect bonding strip from vent valve (1).
(e)Remove four bolts (10) and washers (11). Separate vent valve (1) from manifold (13). Discard O-ring (12).
(f)Clean and inspect component interface, check vent pipe connection for correct condition. Cap open line ends and vent valve orifice. Secure vent valve float in the closed position.

(3)Preparation of Replacement Component
(a)Lubricate new O-ring (12) with Material No.01-001 and place in position on vent valve (1).
(b)Clean manifold (13) and make certain that it is in good condition. Install vent valve (1) on the manifold with four washers (11) and bolts (10). Repaint bolt heads with Material No.16-006.
(c)Connect bonding strip to vent valve (1) with screw (15) and nut (14) (Ref. 20-28-11, P. Block 1).
(d)Clean joint pipe (6) and make certain that it is in good condition. Lubricate two new O-rings (5) with Material No.01-001 and install one on each end of the joint pipe.
(e)Install joint pipe (6) in the end of manifold (13).

(4)Installation
(a)Insert open end of joint pipe (6) in the branch of inner tank vent pipe, then secure manifold (13) to stringers 8 and 9 with two bolts (2), one bolt (9), six washers (3) and three nuts (4). Repaint bolt heads and tails, and nuts with Material No.16-006.
(b)Connect bonding strips to joint pipe (6) with screw (8) and nut (7) (Ref. 20-11-28, P. Block 1).

(5)Test
Make certain that float valve operates freely.

(6)Close-Up
(a)Make certain that working area is clean and clear of tools and miscellaneous items of equipment.
(b)Install manhole cover 640HB (Ref. 28-11-22, P. Block 401).

CHECK VALVE, VENTING AIR (TRIM TANK) - REMOVAL/INSTALLATION

WARNING : LANDING GEAR - MAKE CERTAIN GROUND SAFETIES AND CHOCKS ARE IN POSITION.

FLIGHT CONTROLS - MAKE CERTAIN GROUND SAFETIES AND NOTICES ARE IN POSITION.

OBSERVE THE SAFETY PRECAUTIONS IN 28-00-00, P. BLOCK 301 AND 28-10-00, P. BLOCK 301.

MAKE CERTAIN FIRE FIGHTING EQUIPMENT IS AVAILABLE AND ADEQUATE.

BEFORE POWER IS SUPPLIED TO THE AIRCRAFT MAKE CERTAIN THAT ELECTRICAL CIRCUITS UPON WHICH WORK IS IN PROGRESS ARE ISOLATED.

1. Equipment and Materials

ITEM	DESIGNATION
A.	Access Platform 5 m (16 ft)
B.	Warning Notices Prohibiting the Movement of Fuel
D.	Circuit Breaker Safety Clips and Tags
Referenced Procedure	
- 28-00-00, P. Block 301	Fuel - General
- 28-10-00, P. Block 301	Storage
- 28-11-33, P. Block 401	Trim Tank Manhole Cover
- 55-00-00, P. Block 301	Stabilizers - Standard Warnings and Procedures

2. Procedure

(Ref. Fig. 401)

A. Job Set-Up

(1)Make horizontal and vertical stabilizers safe (Ref. 55-00-00, P. Block 301).

(2)Put access platform in position.

(3)Remove access panel 312AR.

(4)Remove manhole cover access panel (vapor seal) 319AB/319BB.

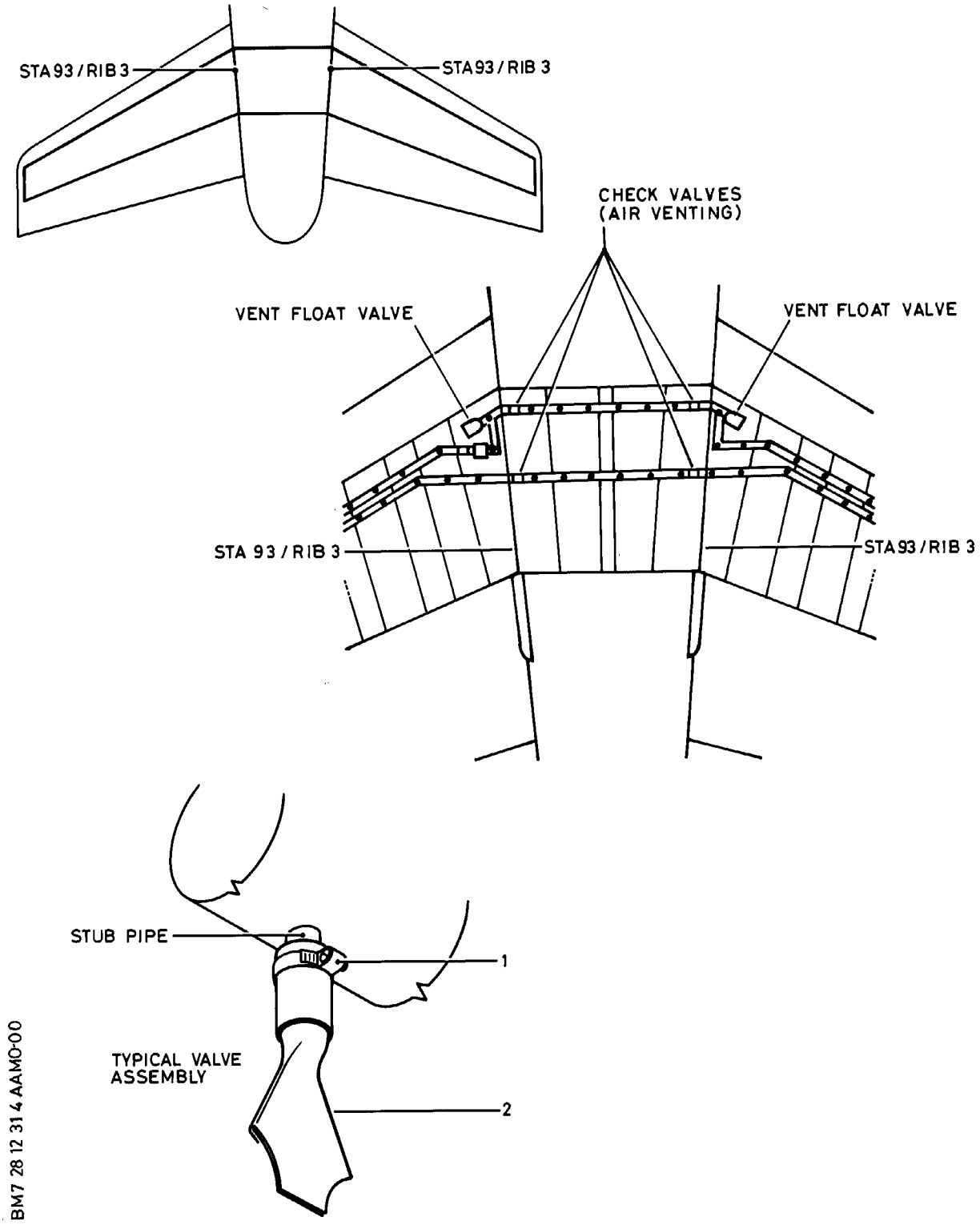
(5)Remove manhole covers 319AZ/319BZ/333BB (Ref. 28-11-33, P. Block 401).

(6)Open, safety and tag the following circuit breakers:

PANEL	SERVICE	IDENT.	LOCATION
132VU	FUEL/TRIM TANK		Line 325

(7)Put warning notices on overhead panel 430VU and refueling panel.

B. Removal



Check Value, Venting Air (Trim Tank System)
Figure 401

(1)Hold check valve/s and sufficiently loosen clip (1) to remove valve (2).

C. Preparation of Replacement Component

NOTE: As the valve is not checked after installation, make certain that it is serviceable, has been correctly stored and that all associated paperwork is in order.

D. Installation
(1)Install clip (1) on valve (2) and move valve onto stub pipe.
(2)Tighten clip (1).

E. Test
None

F. Close-Up
(1)Install manhole cover/s 319AZ/319BZ/333BB (Ref. 28-11-33, P. Block 401).
(2)Make certain that working area is clean and clear of tools and miscellaneous items of equipment.
(3)Install access panel/s (vapour seal) 319AB/319BB.
(4)Install access panel (fuselage) 312AR.
(5)Remove access platform.
(6)Remove safeties applied to horizontal and vertical stabilizers (Ref. 55-00-00, P. Block 301).
(7)Remove safety clips and tags and close FUEL/TRIM TANK circuit breakers on line 325.
(8)Remove warning notices.
(9)Remove all ground handling and maintenance equipment.

TRIM TANK OVERPRESSURE PROTECTOR REMOVAL/INSTALLATION

WARNING : LANDING GEAR - MAKE CERTAIN GROUND SAFETIES AND WHEEL CHOCKS ARE IN POSITION.

FLIGHT CONTROLS - MAKE CERTAIN THAT GROUND SAFETIES AND NOTICES ARE IN POSITION.

MAKE CERTAIN THAT FIRE FIGHTING EQUIPMENT IS AVAILABLE AND ADEQUATE.

OBSERVE THE SAFETY PRECAUTIONS IN 28-00-00, P. BLOCK 301 AND 28-10-00, P. BLOCK 301.

BEFORE POWER IS SUPPLIED TO THE AIRCRAFT MAKE CERTAIN THAT ELECTRICAL CIRCUITS UPON WHICH WORK IS IN PROGRESS ARE ISOLATED.

1. Equipment and Materials

ITEM	DESIGNATION
A.	Access Platform 7 m (23 ft)
B.	O-ring seal
C. Material No. 01-001	Fuels (Ref. 20-31-00)
D. Material No. 09-001	Sealants (Ref. 20-31-00)
E. Material No. 09-002	Sealants (Ref. 20-31-00)
Referenced Procedures	
- 20-28-11, P. Block 1	Electrical Bonding
- 28-00-00, P. Block 301	Fuel - General
- 28-10-00, P. Block 301	Storage
- 28-12-33, P. Block 401	NACA intake and Vent Protector Trim Tank

2. Procedure

(Ref. Fig. 401)

A. Job Set-Up

(1)Position access platform beneath NACA intake.

(2)Remove NACA intake and vent protector panel 346AB 2 (Ref. 28-12-33, P. Block 401).

B. Removal

(1)Remove nut (2) and screw (1) securing bonding lead (3) to overpressure protector (8).

(2)Remove four nuts (7) and bolts (4) and remove overpressure protector (8).

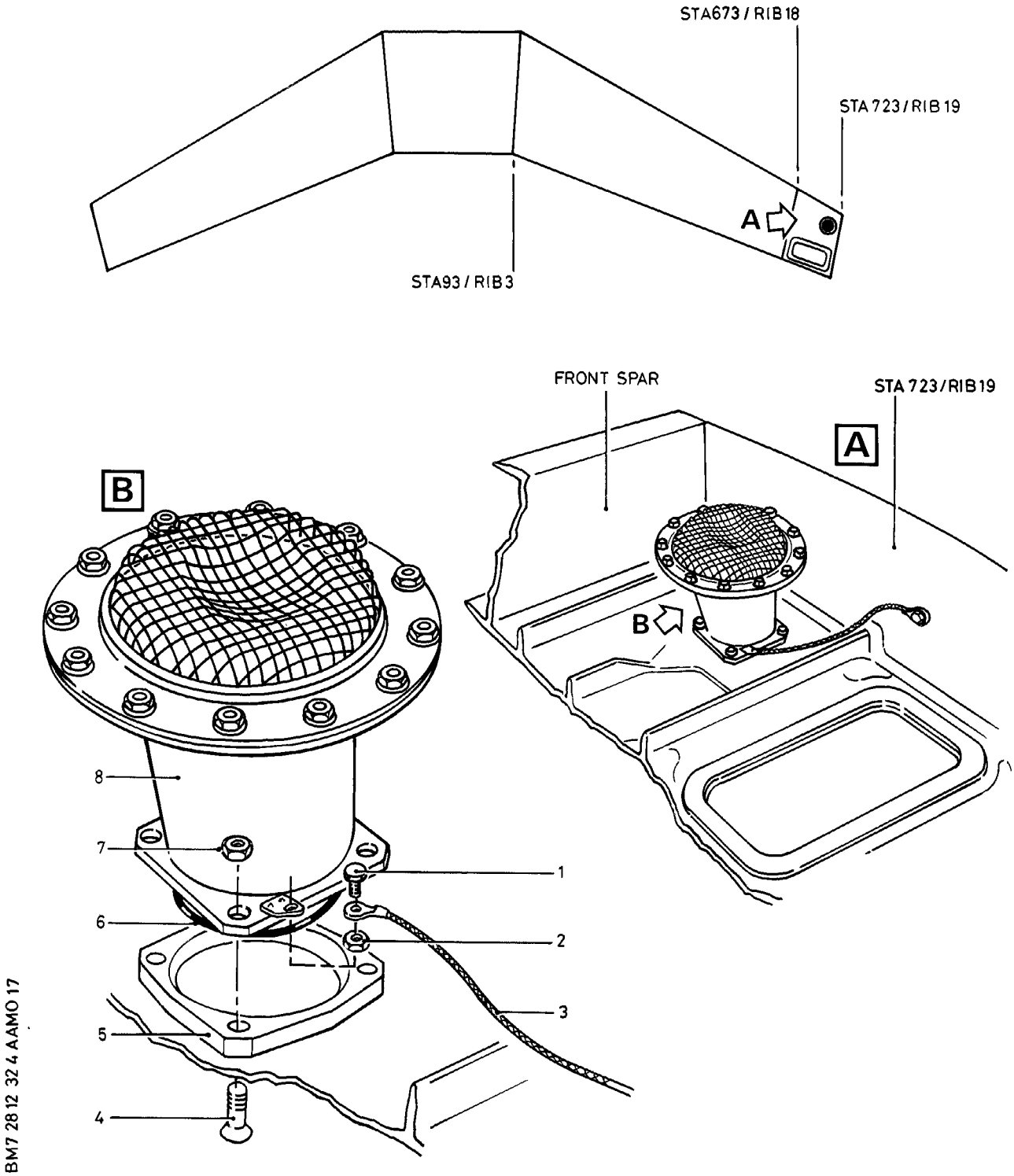
(3)Remove and discard O-ring seal (6) from overpressure protector.

(4)Remove packer (5) from mounting area.

(5)Clean all old sealant from packer (5) and around mounting area.

C. Preparation of Replacement Component

(1)This component is not tested after installation. Make certain the new



Overpressure Protector - Installation
Figure 401

protector has been stored correctly, is serviceable and that the paperwork is correct.

D. Installation
(1)Lubricate new O-ring seal (6) with fuel (Material No. 01-001) and install on overpressure protector.
(2)Apply sealant (Material No. 09-001) around skin mounting hole.
(3)Position overpressure protector (8) correctly, together with packer (5), in skin mounting hole and secure using nuts (7) and bolts (4).
(4)Secure bonding lead (3) to overpressure protector (8) using nut (2) and bolt (1). (Ref. 20-28-11, P. Block 1).
(5)Apply sealant (Material No. 09-002) to seal the joint between packer (5) and lower skin.

E. Test
None.

F. Close-Up
(1)Make certain that working area is clean and clear of tools and miscellaneous items of equipment.
(2)Install NACA intake (Ref. 28-12-33, P. Block 401).

WARNING : LANDING GEAR - MAKE SURE THAT THE GROUND SAFETY-LOCKS AND THE WHEEL CHOCKS ARE IN POSITION.

FLIGHT CONTROLS - MAKE SURE THAT THE GROUND SAFETIES AND THE WARNING NOTICES ARE IN POSITION.

1. Trim Tank Overpressure Protector (Safety Disc) - Visual Inspection

A. Reason for the Job
(1)To make sure that the safety disc in the trim tank overpressure protector is intact.

B. Equipment and Materials

ITEM	DESIGNATION
A.	Access Platform 7 m (23 ft)
B	Safety Barriers
C.	Flashlight
Referenced Procedures - 55-00-00, P. Block 301	Stabilizers - Standard Warning and Procedures

C. Procedure
(1)Job Set-Up
(a)Make the trimmable horizontal stabilizer (THS) and the vertical stabilizer safe (Ref. 55-00-00, P. Block 301).
(b)Put the access platform below the NACA intake on the RH side of the trim tank (zone 343).
(c)Put the safety barriers in position.

(2)Inspection of safety disc

CAUTION : Do not put pressure on the safety disc during the inspection.

(a)Use a flashlight to examine the safety disc in the overpressure protector.

NOTE : A white cross will be clearly visible on the safety disc to show that the disc is not broken.

(b)Make sure that the safety disc is:
- in the correct position
- not damaged
- not broken.

(3)Close-Up
(a)Remove the access platform.
(b)Remove the safety barriers.

(c)Put the THS and the vertical stabilizer in the normal operating condition (Ref. 55-00-00, P. Block 301).

TRIM TANK NACA INTAKE AND VENT PROTECTOR REMOVAL/INSTALLATION

R **WARNING:** THIS PROCEDURE USES A FUEL SYSTEM ITEM THAT IS IN A CATEGORY KNOWN AS
R A CRITICAL DESIGN CONFIGURATION CONTROL LIMITATION (CDCCL). CDCCL
R IDENTIFIES AN ITEM THAT CAN BE THE SOURCE OF A POSSIBLE FUEL TANK
R IGNITION. YOU MUST KEEP ALL CDCCL ITEMS IN THE APPROVED CONFIGURATION.
R DAMAGE, WEAR OR CHANGES TO A CDCCL ITEM CAN CAUSE A POSSIBLE FUEL TANK
R EXPLOSION.

WARNING: LANDING GEAR - MAKE SURE THAT GROUND SAFETIES INCLUDING WHEEL CHOCKS ARE IN POSITION.
FLIGHT CONTROLS - MAKE SURE THAT GROUND SAFETIES AND NOTICES ARE IN POSITION.
OBSERVE SAFETY PRECAUTIONS IN 28-00-00, P. BLOCK 301.
BEFORE POWER IS SUPPLIED TO THE AIRCRAFT, MAKE SURE THAT ELECTRICAL CIRCUITS UPON WHICH WORK IS IN PROGRESS ARE ISOLATED.
BEFORE PRESSURIZING FUEL SYSTEMS, MAKE SURE THAT FUEL SYSTEM HAS BEEN ISOLATED.
MAKE SURE THAT FIRE FIGHTING EQUIPMENT IS AVAILABLE AND ADEQUATE.

1. Reasons for the Job

A. Replacement of NACA intake

B. Replacement of overpressure protector

2. Equipment and Materials

ITEM	DESIGNATION
A.	Access Platform, up to 8.3 m (27 ft.)
B. 98A57304002000	Manhole Bolt Extraction Tool
C. 98A28109013000	Protective Ring
D.	Non-metallic Scraper
E.	Torque Set Driver
F.	Torque Wrench, up to 1.0 m daN (88.5 lbf. in.)
G. Material No. 04-004	Common Greases (Ref. 20-31-00)
H. Material No. 09-007	Sealants (Ref. 20-31-00)
J. Material No. 11-002	Cleaning Agents (Ref. 20-31-00)
Referenced Procedures	
- 20-28-11, P. Block 1	Electrical Bonding
- 28-00-00, P. Block 301	General
- 28-10-00, P. Block 301	Storage
- 28-25-00, P. Block 301	Refuel/Defuel System

3. Procedure

A. Job Set-Up

(1)Put access platform.

(2)Defuel trim tank (Ref. 28-25-00, P. Block 301).

B. Removal (Ref. Fig. 401)

(1)Remove screws (3). If screws prove difficult to remove, use manhole bolt extraction tool P/N 98A57304002001.

NOTE : Remove screws (3) in diametrical sequence.

(2)Remove NACA intake panel (2) and sealing ring (1).

(3)Install protective ring to the opening.

WARNING : DO NOT ENTER A TANK UNTIL IT HAS BEEN PURGED AND CORRECT SAFETY EQUIPMENT IS IN USE.

(4)Purge tank, as necessary (Ref. 28-10-00, P. Block 301).

C. Preparation for Installation (Ref. Fig. 401)

(1)Do a check of panel (2) and attachment area for damage.

(2)Do a check of sealing ring (1) for good condition and if necessary, renew as follows:

(a)Remove sealing ring (1) from panel (2).

(b)Remove sealant from manhole cover and flange, using non-metallic scraper.

(c)Clean sealing ring (1), using cleaning agent (Mat. No. 11-002).

(d)Apply thin layer of sealant (Mat. No. 09-007) to groove of panel (2).

(e)Install sealing ring (1).

(f)Let sealant (Mat. No. 09-007) dry for fifteen minutes.

NOTE : Do not touch sealing ring (1) after installation.

D. Installation (Ref. Fig. 401)

(1)Make sure that vent surge tank is clean and clear of tools and other items.

(2)Remove protective ring.

(3)Apply grease (Mat. No. 04-004) to screws (3).

(4)Put NACA intake panel (2).

NOTE: Make sure that sealing ring (1) has not been damaged.

(5)Install and tighten screws (3) in diametrical sequence.

(6)TORQUE screws (3) in diametrical sequence to 0.79 m daN (70 lbf. in.).

R WARNING: THIS INSTRUCTION IS APPLICABLE TO A CRITICAL DESIGN CONFIGURATION
R CONTROL LIMITATION (CDCCL). CAREFULLY OBEY ALL GIVEN INSTRUCTIONS
R WHEN YOU DO THIS STEP. IF YOU DO NOT OBEY THESE INSTRUCTIONS, A
R DANGEROUS CONDITION CAN OCCUR THAT CAN CAUSE A POSSIBLE FUEL TANK
R EXPLOSION.

(7)Do a check of electrical bonding between manhole cover and a suitable grounding point (Ref. 20-28-11, P.Block 1).

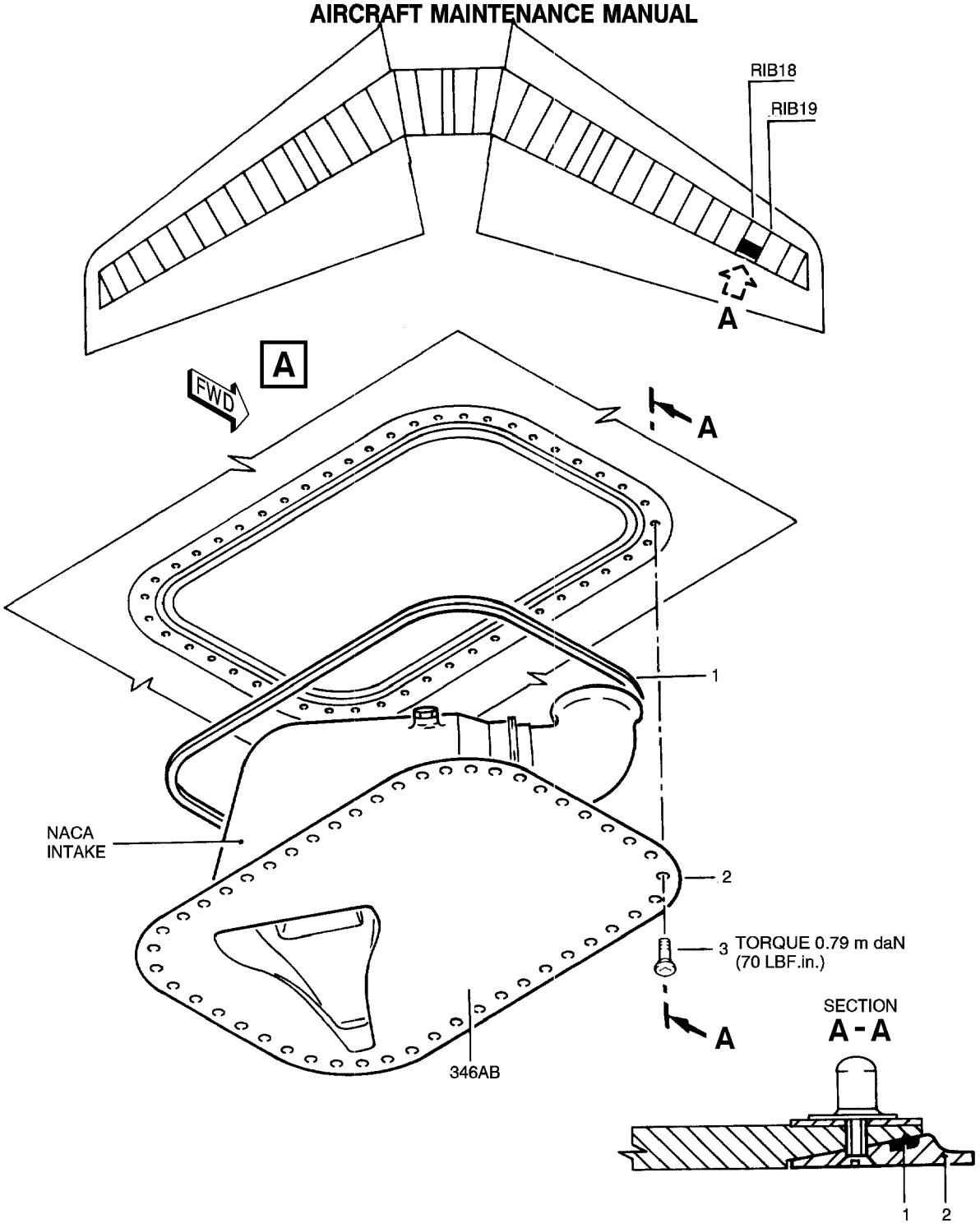
E. Test

R (1)Refuel trim-tank to do a test of the trim-tank NACA vent-seal
R (Ref. 28-25-00, P. Block 301).
(2)Test

ACTION	RESULT
1. Clean area of NACA intake.	
2. Do a check to make sure that NACA intake panel and water drain valves does not leak	

F. Close-Up

(1)Defuel or Transfer fuel from trim tank. (Ref. 28-25-00, P. Block 301).
(2)Make sure that work area is clean and clear of tools and other items.
(3)Remove access platform.



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NACA Intake
Figure 401

TRIM TANK NACA INTAKE AND VENT PROTECTOR INSPECTION/CHECK

WARNING : LANDING GEAR - MAKE CERTAIN THAT GROUND SAFETIES AND CHOCKS ARE IN POSITION.
FLIGHT CONTROLS - MAKE CERTAIN THAT GROUND SAFETIES AND NOTICES ARE IN POSITON.

1. Trim Tank NACA Intake and Vent Protector - Visual Inspection

A. Reason for the Job

(1) Visual Inspection of NACA Intake

B. Equipment and Materials

ITEM	DESIGNATION
(1)	Access Platform, up to 8.3 m (27 ft.)

C. Procedure

(1) Job Set-Up
  (a) Position access platform.

(2) Inspection
  (a) Examine the NACA intake for impact damage, cracks, corrosion or obstruction.

(3) Close-Up
  (a) Remove access platform.

VALVE - VENT FLOAT, TRIM TK (280451,280452,280453)
REMOVAL/INSTALLATION

R **WARNING** : THIS PROCEDURE USES A FUEL SYSTEM ITEM THAT IS IN A CATEGORY
R KNOWN AS A CRITICAL DESIGN CONFIGURATION CONTROL LIMITATION (CDCCL).
R CDCCL IDENTIFIES AN ITEM THAT CAN BE THE SOURCE OF A POSSIBLE FUEL
R TANK IGNITION. YOU MUST KEEP ALL CDCCL ITEMS IN THE APPROVED
R CONFIGURATION. DAMAGE, WEAR OR CHANGES TO A CDCCL ITEM CAN CAUSE A
R POSSIBLE FUEL TANK EXPLOSION.

LANDING GEAR - MAKE CERTAIN GROUND SAFETIES AND CHOCKS ARE IN POSITION.

FLIGHT CONTROLS - MAKE CERTAIN GROUND SAFETIES AND NOTICES ARE IN POSITION.

OBSERVE THE SAFETY PRECAUTIONS IN 28-00-00, P. BLOCK 301, AND 28-10-00, P. BLOCK 301.

MAKE CERTAIN THAT FIRE FIGHTING EQUIPMENT IS AVAILABLE AND ADEQUATE.

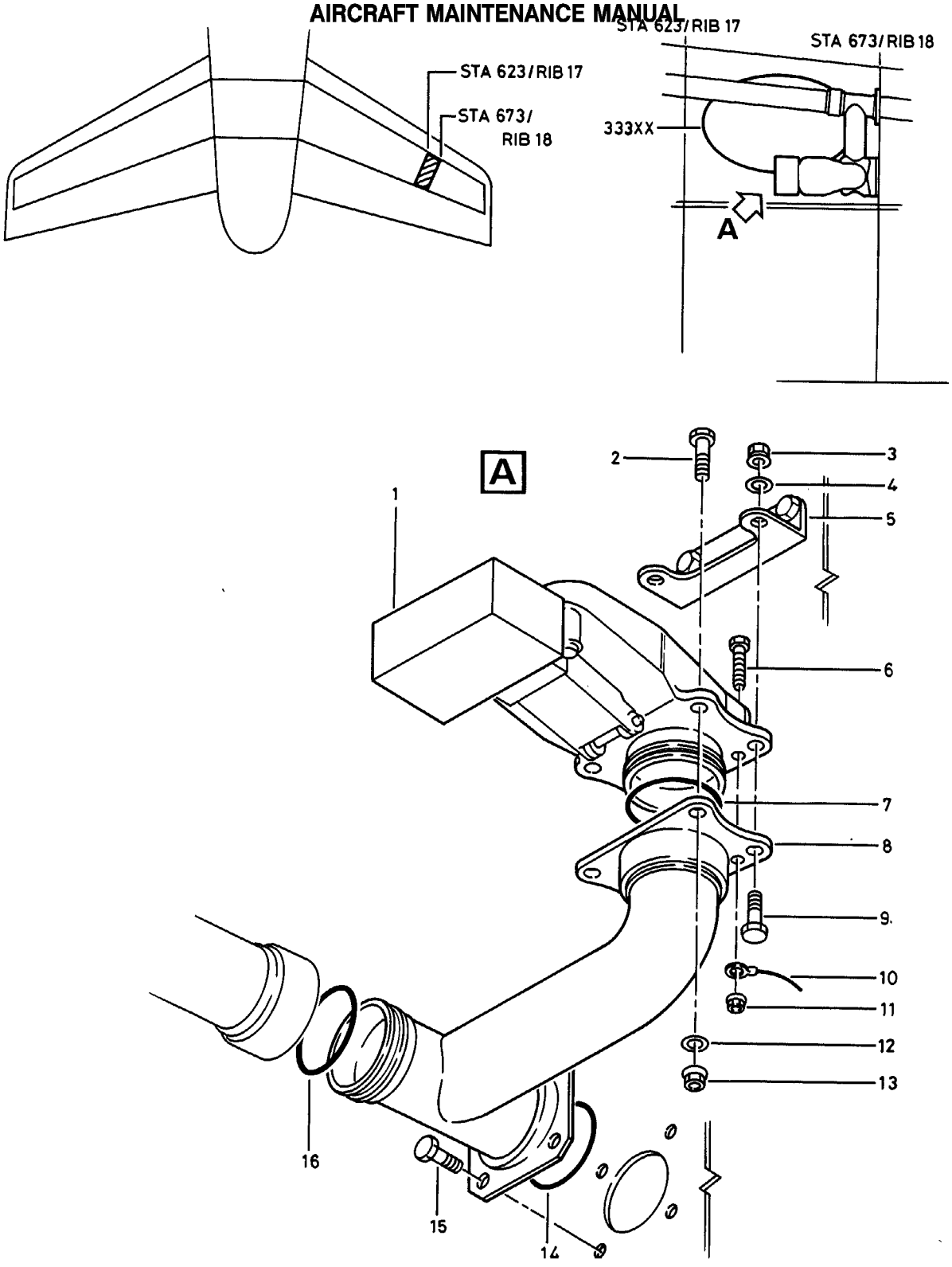
BEFORE POWER IS SUPPLIED TO THE AIRCRAFT MAKE CERTAIN THAT ELECTRICAL CIRCUITS UPON WHICH WORK IS IN PROGRESS ARE ISOLATED.

1. Equipment and Materials

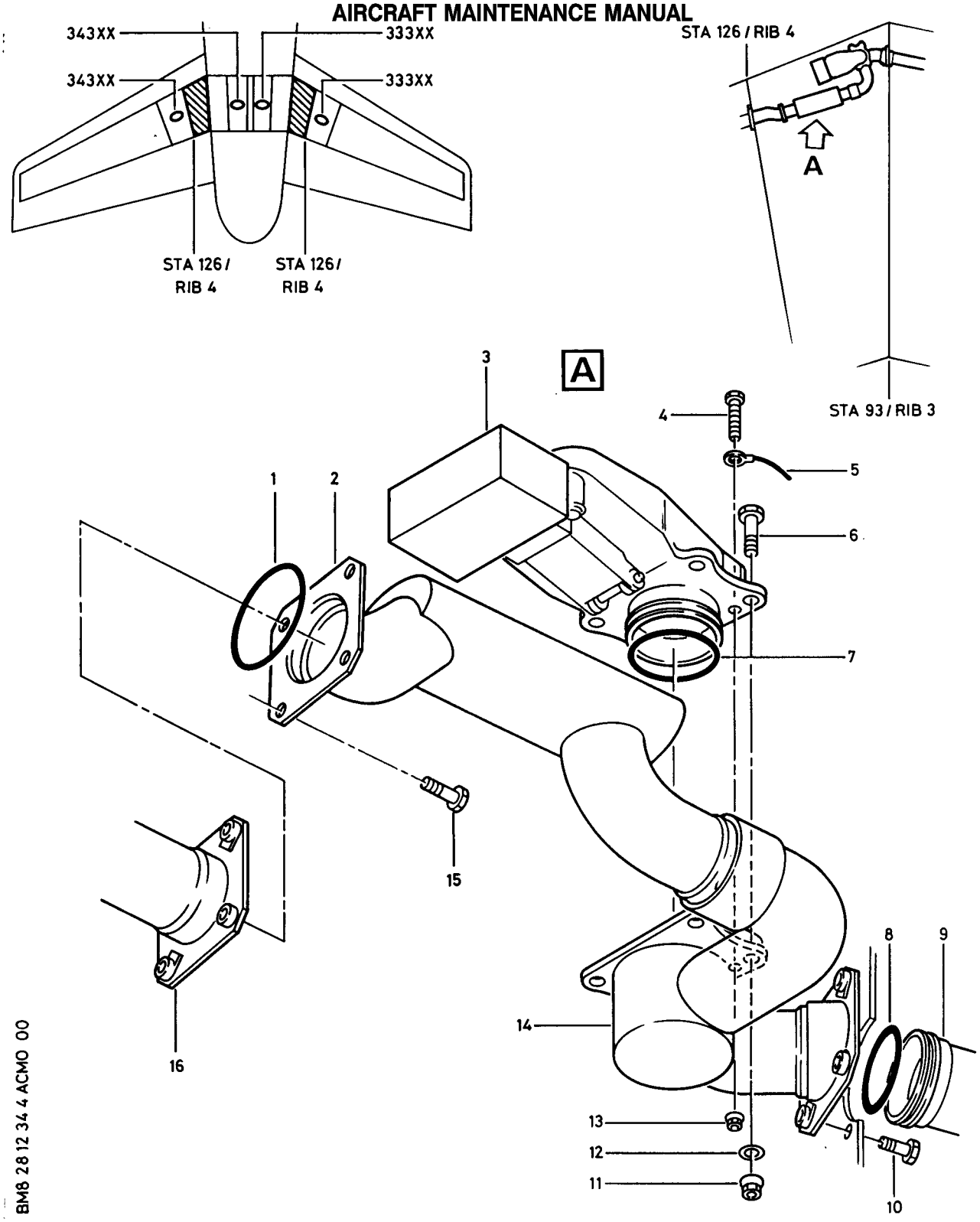
ITEM	DESIGNATION
A.	Access Platform 7 m (24 ft)
B. 97A27302009000	Locking Equipment - Pitch Trim Control Wheel
C.	O-Rings
D. Material No. 01-001	Fuel (Ref. 20-31-00)
E.	Circuit Breaker Safety Clips and Tags
F.	Warning Notices - Prohibiting Operation of Elevator and Pitch Trim Control
Referenced Procedures	
- 20-28-11, P. Block 1	Electrical Bonding
- 28-00-00, P. Block 301	Fuel
- 28-00-00, P. Block 401	Fuel
- 28-10-00, P. Block 301	Storage
- 28-11-33, P. Block 401	Covers - Manhole Trim Tank
- 28-25-00, P. Block 301	Refuel/Defuel System
- 55-00-00, P. Block 301	Stabilizers - General

2. Procedure

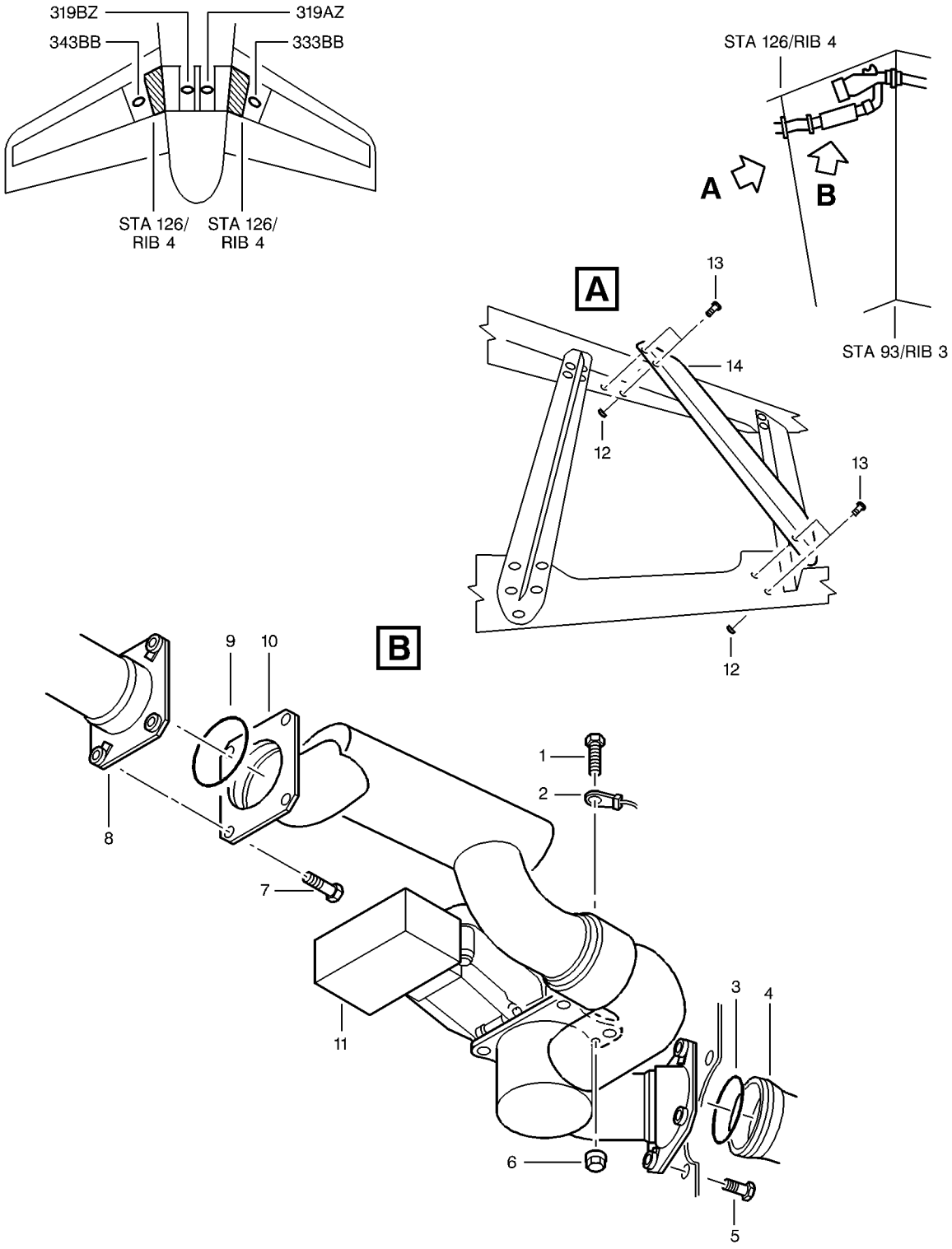
(Ref. Fig. 401)
(Ref. Fig. 402)
R (Ref. Fig. 403)



Outboard Vent Float Valve - Installation
Figure 401



Inboard Vent Float Valve - Installation
Figure 402



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Inboard Vent Float Valve and pipes- Installation
Figure 403

R

A. Job Set-Up
(1)Transfer/defuel fuel from trim tank (Ref. 28-25-00, P. Block 301).
(2)Open, safety and tag the following circuit breakers:

PANEL	SERVICE	IDENT.	LOCATION
132VU	FUEL/TRIM TANK/FWD XFR MAIN VALVE	1QL	325/K53

(3)Make THS and Vertical stabilizers safe (Ref. 55-00-00, P. Block 301).
(4)Make certain that horizontal stabilizer pitch trim control is set at zero and install locking equipment P/N 97A27302009000 at pitch trim control wheel in flight compartment.
(5)Put warning notices in position.
(6)Put access platform in position.
(7)Remove appropriate manhole cover (Ref. 28-11-33, P. Block 401).

B. Removal

NOTE: Line ends 'float' in adjoining sections. Use cumulative line end-float to help with the removal.

This procedure is to be read in conjunction with 28-00-00, P. Block 401.

R There are two procedures for the removal of the inboard vent valve.
R You can do procedure B.(2) or B.(3) to remove the inboard vent valve.

(1)Removal of the outboard vent float-valve (Ref. Fig. 401).
(a)Remove nuts (13) and (3), washers (12) and (4) bolts (2) and (9).
(b)Remove nut (11) and bolt (6) and disconnect bonding lead (10).
(c)Support vent float valve (1) and remove bolts (15).
(d)Withdraw elbow (8) from vent float valve (1).
(e)Remove elbow (8) and vent float valve (1) and seal open lines with caps.
(f)Discard O-ring seals (7), (14) and (16).
(2)Removal of the inboard vent float valve (Ref. Fig. 402).
(a)Remove nut (13) bolt (4) and disconnect bonding lead (5).
(b)Remove bolts (15) and (10), and remove installation comprising vent float valve (3), connector (14) and pipe assembly (2) and remove installation from tank.
(c)Remove nuts (11), washers (12), bolts (6) and separate vent float valve (3) from connector (14). Cap open lines.
(d)Discard O-ring seals (1), (7) and (8).

CAUTION : DO NOT SEPARATE CONNECTOR (14) AND PIPE ASSEMBLY (2).

R (3)Removal of the inboard vent float-valve and pipe assembly
R (Ref. Fig. 403).
R (a)Get access to the inboard vent float-valve (11) through the
R manhole 319AZ (319BZ).
R (b)Remove the nut (6) and the bolt (1) and then disconnect the bonding

R lead (2).
R (c)Remove the bolts (5) and disconnect the vent float assembly (11) from
R the pipe (4).
R (d)Remove and discard the o-ring seal (3).
R (e)Get access to Rib 4 through the manhole 333BB (343BB).
R (f)Remove the nuts (12) and the bolts (13) and then remove the rib
R strut (14) of Rib 4.
R (g)Remove the bolts (7) and then remove the vent float assembly (11) from
R the pipe (8).
R (h)Remove and discard the o-ring seal (9).
R (j)Cap all open lines.

C. Preparation of Replacement Component
(1)Renew all O-ring seals. Apply fuel (Material No. 01-001) to O-ring seals
Install as follows:
(a)For inboard vent float valve (3) seals:
1 Seal (7) on vent float valve (3).
2 Seal (1) on pipe assembly (16).
3 Seal (8) on pipe assembly (9).
R (b)For inboard vent float valve and pipe assembly (11) seals:
R 1 Seal (3) on pipe assembly (4).
R 2 Seal (9) on pipe assembly (8).
(c)For outboard vent float valve (1) seals:
1 Seal (7) on vent float valve (1).
2 Seals (14) and (16) on elbow (8).

D. Installation

NOTE: Pipe ends 'float' in adjoining sections. Use cumulative end-float to help with the installation of the line.

R If you removed the inboard vent float-valve with the pipe assembly,
R then do the installation D.(3). If you only removed the inboard vent
R float-valve, then do the installation D.(2).

(1)Remove caps from vent lines and vent float valve.
(2)Installation of the inboard vent float valve (Ref. Fig. 402).
(a)Attach vent float valve (3) to connector (14), with bolts (6), washers (12) and nuts (11).

NOTE: Ensure pin on pipe assembly (2) is installed in the plate on the connector (14).

(b)Install vent float valve (3) complete with connector (14) and pipe assembly (2).
(c)Position connector (14) onto rib 3 and secure with bolts (10).

R WARNING : THIS INSTRUCTION IS APPLICABLE TO A CRITICAL DESIGN
R CONFIGURATION CONTROL LIMITATION (CDCCL) ITEM. CAREFULLY OBEY
R ALL GIVEN INSTRUCTIONS WHEN YOU DO THIS STEP. IF YOU DO NOT
R OBEY THESE INSTRUCTIONS, A DANGEROUS CONDITION CAN OCCUR THAT

R CAN CAUSE A POSSIBLE FUEL TANK EXPLOSION.

(d)Attach the pipe assembly (2) to pipe assembly (16) with bolts (15) (Ref. 20-28-11, P. Block 1). Let the pipe sections stay at approximately mid-travel.
(e)Install bonding lead (5) with screw (4) and nut (13). (Ref. 20-28-11, P. Block 1).

R (3)Installation of the inboard vent float valve and pipe
R assembly (Ref. Fig. 403).

R WARNING : THIS INSTRUCTION IS APPLICABLE TO A CRITICAL DESIGN
R CONFIGURATION CONTROL LIMITATION (CDCCL) ITEM. CAREFULLY OBEY
R ALL GIVEN INSTRUCTIONS WHEN YOU DO THIS STEP. IF YOU DO NOT
R OBEY THESE INSTRUCTIONS, A DANGEROUS CONDITION CAN OCCUR THAT
R CAN CAUSE A POSSIBLE FUEL TANK EXPLOSION.

R (a)Get access through the manhole 333BB (343BB).
R (b)Install the inboard vent float valve assembly (11) to the pipe (8) with the bolts (7).
R (c)Install the rib strut (14) to the Rib 4 with the bolts (13) and the nuts (12).
R (d)Get access through the manhole 319AZ (319BZ).
R (e)Install the inboard vent float-valve assembly (11) to the pipe (4) with the bolts (5).
R (f)Install the bonding lead (2) with the bolt (1) and the nut (6).

R (4)Installation of the outboard vent float-valve (Ref. Fig. 401).
(a)Position vent float valve (1) in elbow (8) with bolts (2), washers (12) and nuts (13), do not fully tighten at this stage.
(b)Secure elbow to rib 18 with bolts (15).
(c)Fully tighten nuts (13) and secure bonding lead (10) with bolts (6) and nuts (11). (Ref. 20-28-11, P. Block 1).
(d)Secure vent float valve (1) and elbow assembly (8) to bracket (5) with bolt (9), washer (4) and nut (3). Leave piipe sections at approximately mid-travel.

E. Test
(1)Manually operate the vent float valves to make certain that they move freely.

F. Close-Up
(1)Make certain that working area is clean and clear of tools and miscellaneous items of equipment.
(2)Install appropriate manhole cover (Ref. 28-11-33, P. Block 401).
(3)Remove safety clips and tags and close Trim Tank circuit breakers on line 325.
(4)Remove warning notices.
(5)Remove access platform.

ANTI SIPHON VALVE - VENT FLOAT (280454) - REMOVAL/INSTALLATION

WARNING : LANDING GEAR - MAKE CERTAIN GROUND SAFETIES AND CHOCKS ARE IN POSITION.

FLIGHT CONTROLS - MAKE CERTAIN GROUND SAFETIES AND NOTICES ARE IN POSITION.

OBSERVE THE SAFETY PRECAUTIONS IN 28-00-00, P. BLOCK 301, AND 28-10-00, P. BLOCK 301.

MAKE CERTAIN THAT FIRE FIGHTING EQUIPMENT IS AVAILABLE AND ADEQUATE.

BEFORE POWER IS SUPPLIED TO THE AIRCRAFT MAKE CERTAIN THAT ELECTRICAL CIRCUITS UPON WHICH WORK IS IN PROGRESS ARE ISOLATED.

1. Equipment and Materials

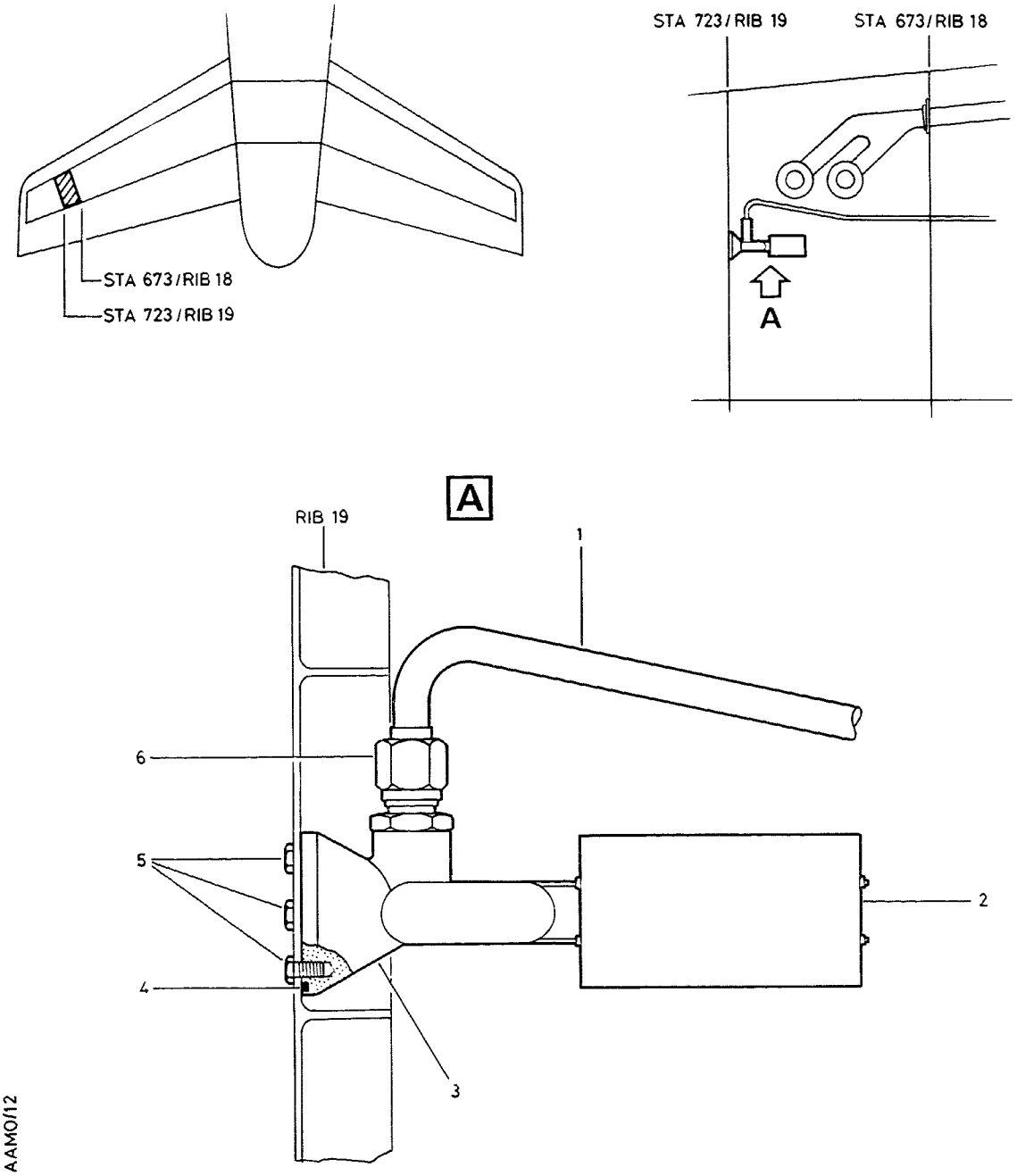
ITEM	DESIGNATION
A.	Access Platform 7 m (24 ft)
B.	O-ring
C. Material No. 01-001	Fuels (Ref. 20-31-00)
D. Material No. 16-006	Structure Paints (Ref. 20-31-00)
Referenced Procedures	
- 12-11-28, P. Block 301	Replenishing of Fuel Tanks
- 28-00-00, P. Block 301	Fuel - General
- 28-10-00, P. Block 301	Storage
- 28-11-33, P. Block 401	Covers - Manhole, Trim Tank
- 55-13-13, P. Block 401	Panels - Trailing Edge Access

2. Procedure
(Ref. Fig. 401)

A. Job Set-Up
(1)Remove manhole cover 333GB (Ref. 28-11-33, P. Block 401).
(2)Lower trailing edge access panels 334JB, 334HB and 334GB (Ref. 55-13-13, P. Block 401).

B. Removal
(1)Gain access through manhole 333GB. Unscrew nut (6) and remove pipeline (1).
(2)Gain access through lightening holes in rear spar to outboard side of Rib 19. Remove bolts (5) and remove vent valve (3). Discard O-ring (4).

C. Preparation of Replacement Component
(1)Lubricate new O-ring (4) with fuel (Material No.01-001) and place in position on new valve.



Anti Siphen Vent Float Valve - Installation
Figure 401

D. Installation
(1)Install vent valve (3) on Rib 19 with bolts (5).
(2)Install pipeline (1) on valve (3) and tighten nut (6).
(3)Apply structure paint (Material No.16-006) to bolt heads.

E. Test
(1)Make certain that float valve (2) operates freely.
(2)Install manhole cover 333GB (Ref. 28-11-33, P. Block 401).
(3)Refuel trim tank (Ref. 12-11-28, P. Block 301).
(4)Make certain there is no fuel leaking through Rib 19 around bolts (5).

F. Close-Up
(a)Make certain that working area is clean and clear of tools and miscellaneous items of equipment.
(b)Close trailing edge access panels 334JB, 334HB and 334GB (Ref. 55-13-13, P. Block 401).

TRIM TANK FUEL DRAIN CHECK VALVE REMOVAL/INSTALLATION

WARNING : LANDING GEAR - MAKE CERTAIN GROUND SAFETIES AND WHEEL CHOCKS ARE IN POSITION.

FLIGHT CONTROLS - MAKE CERTAIN THAT GROUND SAFETIES AND NOTICES ARE IN POSITION.

MAKE CERTAIN THAT FIRE FIGHTING EQUIPMENT IS AVAILABLE AND ADEQUATE.

BEFORE AND DURING MAINTENANCE OPERATIONS TO BE UNDERTAKEN INSIDE A FUEL TANK, THE PRESCRIBED SAFETY PRECAUTIONS MUST BE RIGOROUSLY OBSERVED (REF. 28-00-00, P.BLOCK 301) AND (REF. 28-10-00, P. BLOCK 301).

BEFORE POWER IS SUPPLIED TO THE AIRCRAFT MAKE CERTAIN THAT ELECTRICAL CIRCUITS UPON WHICH WORK IS IN PROGRESS ARE ISOLATED.

1. Equipment and materials

ITEM	DESIGNATION
A.	Access platform 7m (24ft)
B.	O-ring seal
C. Material No. 01-001	Fuels (Ref. 20-31-00)
Referenced Procedures	
- 28-00-00, P. Block 301	Fuel - General
- 28-10-00, P. Block 301	Fuel Storage
- 28-11-33, P. Block 401	Trim Tank Manhole covers
- 28-12-33, P. Block 401	Trim Tank NACA Intake and Vent Protector

2. Procedure

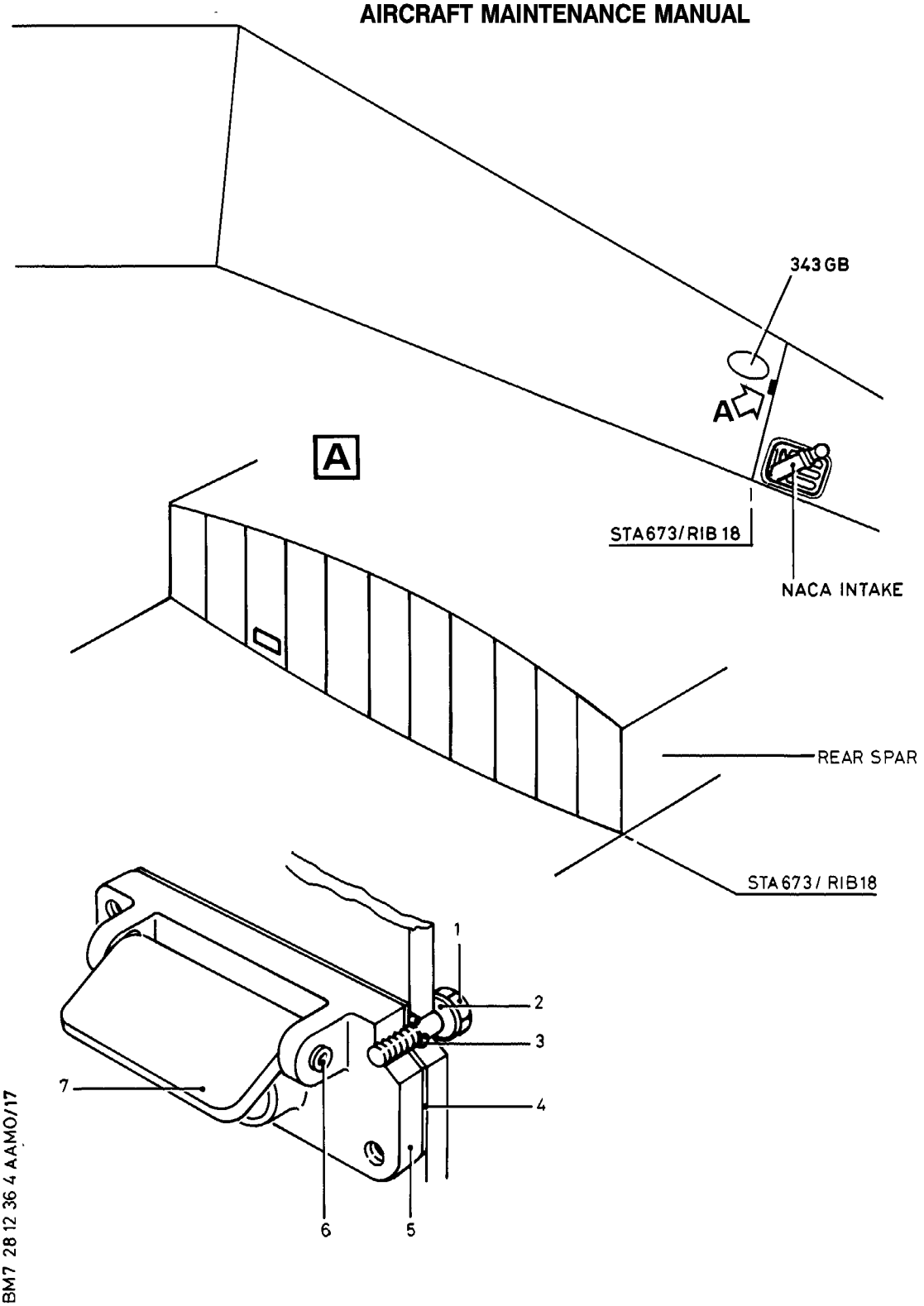
(Ref. Fig. 401)

A. Job Set-Up
(1)Position access platform beneath manhole cover and NACA intake.
(2)Remove manhole cover 343GB (Ref. 28-11-33, P. Block 401).
(3)Remove NACA intake (Ref. 28-12-33, P. Block 401).

B. Removal
(1)Remove four bolts (1) and washers (2) securing check valve (5) and remove check valve; discard O-ring seals (3).
(2)Remove gasket (4) from check valve (5).

C. Preparation of Replacement Component.
(1)Check all mating surfaces are clean and undamaged.

D. Installation



Check Value - Installation
Figure 401

(1)Insert attachment bolts (1), complete with washers (2), into holes in outboard face of Rib 18, lubricate new O-ring seals (3) with fuel (Material No. 01-001) and position new O-ring seal (3) over each bolt.
(2)Position check valve (5) complete with new gasket (4) on inboard face of Rib 18 and secure with bolts (1).

E. Test
(1)Make certain valve (7) is free to pivot on spindle (6) and valve drops evenly onto contact face of seating.

F. Close-up
(1)Make certain that the work area is clean and clear of tools and miscellaneous items of equipment.
(2)Install manhole cover 343GB (Ref. 28-11-33, P. Block 401).
(3)Install NACA intake (Ref. 28-12-33, P. Block 401).
(4)Remove access platform.

TRIM TANK PIPES AND JOINTS - REMOVAL/INSTALLATION

WARNING : LANDING GEAR - MAKE CERTAIN THAT GROUND SAFETIES INCLUDING WHEEL CHOCKS ARE IN POSITION.
FLIGHT CONTROLS - MAKE CERTAIN THAT GROUND SAFETIES AND NOTICES ARE IN POSITION.
OBSERVE SAFETY PRECAUTIONS IN 28-00-00, P. BLOCK 301.
BEFORE POWER IS SUPPLIED TO THE AIRCARFT, MAKE CERTAIN THAT ELECTRICAL CIRCUITS UPON WHICH WORK IS IN PROGRESS ARE ISOLATED.
BEFORE PRESSURIZING FUEL SYSTEMS, MAKE CERTAIN THAT FUEL SYSTEM HAS BEEN ISOLATED.
MAKE CERTAIN THAT FIRE FIGHTING EQUIPMENT IS AVAILABLE AND ADEQUATE.

NOTE : The following procedure is typical for pipe sections in refuel/defuel and ventilation system of trim tank.

1. Equipment and Material

	ITEM	DESIGNATION
	A.	Access Platform, up to 5.5m (18 ft.)
	B. 97A27302009000	Locking Equipment - Pitch Trim Control Wheel
	C.	O-Ring
R	D.	Strap wrench
R	E.	Warning Notices
R	F. Material No. 01-001	Fuels (Ref. 20-31-00)
	Referenced Procedures	
	- 12-11-28, P. Block 301	Fuel Tank Replenishing
	- 20-28-11, P. Block 1	Electrical Bonding
	- 28-00-00, P. Block 301	General
	- 28-11-33, P. Block 401	Manhole Covers
	- 28-12-00, P. Block 501	Tank Venting System
	- 28-25-00, P. Block 301	Refuel/Defuel System

2. Procedure

A. Job Set-Up

(1)Position access platform.
(2)Move horizontal stabilizer to 3° A/C nose down and install locking equipment P/N 97A27302009000 at pitch trim control wheel.
(3)Defuel trim tank (Ref. 28-25-00, P. Block 301).
(4)Open access doors 312AR and 313AL.
(5)Open appropriate manhole covers (Ref. 28-11-33, P. Block 401).
(6)Position warning notices.

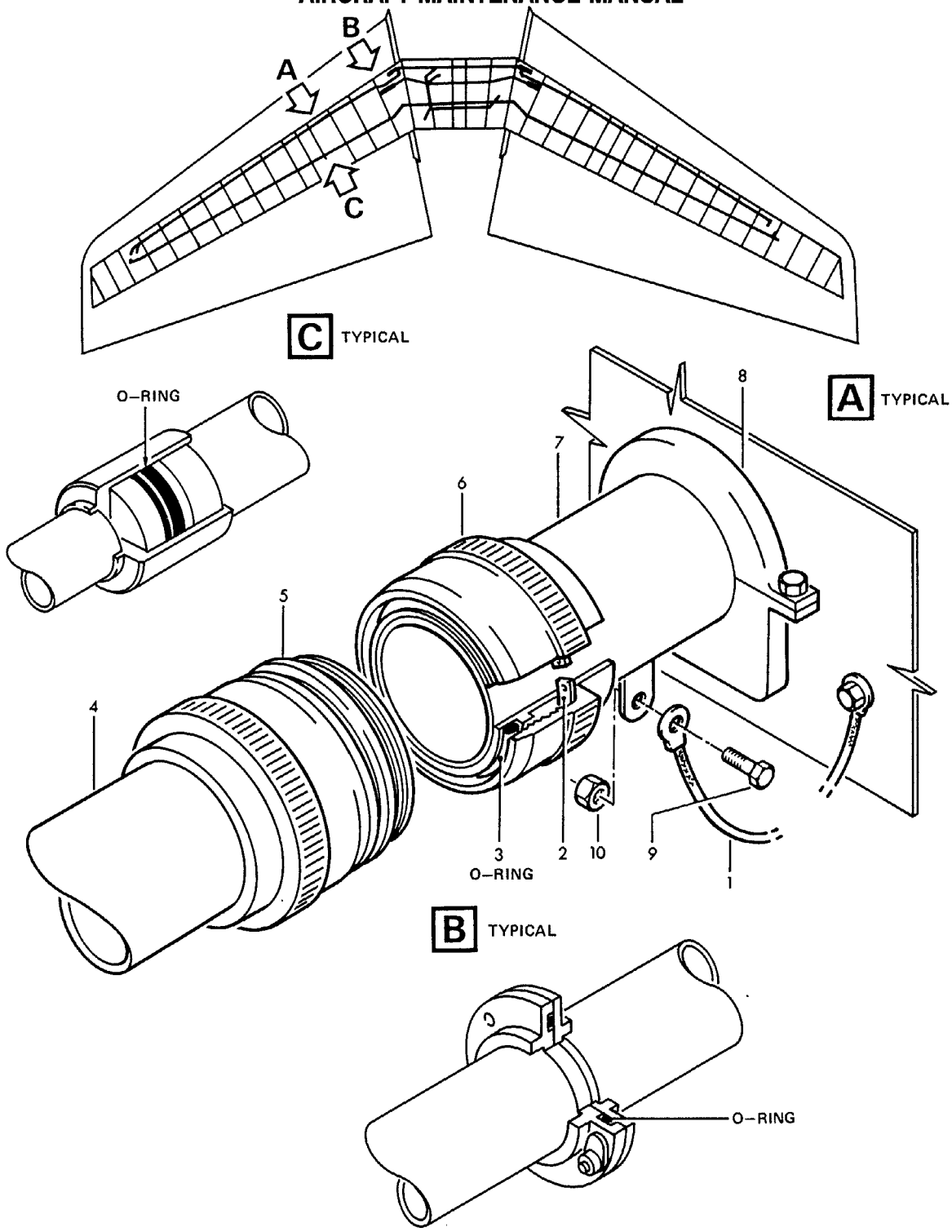
B. Removal (Ref. Fig. 401)
(1)Remove nut (10), bolt (9) and disconnect bonding strap (1).
(2)Unscrew pipe retaining nut (6) from connector (5).
R NOTE:If sleeve cannot be removed by hand do not
R use a metalic tool, a strap wrench is recommended.
NOTE: Do not remove connector (5) from pipe (4).
(3)Remove clamps securing pipe (4, 7) and/or pipe fitting (8) from rib, if required.
(4)Remove pipe (4, 7), remove and discard O-ring (3).

C. Preparation for Replacement Component
(1)Lubricate O-ring with fuel (Mat. No. 01-001) and install on pipe.
(2)Make certain that circlip (2) is secure.

D. Installation (Ref. Fig. 401)
(1)Position pipe (4, 7) and nut (6) on connector (5).
(2)Tighten retaining nut (6).
(3)Install clamps securing pipe (4, 7) and/or pipe fitting (8) at rib.
(4)Connect bonding strap (1), install bolt (9) and nut (10).
For electrical bonding refer to 20-28-11, P. Block 1.
(5)Remove locking equipment P/N 97A27302009000.

E. Test
(1)Examine pipe connections for leaks (Ref. 28-12-00, P. Block 501).

F. Close-Up
(1)Make certain that working area is clean and clear of tools and miscellaneous items of equipment.
(2)Close manhole covers (Ref. 28-11-33, P. Block 401).
(3)Refuel trim tank (Ref. 12-11-28, P. Block 301)
(4)Close access doors 312AR and 313AL.
(5)Remove access platform.
(6)Remove warning notices.



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Pipes and Joints-Typical
Figure 401

VAPOR SEAL VENT AND DRAIN - REMOVAL/INSTALLATION

WARNING : LANDING GEAR - MAKE CERTAIN THAT GROUND SAFETIES INCLUDING WHEEL CHOCKS ARE IN POSITION.
FLIGHT CONTROLS - MAKE CERTAIN THAT GROUND SAFETIES AND NOTICES ARE IN POSITION.
BEFORE POWER IS SUPPLIED TO THE AIRCRAFT, MAKE CERTAIN THAT ELECTRICAL CIRCUITS UPON WHICH WORK IS IN PROGRESS ARE ISOLATED.

1. Equipment and Materials

ITEM	DESIGNATION
A.	Access Platform, up to 5.5 m (18 ft)
B. 97A27302009000	Locking Equipment - Pitch Trim Control Wheel
C.	Warning Notice
D. Material No. 09-016	Sealants (Ref. 20-31-00)
E. Material No. 11-004	Cleaning Agents (Ref. 20-31-00)

Referenced Procedures

- 28-11-35, P. Block 401	Vapor Seal
- 28-13-00, P. Block 501	External Ventilation System

2. Procedure

A. Job Set-Up
(1)Position access platform.
(2)Move horizontal stabilizer to 3° A/C nose down and install locking equipment P/N 97A27302009000 at pitch trim control wheel.
(3)Position warning notice in flight compartment prohibiting operation of pitch controls.
(4)Open access doors 312AR and 313AL.

B. Removal (Ref. Fig. 401, 402)
(1)Removal of Vent and Drain Pipes - Typical
(a)Remove bolt (11) and clamps (10) with bonding leads.
(b)Removal of Vent Pipes
1 Remove bolts (12) and bonded seals (13).
2 Disconnect vent pipe (24) from T union (23).
(c)Removal of union
1 Remove the nut (21), the union (23) and the washer (22).
(2)Removal of Drain Pipes (Ref. Fig. 403)
(a)Loosen the clamp (2), remove the bolt (4) and the pipe clamp (3).
(b)Disconnect the drain pipe (5) from the T union (6).
(c)Remove the drain pipe (5) from the drain (1).

(3)Removal of Flame Arrestor Assembly (15)
(a)Open vapor seal (Ref. 28-11-35, P. Block 401).
(b)Remove bolts (14) and flame arrestor assy (15).

C. Preparation for Installation (Ref. Fig. 401, 402)
(1)Remove sealant from air inlet between FR86 and FR87, using cleaning agent (Mat. No. 11-004).

(2)Remove flame arrestor (18), if necessary:
(a)Remove nuts (20), washers (19) and bolts (16).
(b)Remove cover (17) and flame arrestor (18).
(c)Install flame arrestor (18) and cover (17).
(d)Install bolts (16), washers (19) and nuts (20).

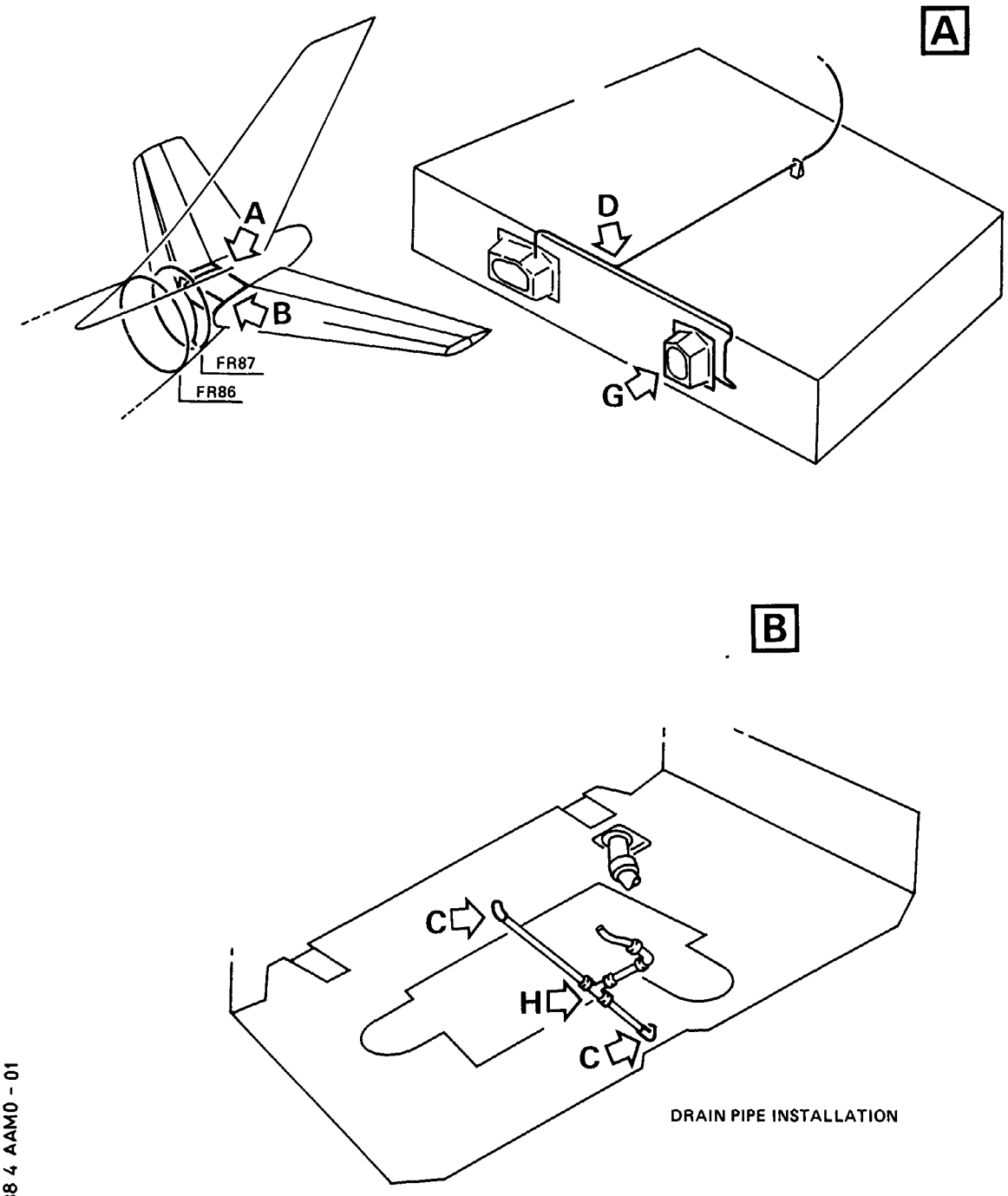
D. Installation
(1)Installation of Flame Arrestor Assy
(a)Position flame arrestor assy (15) and install bolts (14).
(b)Close vapor seal (Ref. 28-11-35, P. Block 401).

(2)Installation of Vent and Drain Pipes - Typical
(Ref. Fig. 401, 403)
(a)Installation of Union
1 Position washer (22), and install union (23) and nut (21).
(b)Installation of Vent Pipes
1 Connect vent pipe (24).
2 Position bonded seals (13) and install bolts (12).
(c)Check bonding leads of clamps (10) for good condition and renew, if necessary.
(d)Install clamps (10) and bolts (11).
(3)Installation of Drain Pipes (Ref. Fig. 403)
(a)Position the clamp (2) on the drain (1).
(b)Install the drain pipe (5) to the drain (1) and the T union (6).
(c)Install the pipe clamp (3) with the bolt (4).
(d)Tighten the clamp (2).

(4)Apply sealant (Mat. No. 09-016) to gap between pipe and fuselage skin between FR86 and FR87 if necessary.
(5)Remove locking equipment P/N 97A37302009000.

E. Test
(1)Carry out free flow and leak test of vapor seal and drain lines (Ref. 28-13-00, P. Block 501).

F. Close-Up
(1)Make certain that working area is clean and clear of tools and miscellaneous items and equipment.
(2)Close access doors 312AR and 313AL.
(3)Remove access platform.
(4)Remove warning notice.



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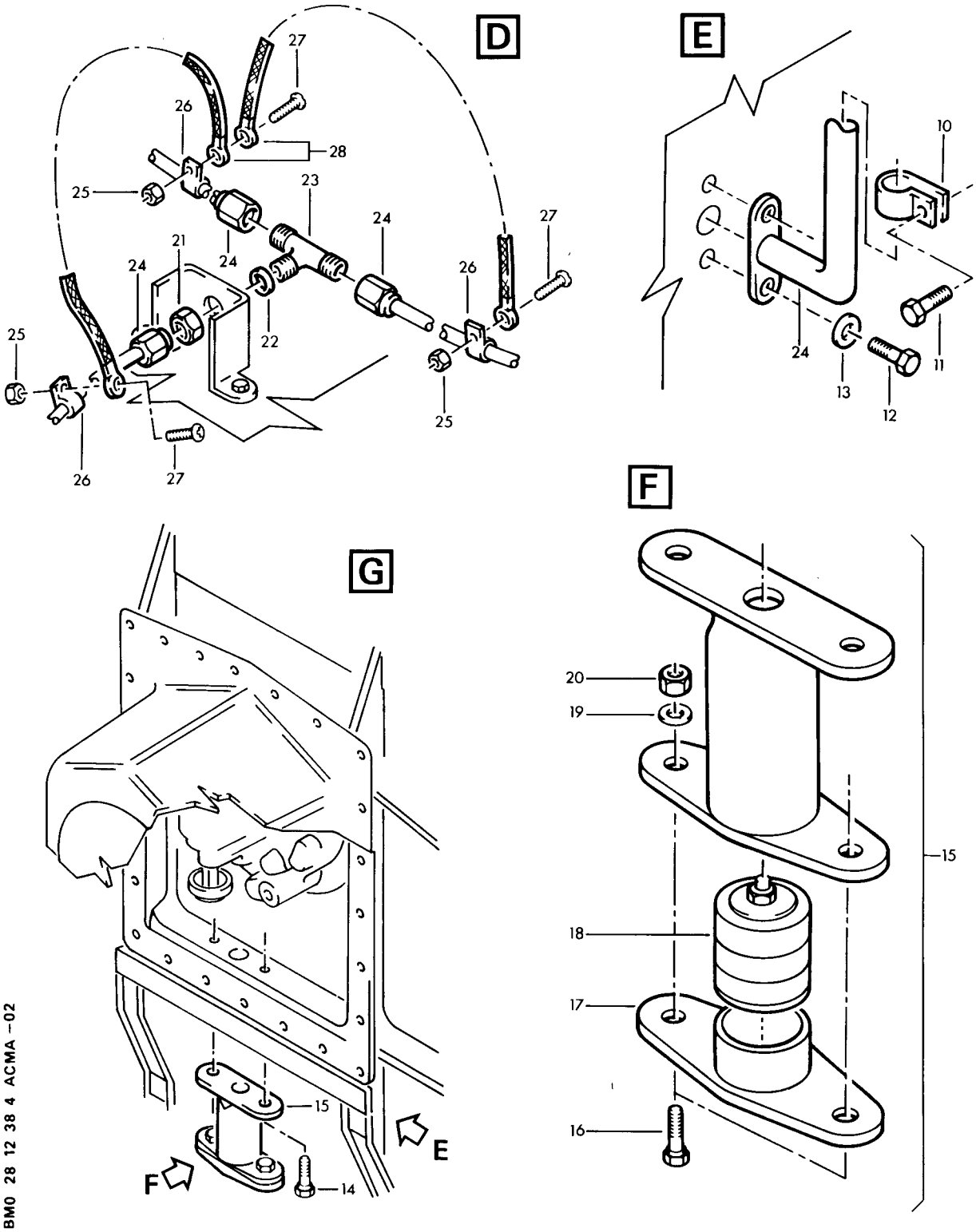
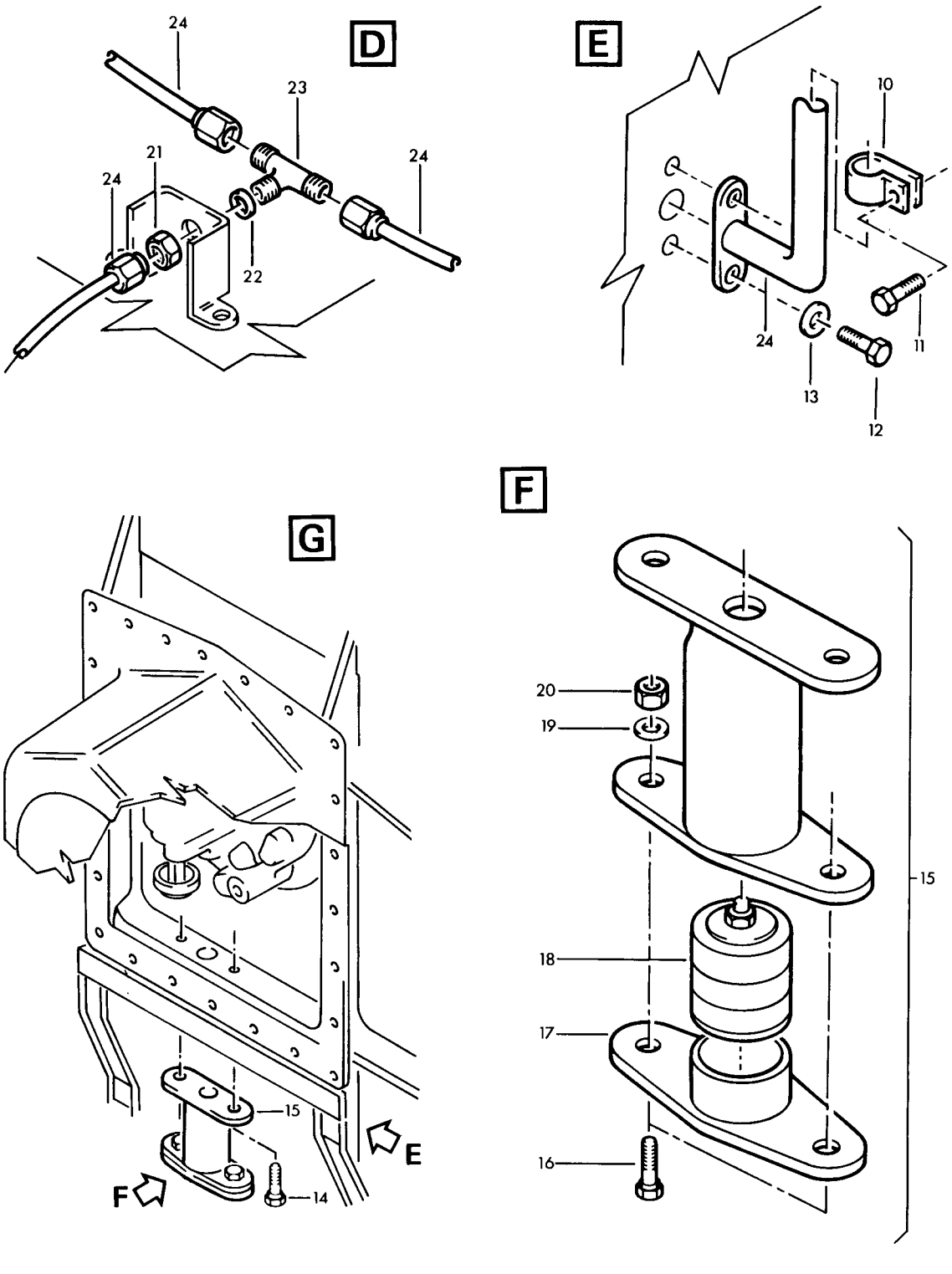
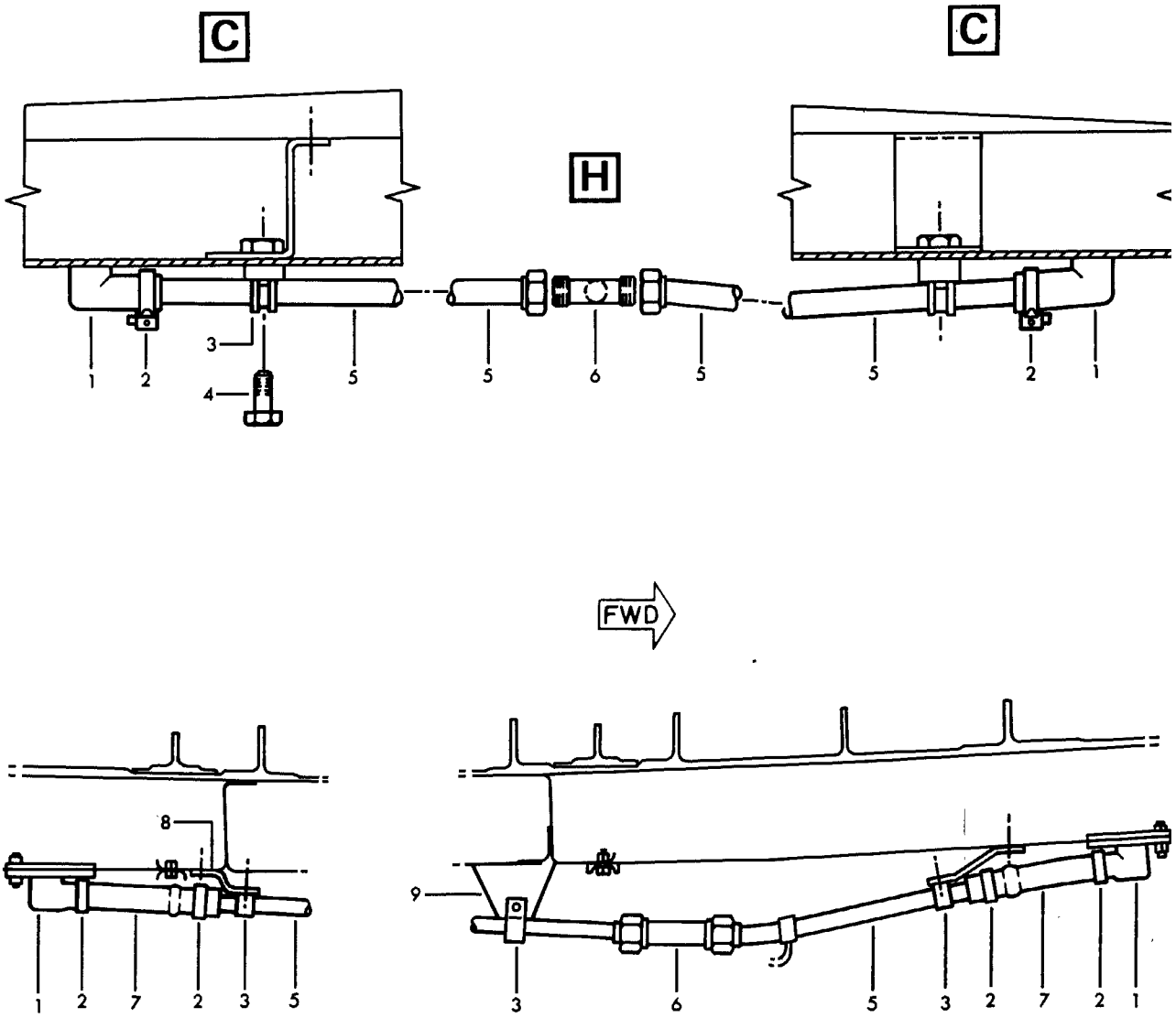
Vent and Drain Pipes
Figure 401



Vent and Drain Pipes (Sheet 1/2)
Figure 402



Vent and Drain Pipes (Sheet 2/2)
Figure 402



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Drain Pipes
Figure 403

VENT VALVE AND ACTUATOR - ADDITIONAL CENTER TANK - REMOVAL/INSTALLATION

R WARNING : THIS PROCEDURE USES A FUEL SYSTEM ITEM THAT IS IN A CATEGORY KNOWN
R AS A CRITICAL DESIGN CONFIGURATION CONTROL LIMITATION (CDCCL).
R CDCCL IDENTIFIES AN ITEM THAT CAN BE THE SOURCE OF A POSSIBLE FUEL
R TANK IGNITION. YOU MUST KEEP ALL CDCCL ITEMS IN THE APPROVED
R CONFIGURATION. DAMAGE, WEAR OR CHANGES TO A CDCCL ITEM CAN CAUSE A
R POSSIBLE FUEL TANK EXPLOSION.

WARNING : OBEY THE SAFETY PRECAUTIONS IN 28-00-00, P. BLOCK 301 AND 28-10-00, P. BLOCK 301, BEFORE AND DURING MAINTENANCE OPERATIONS IN A FUEL TANK.
MAKE SURE THAT THE FIRE FIGHTING EQUIPMENT IS AVAILABLE AND NEAR TO THE WORK AREA, BEFORE YOU START THE MAINTENANCE OPERATIONS.
MAKE SURE THAT THE ELECTRICAL CIRCUITS, ON WHICH THE WORK IS IN PROGRESS, ARE ISOLATED BEFORE YOU SUPPLY POWER TO THE AIRCRAFT.

1. Equipment and Materials

ITEM	DESIGNATION
A.	Access Platform, 2.7 m (9 ft.)
B.	Fluorescent Lamp - Explosion Proof
C. 98A28108001000	Water Drain Adapter
D.	Blanking Caps
E.	Drainage Containers
F.	O-Rings
G.	Circuit Breaker Safety Clips and Tags
H.	Adhesive Tape
I.	Warning Notices
J. Material No. 04-012	Common Greases (Ref. 20-31-00)

Referenced Procedures

- 12-11-28, P. Block 301	Fuel Tank Replenishing
- 20-28-11, P. Block 1	Electrical Bonding
- 28-00-00, P. Block 301	Fuel - General
- 28-10-00, P. Block 301	Storage
- 28-11-00, P. Block 301	Tanks
- 28-11-36, P. Block 601	Additional Center Tank
- 28-11-37, P. Block 401	Manhole Cover - Additional Center Tank
- 28-11-38, P. Block 601	Bladder Tank
- 28-11-39, P. Block 401	Water Drain Valve - Additional Center Tank
- 28-25-00, P. Block 301	Refuel/Defuel System
- 28-28-00, P. Block 501	Additional Center Tank Transfer System
- 52-30-00, P. Block 1	Cargo Compartment Doors

**ON A/C 101-200,

Post SB 28-2105 For A/C 101-200,

Referenced Procedures

- 12-11-28, P. Block 301	Fuel Tank Replenishing
- 20-28-11, P. Block 1	Electrical Bonding
- 25-21-00, P. Block 401	Passenger Compartment Seats
- 28-00-00, P. Block 301	Fuel - General
- 28-10-00, P. Block 301	Storage
- 28-11-00, P. Block 301	Tanks
- 28-11-36, P. Block 401	Additional Center Tank
- 28-11-36, P. Block 601	Additional Center Tank
- 28-11-37, P. Block 401	Manhole Cover - Additional Center Tank
- 28-11-38, P. Block 601	Bladder Tank
- 28-11-39, P. Block 401	Water Drain Valve - Additional Center Tank
- 28-25-00, P. Block 301	Refuel/Defuel System
- 28-28-00, P. Block 501	Additional Center Tank Transfer System
- 52-30-00, P. Block 1	Cargo Compartment Doors

**ON A/C 101-200,

2. Procedure

**ON A/C 101-200,

Post SB 28-2105 For A/C 101-200,

2. Procedure
NOTE : If two additional center tanks (ACT) are installed:
(1) The installation of the vent valve 280268 in the fwd ACT and 280269 in the aft ACT is the same.
(2) The installation of the actuator 280273 on the fwd ACT and 280274 on the aft ACT is the same.
(3) The removal/installation of the vent valve and the actuator from one ACT only is given.

**ON A/C 101-200,

A. Job Set-Up
(1)Make sure that the aircraft is statically grounded.
(2)Put the access platform in position.
(3)Open the AFT cargo-compartment door (Ref. 52-30-00, P. Block 1).

(4)Open, safety and tag the circuit breakers:

PANEL	SERVICE	IDENT.	LOCATION
101VU	FUEL CARGO TK L PUMP SUPPLY	1QH	GEN1/B02
132VU	FUEL ACT VENT AND PRESS VALVE	3QH	325/K57
132VU	FUEL ACT XFR VALVE MOTOR 1	4QH	325/K58
132VU	FUEL ACT PUMP CTL XFR VALVE MOTOR 2	5QH	325/K59

(5)Put the warning notices in position on:
- the refuel/defuel panel 110VU
- the fuelling panel 430VU
to tell persons not to operate the MODE SELECTOR switch.

**ON A/C 101-200,

Post SB 28-2105 For A/C 101-200,

PANEL	SERVICE	IDENT.	LOCATION
101VU	FUEL CARGO TK L PUMP SUPPLY	1QH	GEN1/A02
101VU	FUEL CARGO TK R PUMP SUPPLY	2QH	GEN2/C02
128VU	FUEL/AUX TK PUMP L CTL AND R WARN	3QH	801/R81

PANEL	SERVICE	IDENT.	LOCATION
128VU	FUEL/AUX TK PUMP VALVES AND PUMP R CTL AND L WARN	4QH	801/R82
128VU	FUEL/AUX TK OVERRIDE	5QH	801/R83

(5)On refuel/defuel panel 110VU and on fuelling panel 476VU display warning notices prohibiting operation of MODE SELECTOR switch.

**ON A/C 101-200,

Post SB 28-2105 For A/C 101-200,

(6)Do this step if you are to remove:
- the vent valve 280268 only,
- the vent valve 280268 and the actuator 280273

from the fwd ACT when two ACT are installed.
(a)Remove the aft ACT (Ref. 28-11-36, P. Block 401).
(7)Do this step if you are to remove the actuator 280273 only, from the fwd ACT, when two ACT are installed.
(a)Get access to the actuator 280273 through the maintenance panel for the fuel quantity indicator (FQI) probe 280255.
1 Remove the right-hand floor panel in the AFT passenger compartment, aft of FR54.2.
a Remove the relevant passenger compartment seats (Ref. 25-21-00, P. Block 401).
b Remove the right-hand floor panel and get access to the FQI maintenance panel.
2 Remove the maintenance panel from the ceiling panel of the AFT cargo-compartment.

**ON A/C 101-200,

B. Removal
(Ref. Fig. 401)

**ON A/C 101-200,

Post SB 28-2105 For A/C 101-200,

(Ref. Fig. 402)

**ON A/C 101-200,

(1)Removal of the Vent Valve Actuator 280273 (2)

**ON A/C 101-200,

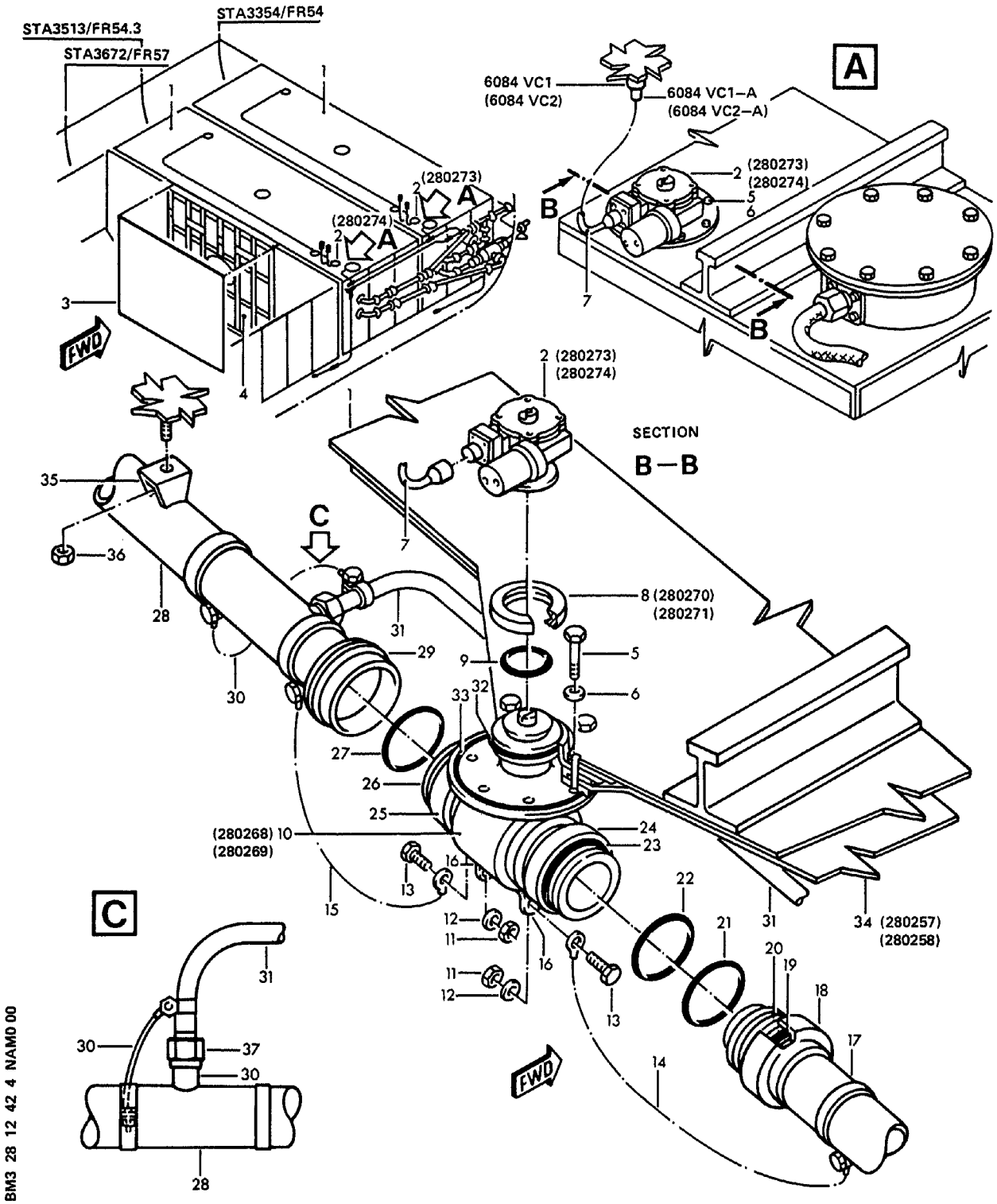
Post SB 28-2105 For A/C 101-200,

(1)Removal of the Actuator 280273 (280274) (2)

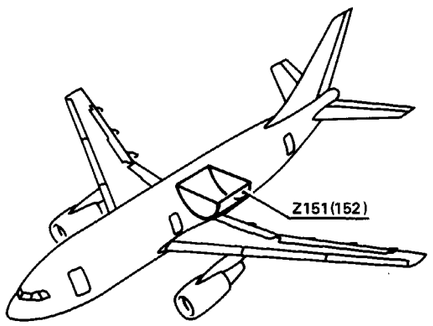
**ON A/C 101-200,

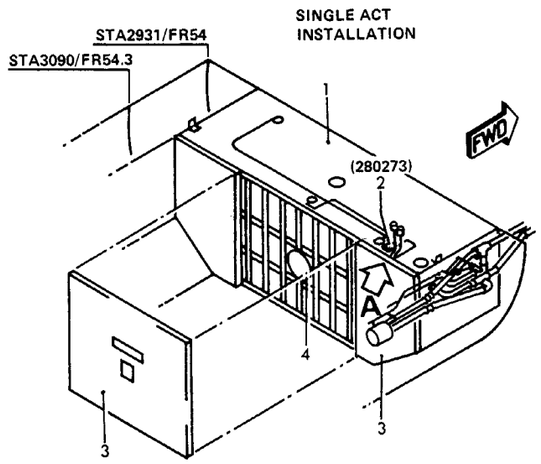
(a)Disconnect the quick-release fasteners and remove the right end section of the heat shield (3), if necessary.
(b)Disconnect the electrical harness (7) from the plug of the actuator (2).
(c)Put blanking caps on the plug of the actuator (2) and the connection of the harness (7).
NOTE : Do not disconnect the connection 6084VC1-A (6084VC2-A) of the harness (7) from the plug 6084VC1 (6084VC2) in the ceiling panel.
(d)Disconnect the V-clamp (8) at the flange connection of the actuator (2) and the vent valve (10).
(e)Remove the V-clamp (8).
(f)Remove the actuator (2).
(g)Remove and discard the O-ring (9) from the interface of the vent valve (10).
(h)Put adhesive tape in position to protect:
- the drive shaft spigot at the interface of the actuator (2),
- the see/feel indicator on the top surface of the actuator (2),
- the input shaft at the interface of the vent valve (10).

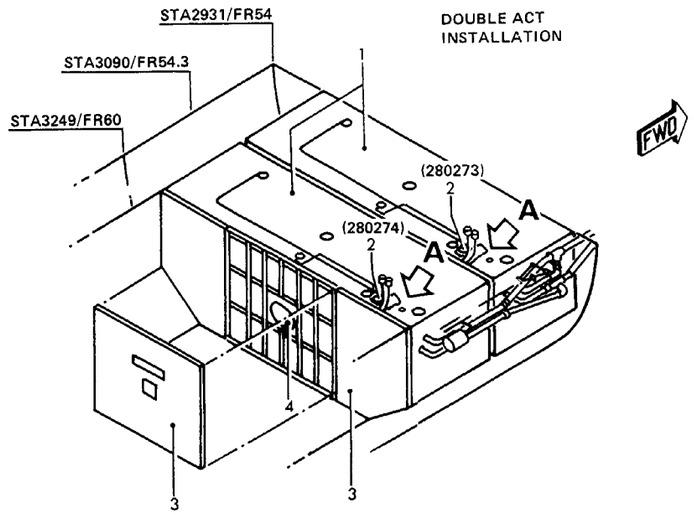
(2)Removal of the Vent Valve 280268 (10)
(a)Make the ACT (1) empty (Ref. 28-25-00, P. Block 301).
CAUTION : REMOVE FUEL LEAKAGE IMMEDIATELY.
(b)Drain the remaining fuel from the ACT (1).
1 Put the drainage containers below the water drain valves 280241 and 280244 at the access panels 153DL and 154DR.

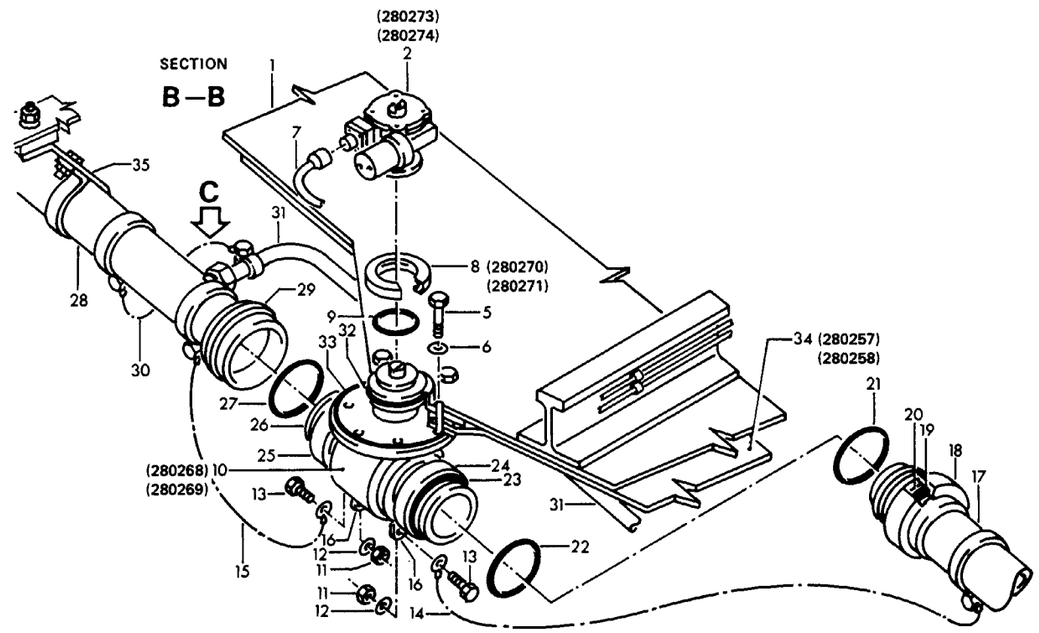


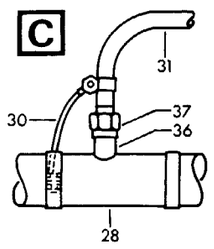
Vent Valve and Vent Valve Actuator
Figure 401

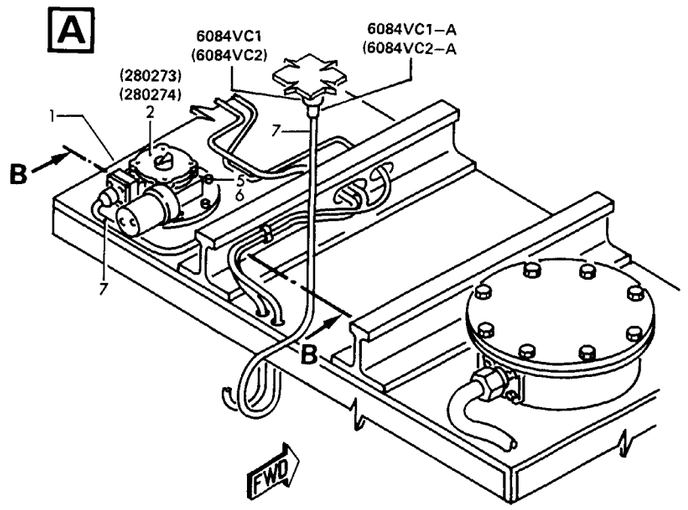












BM6 28 12 42 4 DAM0 00

Vent Valve and Actuator
Figure 402

2 Disconnect the screws to remove the access panels 153DL and 154DR.

NOTE : Do not disconnect the safety cords from the access panels 153DL and 154DR at this step.

4 Put the flange PN 98A28108001200 of the water drain adapter PN 98A28108001000, in position at one of the drain openings.

5 Connect the flange PN 98A28108001200 to the aircraft skin with the quick-release fasteners.

6 Put the thrust rod PN 98A28108001100 of the water drain adapter PN 98A28108001000 through the flange PN 98A28108001200.

7 Use the thrust rod PN 98A28108001100 to lift the water drain valve 280241 (280244) and drain the fuel into the drainage container.

8 Remove the thrust rod PN 98A28108001100.

9 Disconnect the quick-release fasteners and remove the flange PN 98A28108001200.

10 Do the steps 4 thru 9 again at the other water drain valve 280244 (280241).

11 Remove the drainage containers.

NOTE : Do not connect the access panels 153DL and 154DR to the aircraft skin at this time.

**ON A/C 101-200,

Post SB 28-2105 For A/C 101-200,

(2)Removal of the Vent Valve 280268 (2802679) (10)
(a)Make the ACT (1) empty (Ref. 28-25-00, P. Block 301).
CAUTION : REMOVE FUEL LEAKAGE IMMEDIATELY.
(b)Drain the remaining fuel from the ACT (1).
1 Put the drainage containers in position below the water drain valves 280241 (280242) and 280244 (280243) at the access panels 153DL (153EL) and 154DR (154ER).
2 Disconnect the screws and remove the access panels 153DL (153EL) and 154DR (154ER) from the aircraft skin.
NOTE : Do not disconnect the safety cords from the access panels 153DL (153EL), 154DR (154ER) at this step.
3 Put the flange PN 98A28108001200 of the water drain adapter PN 98A28108001000 in position at one of the drain openings.
4 Connect the flange PN 98A28108001200 to the aircraft skin with the quick-release fasteners.
5 Put the thrust rod PN 98A28108001100 of the water drain adapter PN 98A28108001000 through the flange PN 98A28108001200.
6 Use the thrust rod PN 98A28108001100 to lift the valve 280241 (280242) or 280244 (280243) and drain the fuel from the ACT (1).
7 Remove the thrust rod PN 98A28108001100.
8 Disconnect the quick-release fasteners and remove the flange PN 98A28108001200.
9 Do the steps 3 thru 8 again at the other valve 280244 (280243) or 280241 (280242).
10 Remove the drainage containers.
NOTE : Do not connect the access panels 153DL (153EL) and 154DR (154ER) to the aircraft skin at this time.

**ON A/C 101-200,

(c)Remove the actuator (2) from the top surface of the ACT (1) (Ref. step 2B(1)).
(d)Disconnect the quick-release fasteners and remove the center section of the heat shield (3), if necessary.
(e)Remove the manhole cover (4) from the rear wall of the ACT (1) (Ref. 28-11-37, P. Block 401).
WARNING : DO NOT GO INTO A FUEL TANK UNTIL IT IS PURGED AND/OR USE THE CORRECT SAFETY EQUIPMENT.
(f)Purge the ACT (1) as necessary (Ref. 28-11-00, P. Block 301).
(g)Use an explosion-proof fluorescent lamp so that you can see the internal area of the ACT (1).
(h)Disconnect the bonding straps (14),(15) from the vent valve (10).
1 Remove the nuts (11), the washers (12) and the bolts (13).
2 Remove the bonding straps (14),(15) from the bonding brackets (16) of the vent valve (10).
NOTE : Do not disconnect:
- the bonding strap (14) from the vent pipe (17),
- the bonding strap (15) from the vent pipe (28),
- the bonding brackets (16) from the vent valve (10),
unless a repair or a new installation is necessary.
(i)Disconnect the vent valve (10) from the vent pipe (17).
1 Disconnect the union nut (24) at the connection of the vent valve (10) and the bush (20).
2 Move the union nut (24), together with the spring retaining ring (23), along the stub pipe of the vent valve (10).
NOTE : Make sure that the union nut (24) is clear of the O-ring (22) on the stub pipe of the vent valve (10).
3 Move the union nut (18), together with the spring retaining ring (19) and the bush (20), along the vent pipe (17).
NOTE : Make sure that the bush (20) is clear of the O-ring (21) on the vent pipe (17).
NOTE : Do not disconnect the union nut (18) and remove the bush (20) unless a repair or a new installation is necessary.
3 Loosen the nut at the support clamp (35) on the vent pipe (28).
(j)Disconnect the vent valve (10) from the vent pipe (28).
1 Disconnect the union nut (37) at the connection of the air pipe (31) to the stub pipe (36) of the vent pipe (28).
2 Move the union nut (37) clear of the stub pipe (36).
NOTE : Do not disconnect the bonding strap (30) unless a repair or a new installation is necessary.
3 Loosen the nut at the support clamp (35) on the vent pipe (28).
4 Disconnect the union nut (25) at the connection of the vent valve (10) and the sleeve (29) of the vent pipe (28).
5 Move the union nut (25), together with the spring retaining ring (26), along the stub pipe of the vent valve (10).
NOTE : Make sure that the union nut (25) is clear of the O-ring (27) on the stub pipe of the vent valve (10).

(k)Remove the vent valve (10) from the ACT (1).
CAUTION : HOLD THE VENT VALVE (10) IN THE ACT (1).
1 Hold the vent valve (10) in the ACT (1) and remove the bolts (5) and the washers (6) from the top surface of the ACT (1).
2 Move the vent pipe (28) away from the vent valve (10).
3 Move the vent valve (10) away from the fabric flange of the bladder tank (34).
4 Remove the vent valve (10) from the ACT (1) through the manhole in the rear wall of the ACT (1).
5 Remove and discard the O-rings (22),(27) from the stub pipes of the vent valve (10).
6 Remove and discard the O-ring (32) from the body interface of the vent valve (10).
7 Remove and discard the O-ring (33) from the flange interface of the vent valve (10).
8 Remove and discard the O-ring (21) from the vent pipe (17) in the ACT (1).
(l)Put blanking caps on the stub pipes of the vent valve (10).
(m)Put blanking caps on the ends of the vent pipes (17),(28) in the ACT (1).
(n)Temporarily connect the union nut (37) of the air pipe (31) to the stub pipe (36) of the vent pipe (28) by hand.
(o)Put adhesive tape over the opening for the vent valve (10) in the top surface of the ACT (1).
(p)Remove the fluorescent lamp.
(q)Temporarily install the manhole cover (4) on the rear wall of the ACT (1).

C. Preparation for Installation
(1)Actuator 280273

**ON A/C 101-200,

Post SB 28-2105 For A/C 101-200,

C. Preparation for Installation
(1)Actuator 280273 (280274)

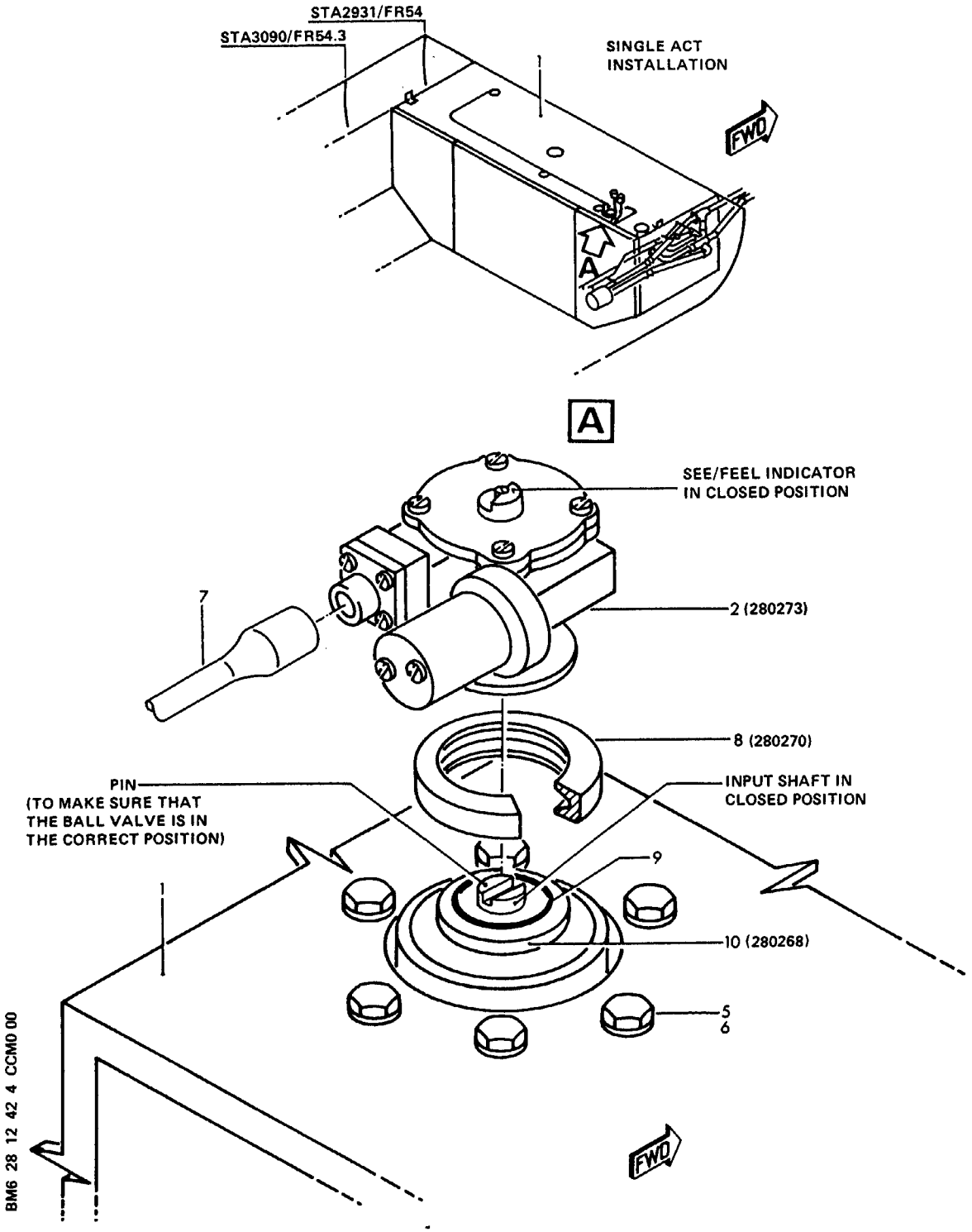
**ON A/C 101-200,

(Ref. Fig. 403)

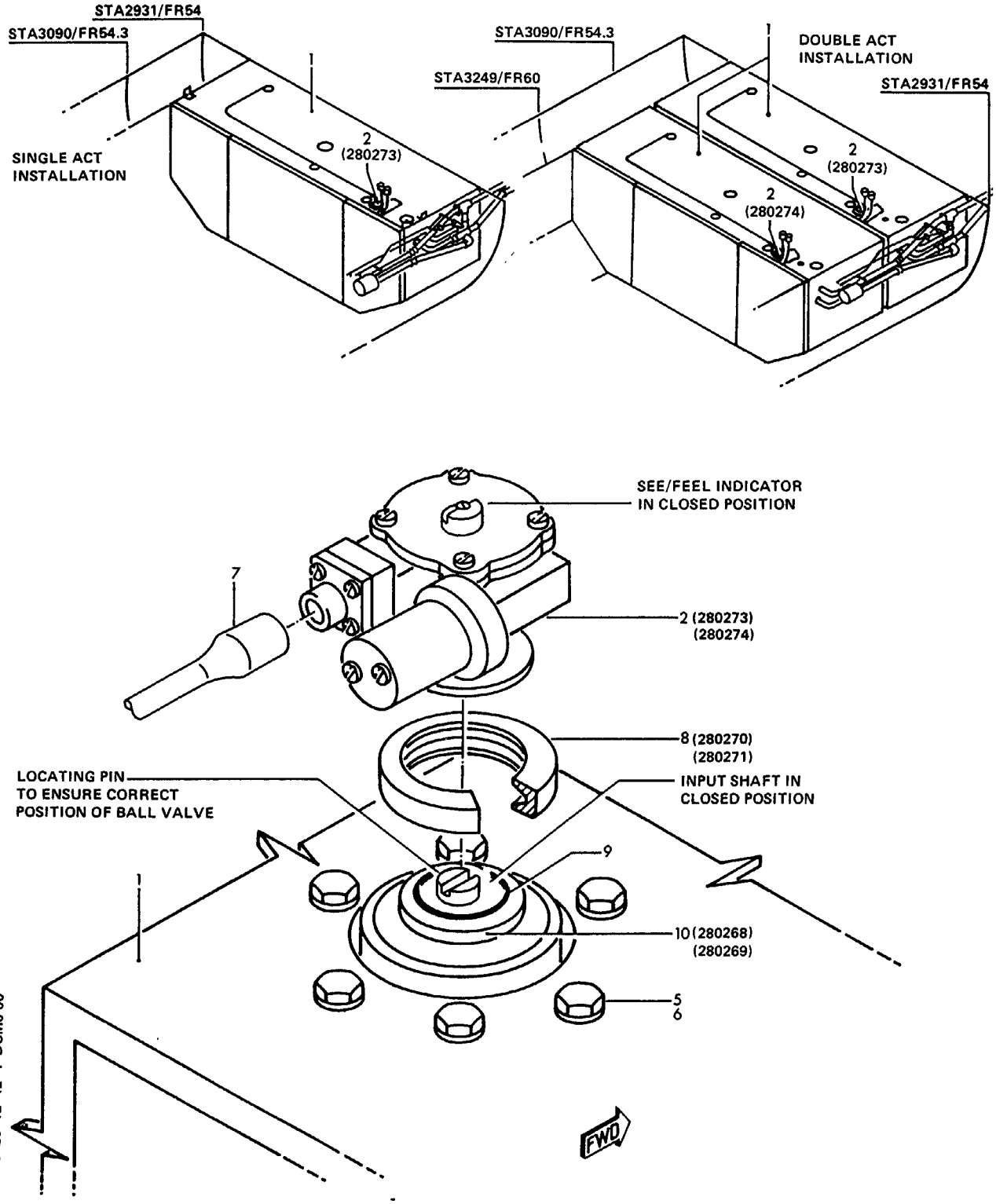
**ON A/C 101-200,

Post SB 28-2105 For A/C 101-200,

(Ref. Fig. 404)



Input Shaft and Indicator - Closed Position
Figure 403



Closed Position of See/Feel Indicator and Input Shaft
Figure 404

**ON A/C 101-200,

(a)Make sure that the actuator 280273 is serviceable as specified in the related vendor manual.
(b)Remove the adhesive tape or the protective cap from the see/feel indicator on the top surface of the actuator 280273.
(c)Make sure that the see/feel indicator is in the closed position (Ref. Fig.).
(d)Remove the adhesive tape or the protective cap from the drive shaft spigot of the actuator 280273.
(e)Make sure that the V-clamp 280270 has no damage.
(f)Remove the adhesive tape or the protective cap from the input shaft of the vent valve 280268 (Ref. Fig.).
(g)Make sure that the flange of the vent valve 280268 is clean and has no damage.
(h)Make sure that the electrical harness on the top surface of the ACT is clean and has no damage.

(2)Vent Valve 280268
(a)Do the preparation for the installation of the vent valve actuator 280273 (Ref. step 2.C.(1)).
(b)Remove the manhole cover which was temporarily attached to the rear wall of the ACT.
(c)Examine the ACT (Ref. 28-11-36, P. Block 601) and look for:
- corrosion,
- damage,
- correct attachment of the components,
- signs of fuel leakage.

NOTE : If you find fuel leakage or damage to the bladder tank 280257:
1. Remove the bladder tank 280257.
2. Do an approved leak test.
3. Do an approved repair as necessary.

(d)Examine the internal area of the bladder tank 280257 (Ref. 28-11-38, P. Block 601).
(e)Make sure that the interface of the fabric flange on the bladder tank 280257:
- is clean,
- has no damage.
(f)Make sure that the vent valve 280268 is serviceable as specified in the related vendor manual.
(g)Remove the preservation from the replacement vent valve 280268.
(h)Remove the adhesive tape or the protective cap from the input shaft of the vent valve 280268.
(i)Make sure that the input shaft of the vent valve 280268 has no damage.
(j)Make sure that the drive slot in the input shaft of the vent valve 280268 is in the closed position.
(k)Make sure that the bonding lugs on the vent valve 280268 are clean and have no damage (Ref. 20-28-11, P. Block 1).
(l)Remove the blanking caps from the stub pipes of the vent valve 280268.
(m)Make sure that:
- the union nuts (24),(25),
- the spring retaining rings (23),(26)

are correctly installed on the stub pipes of the vent valve 280268 (Ref. Fig.).

**ON A/C 101-200,

Post SB 28-2105 For A/C 101-200,

(a)Make sure that the actuator 280273 (280274) is serviceable as specified in the related vendor manual.
(b)Remove the adhesive tape from the see/feel indicator on the top surface of the actuator 280273 (280274).
(c)Make sure that the see/feel indicator is in the closed position.
(d)Remove the adhesive tape from the drive shaft spigot of the actuator 280273 (280274).
(e)Remove the adhesive tape from the input shaft of the vent valve

280268 (280269).

(f) Make sure that the input shaft and the flange of the vent valve 280268 (280269) are clean and have no damage.

(g) Make sure that the V-clamp 280270 (280271) has no damage.

(h) Make sure that the electrical harness on the top surface of the ACT has no damage.

(2)Vent Valve 280268 (280269)
(a)Do the preparation for the installation of the vent valve actuator 280273 (280274) (Ref. step 2C(1)).
(b)Remove the manhole cover which is temporarily attached to the rear wall of the ACT.
(c)Examine the ACT (Ref. 28-11-36, P. Block 601) and look for:
- corrosion,
- damage,
- correct attachment of the components,
- signs of fuel leakage.
(d)Use an explosion-proof fluorescent lamp so that you can see the internal area of the ACT.
(e)Examine the internal area of the bladder tank 280257 (280258) (Ref. 28-11-38, P. Block 601).
(f)Make sure that the interface of the fabric flange on the bladder tank 280257 (280258):
- is clean,
- has no damage.
(g)Make sure that the vent valve 280268 (280269) is serviceable as specified in the related vendor manual.
(h)Remove the preservation from the replacement vent valve 280268 (280269), if necessary.
(i)Remove the adhesive tape from the input shaft of the vent valve 280268 (280269).
(j)Make sure that the input shaft of the vent valve 280268 (280269) has no damage.
(k)Make sure that the drive slot in the input shaft of the vent valve 280268 (280269) is in the closed position (Ref. Fig.).
(l)Make sure that the bonding brackets on the vent valve 280268 (280269) are clean and have no damage (Ref. 20-28-11, P. Block 1).
(m)Remove the blanking caps from the stub pipes of the vent valve 280268 (280269).
(n)Make sure that:
- the union nuts,
- the spring retaining rings,
are correctly installed on the stub pipes of the vent valve 280268 (280269).

**ON A/C 101-200,

D. Installation (Ref. Fig. , 403)
(1)Installation the Actuator 280273 (2)

**ON A/C 101-200,

Post SB 28-2105 For A/C 101-200,

D. Installation (Ref. Fig. 402, 404)
(1)Installation of the Actuator 280273 (280274)

**ON A/C 101-200,

(a)Apply vaseline (Material No. 04-012) to the new O-ring (9).
(b)Put the O-ring (9) in the groove in the interface of the vent valve (10).
(c)Put the flange of the actuator (2) in position at the flange of the vent valve (10).
NOTE : Make sure that:
(1) The slot in the input shaft of the vent valve (10) is aligned with the spigot of the actuator (2).
(2) The pin on the input shaft of the vent valve (10) is correctly installed in the drive shaft of the actuator (2).
(d)Put the V-clamp (8) in position at the flange connection of the actuator (2) and the vent valve (10).
NOTE : Make sure that the O-ring (9) is correctly installed.
(e)Connect the V-clamp (8).
(f)Remove the blanking cap from the plug of the actuator (2).
(g)Remove the blanking cap from the connection of the harness (7).
(h)Connect the harness (7) to the plug of the actuator (2).
NOTE : Make sure that the connection 6084VC1-A of the harness (7) is correctly installed to the plug 6084VC1 in the ceiling panel.
(2)Installation of the Vent Valve 280268 (10)

**ON A/C 101-200,

Post SB 28-2105 For A/C 101-200,

NOTE : Make sure that the connection 6084VC1-A (6084VC2-A) of the harness (7) is correctly installed to the plug 6084VC1 (6084VC2) in the ceiling panel.
(2)Installation of the Vent Valve 280268 (280269) (10)

**ON A/C 101-200,

(a)Remove the adhesive tape from the opening for the vent valve (10) in the top surface of the ACT (1).

(b)Remove the blanking caps from the ends of the vent pipes (17),(28) in the ACT (1).
(c)Disconnect the union nut (37) of the air pipe (31) from the stub pipe (36) of the vent pipe (28).
(d)Apply vaseline (Material No. 04-012) to the new O-rings (21),(22), (27),(32),(33).
(e)Put the O-ring (21) on the end of the vent pipe (17).
(f)Put the O-rings (22),(27) on the stub pipes of the vent valve (10).
(g)Put the O-ring (32) in the groove in the body interface of the vent valve (10).
(h)Put the O-ring (33) in the groove in the flange interface of the vent valve (10).
(i)Install the vent valve (10) in the ACT (1).

CAUTION : HOLD THE VENT VALVE (10) IN THE ACT (1).

1 Put the vent valve (10) through the manhole in the rear wall of the ACT (1).
2 Move the vent pipe (28) away from the vent valve position.
3 Put the vent valve (10) in position at the fabric flange of the bladder tank (34).

NOTE : Make sure that the body interface of the vent valve (10) is correctly installed through the fabric flange.

4 Examine the input shaft of the vent valve (10) at the top surface of the ACT (1).
a Make sure that:
- the pin is to the center of the ACT (1) to show the correct position of the ball valve,
- the drive slot in the input shaft is in the closed position.

5 Install the bolts (5) and the washers (6) to connect the ACT (1), the fabric flange and the vent valve (10).

6 Tighten the bolts (5) by hand.

NOTE : Make sure that the O-rings (32),(33) are correctly installed.

(j)Connect the vent valve (10) to the vent pipe (28).

1 Put the sleeve (29) of the vent pipe (28) on the stub pipe of the vent valve (10).

2 Move the union nut (25), together with the spring retaining ring (26), along the stub pipe of the vent valve (10).

3 Put the union nut (25) on the sleeve (29).

4 Tighten the union nut (25) on the sleeve (29) by hand.

NOTE : Make sure that the O-ring (27) is correctly installed.

5 Connect the union nut (37) of the air pipe (31) on the stub pipe (36) of the vent pipe (28).

6 Tighten the union nut (37) by hand.

(k)Connect the vent valve (10) to the vent pipe (17).

1 Move the union nut (18), together with the spring retaining ring (19) and the bush (20), along the vent pipe (17).

2 Put the bush (20) over the end of the stub pipe of the vent valve (10).

NOTE : Make sure that the O-ring (21) is correctly installed.

3 Move the union nut (24), together with the spring retaining ring (23), along the stub pipe of the vent valve (10).

4 Put the union nut (24) over the end of the bush (20).

NOTE : Make sure that the O-ring (22) is correctly installed.

5 Tighten the union nut (24) by hand.

(l)Fully tighten the bolts (5) at the top surface of the ACT (1).

(m)Fully tighten the union nut (25) at the connection of the vent valve (10) and the vent pipe (28).

(n)Fully tighten the union nut (24) at the connection of the vent valve (10) and the bush (20).

(o)Fully tighten the union nut (37) at the connection of the air pipe (31) and the stub pipe (36) of the vent pipe (28).

(p)Fully tighten the nut at the support clamp (35) on the vent pipe (28).

R WARNING: THIS INSTRUCTION IS APPLICABLE TO A CRITICAL DESIGN
R CONFIGURATION CONTROL LIMITATION (CDCCL). CAREFULLY OBEY
R ALL GIVEN INSTRUCTIONS WHEN YOU DO THIS STEP. IF YOU DO NOT
R OBEY THESE INSTRUCTIONS, A DANGEROUS CONDITION CAN OCCUR THAT
R CAN CAUSE A POSSIBLE FUEL TANK EXPLOSION.

(q)Connect the bonding straps (14),(15) to the vent valve (10) (Ref. 20-28-11, P. Block 1).

1 Put the bonding straps (14),(15) in position at the bonding

brackets (16).

2 Install the bolts (13), the washers (12) and the nuts (11) at the connection of the bonding straps (14),(15) and the bonding brackets (16).

(r)Install the actuator (2) at the top surface of the ACT (1) (Ref. step 2D(1)).
(s)Remove the fluorescent lamp.
(t)Make sure that no tools or other items are in the ACT (1).
(u)Install the manhole cover (4) to the rear wall of the ACT (1) (Ref. 28-11-37, P. Block 401).

**ON A/C 101-200,

Post SB 28-2105 For A/C 101-200,

(v)Do this step if it was necessary to remove/install:
- the vent valve 280268 only,
- the vent valve 280268 and the actuator 280273
from the fwd ACT when two ACT are installed.
1 Install the aft ACT (1) (Ref. 28-11-36, P. Block 401).

**ON A/C 101-200,

E. Test
(1)Remove the safety clips and the tags and close the circuit breakers 1QH, 3QH, 4QH and 5QH.
(2)Remove the warning notices from the refuel/defuel panel 110VU and from the fuelling panel 430VU.
(3)Do a functional check of the vent valve operation (Ref. 28-28-00, P. Block 501) and make sure that:
- the vent valve 280268 operates from the closed position to the open position,
- the see/feel indicator on the top of the actuator 280273 correctly shows the valve open position,
- the vent valve 280268 operates from the open position to the closed position,
- the see/feel indicator on the top of the actuator 280273 correctly shows the valve closed position.

F. Close-Up
(1)Put the heat shield in position on the rear wall of the ACT.
(2)Connect the heat shield to the ACT with the quick-release fasteners.
(3)Make sure that the work area is clean and clear of tools and other items.
(4)Close the AFT cargo-compartment door (Ref. 52-30-00, P. Block 1).
(5)Remove the access platform.
(6)Refuel the aircraft as required (Ref. 12-11-28, P. Block 301).
NOTE : Keep a minimum of 50 litres (13.21 U.S. gal.) of fuel in the ACT. This will prevent cracks in the inner lining of the bladder tank 280257.
(7)Make sure that there is no leakage from the drain valves 280241 and 280244 (Ref. 28-11-39, P. Block 401).
(8)Put the access panels 153DL and 154DR in position at the aircraft

skin and connect the screws.

**ON A/C 101-200,

Post SB 28-2105 For A/C 101-200,

E. Test
(1)Remove the safety clips and tags and close the circuit breakers 1QH, 3QH, 4QH and 5QH.
(2)Remove the warning notices from the refuel/defuel panel 110VU and from the fuelling panel 430VU.
(3)Do a functional check of the vent valve operation (Ref. 28-28-00, P. Block 501) and make sure that:
- the vent valve 280268 (280269) operates from the closed position to the open position,
- the see/feel indicator on the top of the actuator 280273 (280274) correctly shows the valve open position,
- the vent valve 280268 (280269) operates from the open position to the closed position,
- the see/feel indicator on the top of the actuator 280273 (280274) correctly shows the valve closed position.

F. Close-Up
(1)Do this step only if it was necessary to remove/install the actuator 280273 only from the fwd ACT, when two ACT are installed.
(a)Make sure that the work area is clean and clear of tools and other items.
(b)Install the FQI maintenance panel in the ceiling panel of the AFT cargo-compartment.
(c)Install the right-hand floor panel aft of FR54.2 in the AFT passenger compartment.
(d)Install the relevant passenger-compartment seats (Ref. 25-21-00, P. Block 401).
(2)Put the heat shield in position on the rear wall of the ACT and connect the quick-release fasteners, if necessary.
(3)Make sure that the work area is clean and clear of tools and other items.
(4)Close the AFT cargo-compartment door (Ref. 52-30-00, P. Block 1).
(5)Remove the access platform.

(6)Do this step if you drained the fuel from the ACT.
  (a)Refuel the aircraft as required (Ref. 12-11-28, P. Block 301).
  (b)Make sure that there is no leakage from the drain valves 280241 (280242) and 280244 (280243) (Ref. 28-11-39, P. Block 401).
  (c)Put the access panels 153DL (153EL) and 154DR (154EF) in position at the aircraft skin and connect the screws.
  (d)Remove the containers from below the drain valves 280241 (280242) and 280244 (280243).
    NOTE : Keep a minimum of 50 litres (13.21 U.S. gal.) of fuel in the ACT. This will prevent cracks in the inner lining of the bladder tank 280257 (280258).

VENT VALVE AND ACTUATOR - ADDITIONAL CENTER TANK - DEACTIVATION/REACTIVATION

R Ref: MMEL Sect. 1-28, Item 49

WARNING : USE THIS PROCEDURE IN ACCORDANCE WITH THE REQUIREMENTS OF THE MMEL. THE MMEL.

WARNING : OBEY THE SAFETY PRECAUTIONS IN 28-00-00, P. BLOCK 301 AND 28-10-00, P. BLOCK 301.
MAKE SURE THAT THE FIRE FIGHTING EQUIPMENT IS AVAILABLE AND NEAR TO THE WORK AREA, BEFORE YOU START THE MAINTENANCE OPERATIONS.
MAKE SURE THAT THE ELECTRICAL CIRCUITS ON WHICH THE WORK IS IN PROGRESS, ARE ISOLATED BEFORE YOU SUPPLY POWER TO THE AIRCRAFT.

1. Deactivation

A. Reason for the job

(1)To make sure that the inoperative valve is in the open position.

B. Equipment and Materials

ITEM	DESIGNATION
A.	Access Platform, 2.7 m (9 ft.)
B.	Warning Notice, to tell the Crew that the Vent Valve is locked OPEN Mechanically
C.	Circuit Breaker Safety Clip and Tag
D.	Blanking Cap
E.	Adhesive Tape

Referenced Procedures

- 28-00-00, P. Block 301	Fuel - General
- 28-10-00, P. Block 301	Storage
- 28-12-42, P. Block 401	Vent Valve and Actuator - Additional Center Tank
- 52-30-00, P. Block 1	Cargo Compartment Doors

C. Procedure

(1)Job Set-Up

(a)Make sure that the aircraft is statically grounded.

(b)Put the access platform in position.

(c)Open the AFT cargo compartment door (Ref. 52-30-00, P. Block 1).

(d)Open, safety and tag the circuit breaker:

PANEL	SERVICE	IDENT.	LOCATION
132VU	FUEL AUX TK VENT AND PRESS VALVE	3QH	325/K57

(2)Removal

**ON A/C 101-200,

Post SB 28-2105 For A/C 101-200,

ITEM	DESIGNATION
A.	Access Platform, 2.7 m (9 ft.)
B.	Warning Notice, to tell the Crew that the Vent Valve is locked OPEN Mechanically
C.	Circuit Breaker Safety Clip and Tag
D.	Fluorescent-Lamp, Explosion Proof
E.	Adhesive Tape
F.	Blanking Caps

Referenced Procedures

- 25-21-00, P. Block 401	Passenger Compartment Seats
- 28-00-00, P. Block 301	Fuel - General
- 28-10-00, P. Block 301	Storage
- 28-12-42, P. Block 401	Vent Valve and Actuator - Additional Center Tank
- 52-30-00, P. Block 1	Cargo Compartment Doors

C. Procedure
(1)Job Set-Up
(a)Make sure that the aircraft is statically grounded.
(b)Put the access platform in position.
(c)Open, safety and tag the circuit breaker:

PANEL	SERVICE	IDENT.	LOCATION
132VU	FUEL AUX TK VENT AND PRESS VALVE	3QH	325/K57

(d)Do this step if:
- the aircraft has the single additional-center -tank (ACT) installation, or,
- the aircraft has the double ACT installation and the vent valve 280269 of the aft ACT is to be deactivated.

1 Open the AFT cargo-compartment door (Ref. 52-30-00, P. Block 1).

(e)Do this step if the aircraft has the double ACT installation and the vent valve 280268 of the fwd ACT is to be deactivated.
NOTE : You can get access through the maintenance panel for the fuel quantity indicator (FQI) probe 280255.
1 Remove the cover from the right-hand floor panel in the AFT passenger-compartment, aft of FR54.2.
a Remove the relevant passenger-compartment seats (Ref. 25-21-00, P. Block 401).
b Remove the cover and get access to the FQI maintenance panel.
2 Remove the FQI maintenance panel from the ceiling panel of the AFT cargo compartment.

(2)Removal

**ON A/C 101-200,

(Ref. Fig. 901)

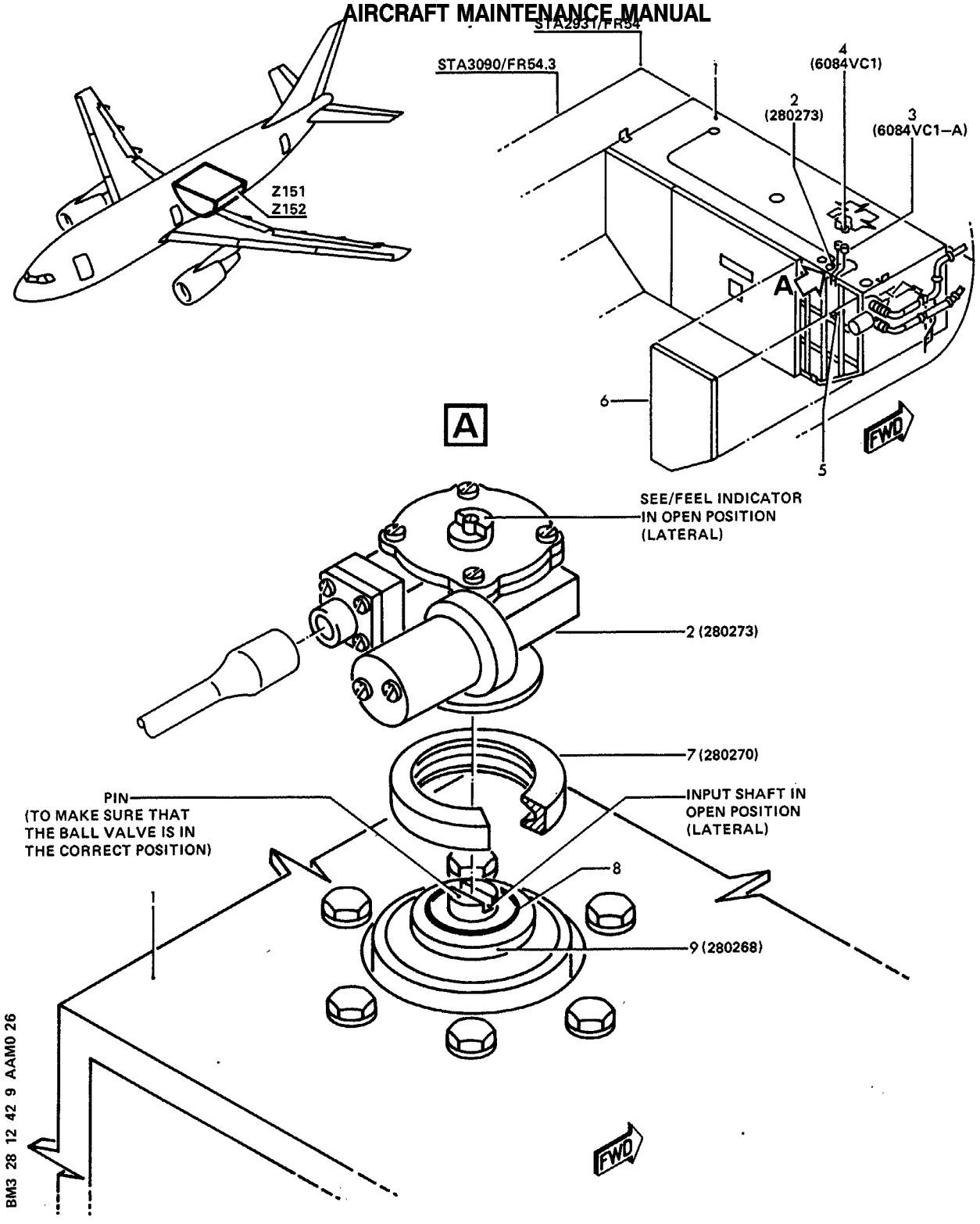
**ON A/C 101-200,

Post SB 28-2105 For A/C 101-200,

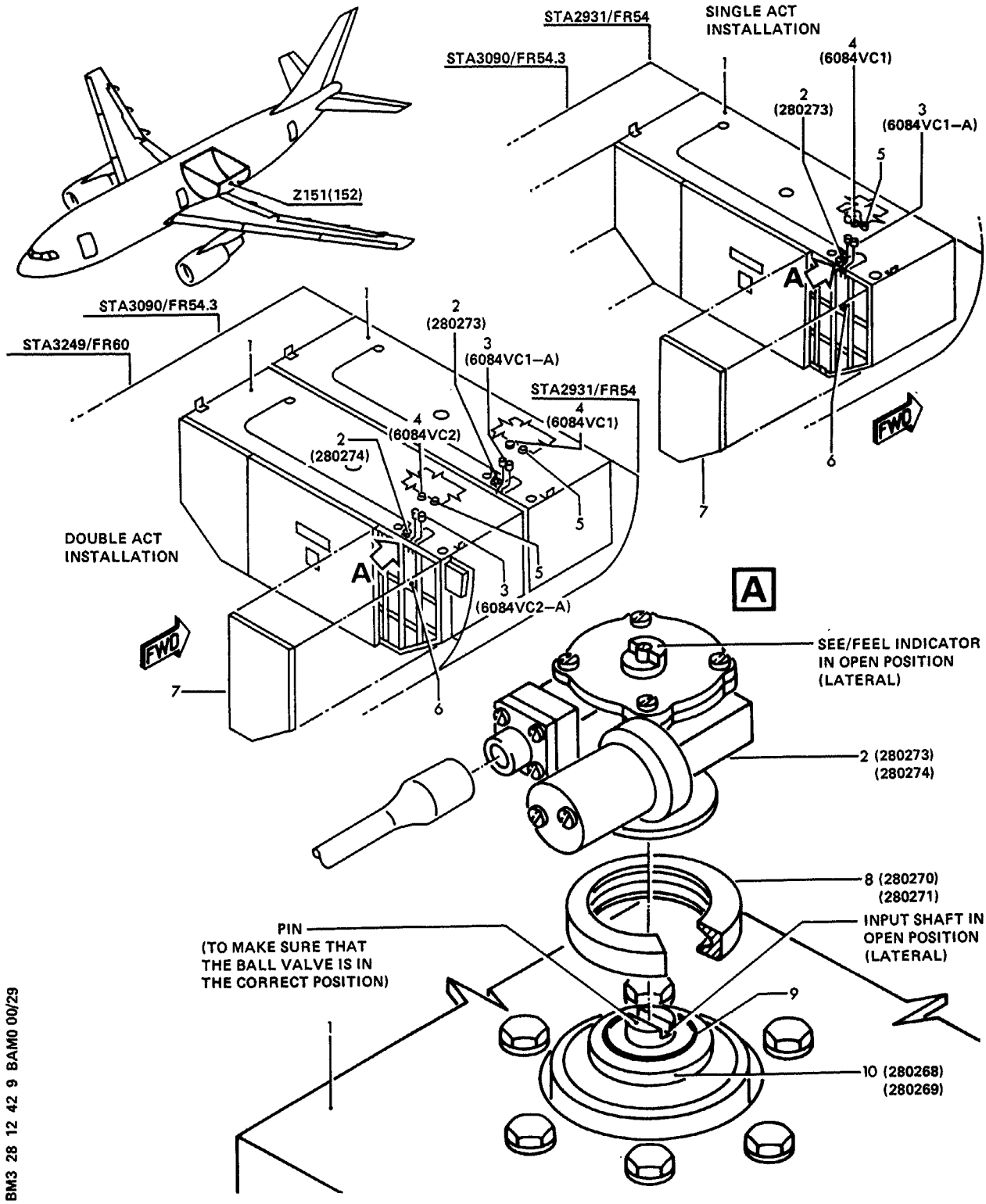
(Ref. Fig. 902)

**ON A/C 101-200,

(a)Disconnect the quick-release fasteners of the right end section of the heat shield (6).
(b)Remove the right end section of the heat shield (6) from the rearwall of the ACT (1).
(c)Disconnect the electrical connection 6084VC1-A (3) from the plug 6084VC1 (4) in the ceiling panel.
(d)Put the electrical connection 6084VC1-A (3) in the stowage plug (5) on the rearwall of the ACT (1).



Vent Valve 280268 - Deactivation
Figure 901



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Vent Valve - Deactivation
Figure 902

(e)Put a blanking cap on the plug 6084VC1 (4) in the ceiling panel.
(f)Do a visual check of the see/feel indicator of the actuator (2) and identify its position.
NOTE : The see/feel indicator must be in the lateral position to indicate that the vent valve (9) is open.
(g)Do this step if the see/feel indicator of the actuator (2) is not in the open position.
1 Remove the actuator (2) (Ref. 28-12-42, P. Block 401).
2 Remove and discard the O-ring (8) from the interface of the vent valve (9).
3 Manually turn the input shaft of the vent valve (9) to the open position.
NOTE : The slot in the end of the input shaft must be lateral.
4 Stop the input shaft mechanically and safety it in the open position.
5 Put adhesive tape over the input shaft and the interface of the vent valve (9) for protection.
NOTE : Do not install the actuator (2).
6 Stow the actuator (2) and the V-clamp (7).
(h)Put the right end section of the heat shield (6) in position on the rear wall of the ACT (1).
(i)Connect the right end section of the heat shield (6) to the ACT (1) with the quick-release fasteners.

(3)Close-Up
(a)Make sure that the work area is clean and clear of tools and other items.
(b)Remove the safety clip and tag and close the circuit breaker 3QH.
(c)Install the temporary warning notice in the cockpit to tell the crew that:
"The ACT Vent Valve is locked in the OPEN position. To transfer fuel from the ACT, descend to below 27,000 ft."

(d)Close the AFT cargo compartment door (Ref. 52-30-00, P. Block 1).
(e)Remove the access platform.

2. Reactivation

A. Make the Vent Valve operational.
(1)Trouble shoot to identify the cause of the vent valve malfunction.
(2)Replace the defective component as follows:
(a)Valve fault - replace the vent valve 280268 (Ref. 28-12-42, P. Block 401).
(b)Actuator fault - replace the actuator 280273 (Ref. 28-12-42, P. Block 401).

**ON A/C 101-200,

Post SB 28-2105 For A/C 101-200,

(a)Do this step if:
- the vent valve 280268 (10) of the single ACT (1) installation, or,
- the vent valve 280269 (10) of the aft ACT (1) in the double ACT (1) installation,

is to be deactivated.
1 Disconnect the quick-release fasteners of the right-end section of the heat shield (7).
2 Remove the right-end section of the heat shield (7) from the rear wall of the ACT (1).
3 Disconnect the electrical connection 6084VC1-A (6084VC2-A) (3) from the plug 6084VC1 (6084VC2) (4) in the ceiling panel.
4 Put the connection 6084VC1-A (6084VC2-A) (3) in the stowage plug (6) on the rear wall of the ACT (1).
5 Remove the dummy plug (5) from the stowage position in the ceiling panel.
6 Put the dummy plug (5) in the plug 6084VC1 (6084VC2) (4).

7 Do a visual check of the see/feel indicator of the actuator (2) and identify its position.
NOTE : The see/feel indicator must be in the lateral position to indicate that the vent valve (10) is open.

(b)Do this step if the vent valve 280268 (10) of the fwd ACT (1) in the double ACT (1) installation is to be deactivated.

1 Get access to the actuator (2) through the opening for the FQI maintenance panel in the AFT passenger compartment.
2 Use an explosion proof fluorescent lamp so that you can see the work area.
3 Disconnect the electrical connection 6084VC1-A (3) from the plug 6084VC1 (4) in the ceiling panel.
4 Put a blanking cap on the connection 6084VC1-A (3).
5 Use adhesive tape and safety the connection 6084VC1-A (3) to the top surface of the ACT (1).
6 Remove the dummy plug (5) from the stowage position on the ceiling panel.
7 Put the dummy plug (5) in the plug 6085VC1 (4).
8 Do a visual check of the see/feel indicator of the actuator (2) and identify its position.
NOTE : The see/feel indicator must be in the lateral position to indicate that the vent valve (10) is open.

(c)Do this step if the see/feel indicator of the actuator (2) is not in the open position.

1 Disconnect the electrical harness from the plug of the actuator (2).
2 Put blanking caps on the plug of the actuator (2) and the connection of the harness.
3 Use adhesive tape and safety the harness to the top surface of the ACT (1).
4 Disconnect the V-clamp (8) at the flange connection of the actuator (2) and the vent valve (10).
5 Remove the V-clamp (8).
6 Remove the actuator (2).
7 Remove and discard the O-ring (9) from the interface of the vent valve (10).
8 Manually turn the input shaft of the vent valve (10) to the open position.
NOTE : The slot in the end of the input shaft must be lateral.
9 Stop the input shaft mechanically and safety it in the open position.
10 Put adhesive tape over the input shaft and the interface of the vent valve (10).
11 Stow the actuator (2) and the V-clamp (8).

(d)Do this step if:
- the vent valve 280268 (10) of the single ACT (1) installation, or,
- the vent valve 280269 (10) of the aft ACT (1) in the double ACT (1) installation,

is deactivated.

1 Put the right-end section of the heat shield (7) in position on the rear wall of the ACT (1).

2 Connect the right-end section of the heat shield (7) to the ACT (1) with the quick-release fasteners.

(3)Close-Up

(a)Do this step if:
- the aircraft has the single ACT installation, or,
- the aircraft has the double ACT installation and the vent valve 280269 of the aft ACT is deactivated.

1 Make sure that the work area is clean and clear of tools and other items.

2 Remove the safety clip and tag and close the circuit breaker 3QH.

3 Install a temporary warning notice in the cockpit to tell the crew that:
- "The ACT Vent Valve is locked in the OPEN position. To transfer fuel from the ACT, descend to below 27.000 ft."

4 Close the AFT cargo-compartment door (Ref. 52-30-00, P. Block 1).

5 Remove the access platform.

(b)Do this step if the aircraft has the double ACT installation and the vent valve 280268 of the fwd ACT is deactivated.

1 Make sure that the work area is clean and clear of tools and other items.

2 Install the FQI maintenance panel in the ceiling panel of the AFT cargo compartment.

3 Install the cover in the right-hand floor panel, aft of FR54.2, in the AFT passenger-compartment.

4 Install the relevant passenger-compartment seats (Ref. 25-21-00, P. Block 401).

5 Remove the safety clip and tag and close the circuit breaker 3QH.

6 Install a temporary warning notice in the cockpit to tell the crew that:
- "The ACT Vent Valve is locked in the OPEN position. To transfer fuel from the ACT, descend to below 27.00 ft."

7 Remove the access platform.

2. Reactivation

A. Make the Vent Valve operational.
(1)Trouble shoot to identify the cause of the vent valve malfunction.
(2)Replace the defective component as follows:
(a)Valve fault - replace the vent valve 280268 (280269) (Ref. 28-12-42, P. Block 401).
(b)Actuator fault - replace the actuator 280273 (280274) (Ref. 28-12-42, P. Block 401).

VALVE-NON-RETURN - ADDITIONAL CENTER TANK
REMOVAL/INSTALLATION

WARNING : OBEY THE SAFETY PRECAUTIONS IN 28-00-00, P. BLOCK 301 and 28-10-00, P. BLOCK 301.
MAKE SURE THAT THE FIRE FIGHTING EQUIPMENT IS AVAILABLE AND NEAR TO THE WORK AREA BEFORE YOU START THE MAINTENANCE OPERATIONS.
MAKE SURE THAT THE ELECTRICAL CIRCUITS, ON WHICH THE WORK IS IN PROGRESS, ARE ISOLATED BEFORE YOU SUPPLY POWER TO THE AIRCRAFT.

1. Equipment and Materials

ITEM	DESIGNATION
A.	Access Platform, 2.7 m (9 ft.)
B.	Low-Pressure Air Supply with Gage
C.	Air Pressure Gage
D.	Bonding Tester NOTE : A low-voltage ohmmeter with connection leads and probes. The effective range must be at least 0.1 ohm when a test current of 1 ampere is used. The measurement accuracy must be within ±10 % (Ref. 20-28-11, P. Block 1).
E.	Blanking Caps
F.	Lint-Free Cloth
G. Material No. 04-012	Common Greases (Ref. 20-31-00)
H. Material No. 11-002	Cleaning Agents (Ref. 20-31-00)
Referenced Procedures	
- 20-28-11, P. Block 1	Electrical Bonding
- 25-52-11, P. Block 1	Semi-Automatic Cargo Loading
- 28-00-00, P. Block 301	Fuel - General
- 28-10-00, P. Block 301	Storage
- 28-28-18, P. Block 401	Pressure Reducing Valve
- 28-28-24, P. Block 401	Air Filter
- 52-30-00, P. Block 1	Cargo Compartment Doors

2. Procedure

A. Job Set-Up
(1)Make sure that the aircraft is statically grounded.
(2)Put the access platform in position.
(3)Open the AFT cargo-compartment door (Ref. 52-30-00, P. Block 1).
(4)Remove the container or the two half-width containers from behind the additional center tank (ACT), if necessary (Ref. 25-52-00, P. Block 1).
(5)Remove the right section of the heat shield from the rear wall of the ACT.
(a)Disconnect the quick-release fasteners.
(b)Remove the right section of the heat shield.

B. Removal
(1)Removal of the Non-Return Valve 280266

**ON A/C 101-200,

Post SB 28-2105 For A/C 101-200,

Post SB 28-2108 For A/C 101-200,

- 20-28-11, P. Block 1 Electrical Bonding
- 25-21-00, P. Block 401 Passenger Compartment Seats
- 25-52-00, P. Block 1 Semi-Automatic Cargo Loading
- 28-00-00, P. Block 301 Fuel - General
- 28-10-00, P. Block 301 Storage
- 28-11-36, P. Block 401 Additional Center Tank
- 28-28-18, P. Block 401 Pressure Reducing Valve

- 28-28-24, P. Block 401 Air Filter
- 52-30-00, P. Block 1 Cargo Compartment Doors

2. Procedure

NOTE : In the double additional center tank (ACT) installation.

1. The non-return valves (NRV) installed in the fwd ACT and in the aft ACT are the same. The removal and the installation of one of the NRV only is given.
2. For the removal and the installation of the NRV 280266 of the fwd ACT, the aft ACT must be removed (Ref. 28-11-36, P. Block 401).
3. For the removal and the installation of the NRV 280276 and 280277 from behind the sidewall lining:
   a. Remove the relevant passenger compartment seats (Ref. 25-21-00, P. Block 401).
   b. Remove the right hand outer floor panel between FR54.2 and FR58.

A. Job Set-Up

(1)Make sure that the aircraft is statically grounded.
(2)Put the access platform in position.
(3)Open the AFT cargo-compartment door (referred to as AFT cargo door) (Ref. 52-30-00, P. Block 1).
(4)Remove the container or the two half-width containers from behind the ACT, if necessary (Ref. 25-52-00, P. Block 1).
(5)Remove the right end section of the heat shield from the rear wall of the ACT.
(a)Disconnect the quick-release fasteners of the right end section of the heat shield.
(b)Remove the right end section of the heat shield from the ACT.

B. Removal

(1)Removal of the Non-Return Valve 280266 (280267)

**ON A/C 101-200,

(Ref. Fig. 401)

**ON A/C 101-200,

Post SB 28-2105 For A/C 101-200,

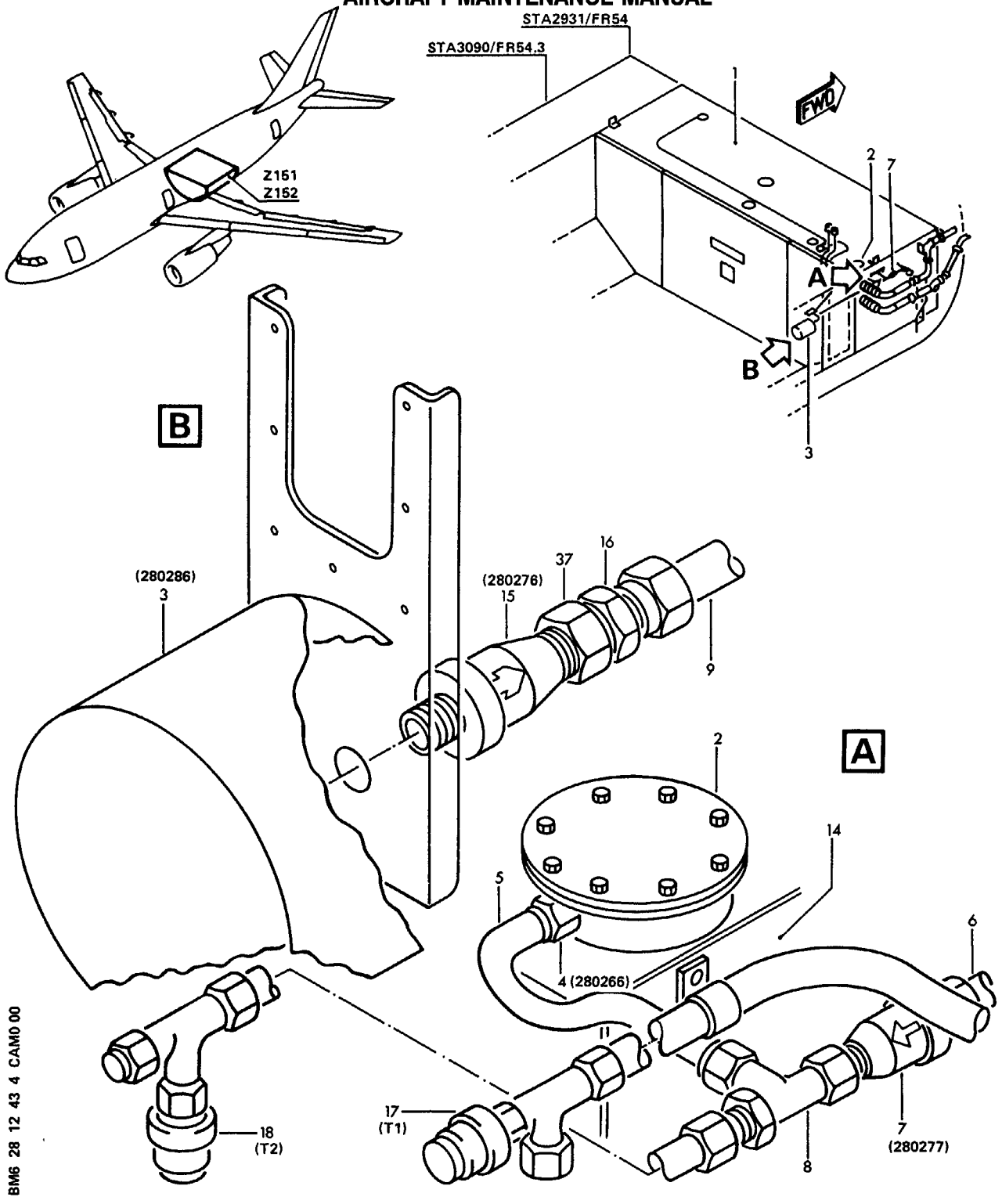
Post SB 28-2108 For A/C 101-200,

(Ref. Fig. 402)

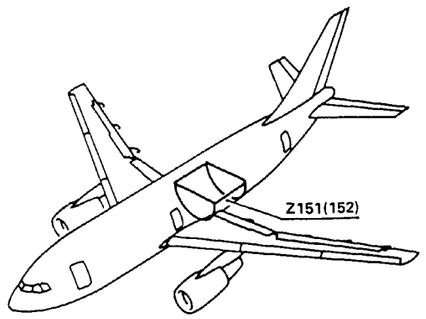
**ON A/C 101-200,

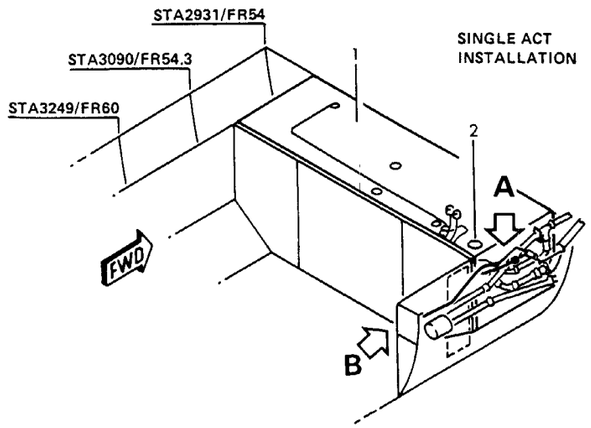
(Ref. Fig. 403)

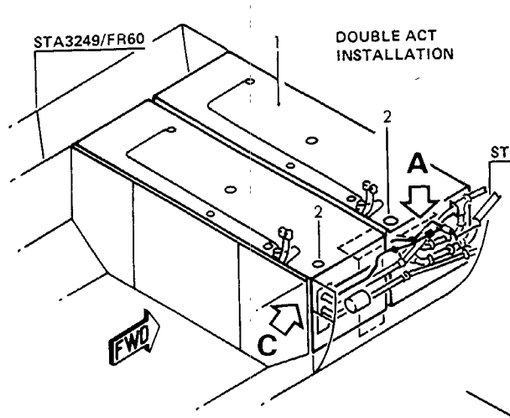
**ON A/C 101-200,

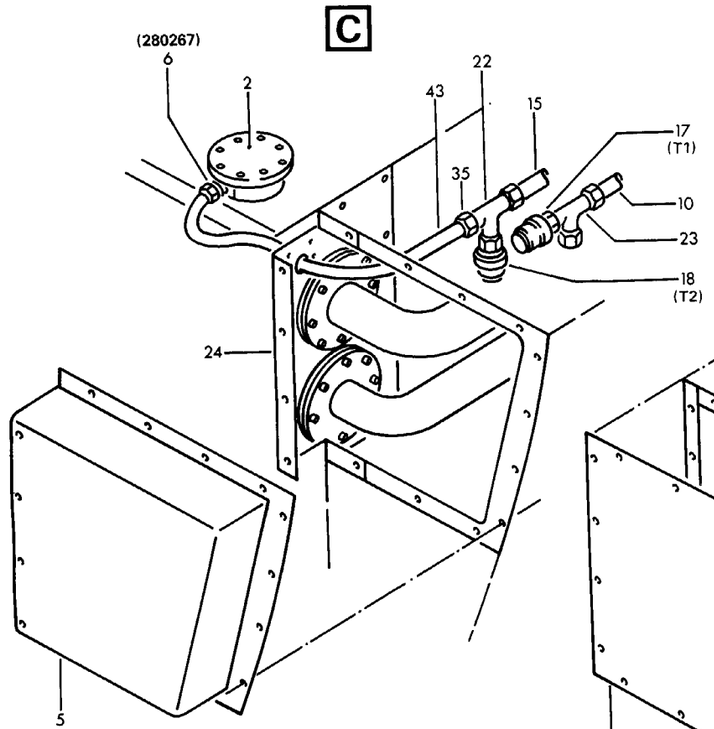


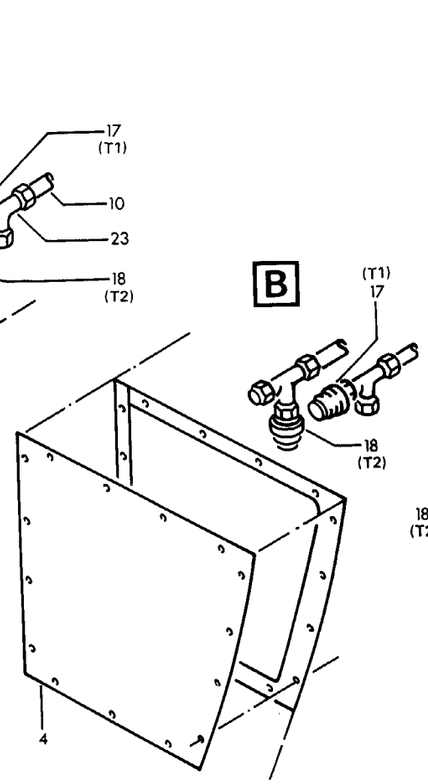
Non-Return Valve - Locations
Figure 401

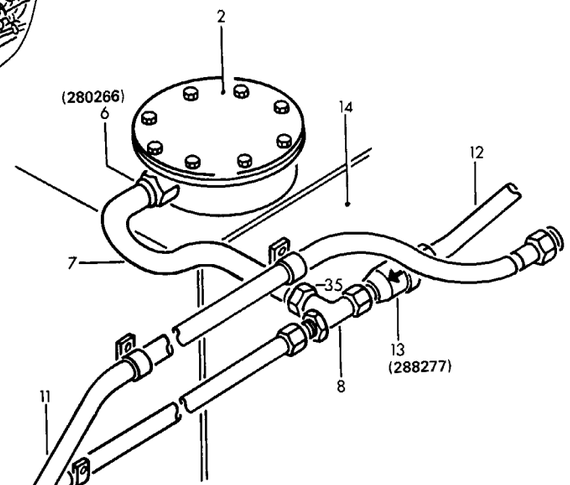




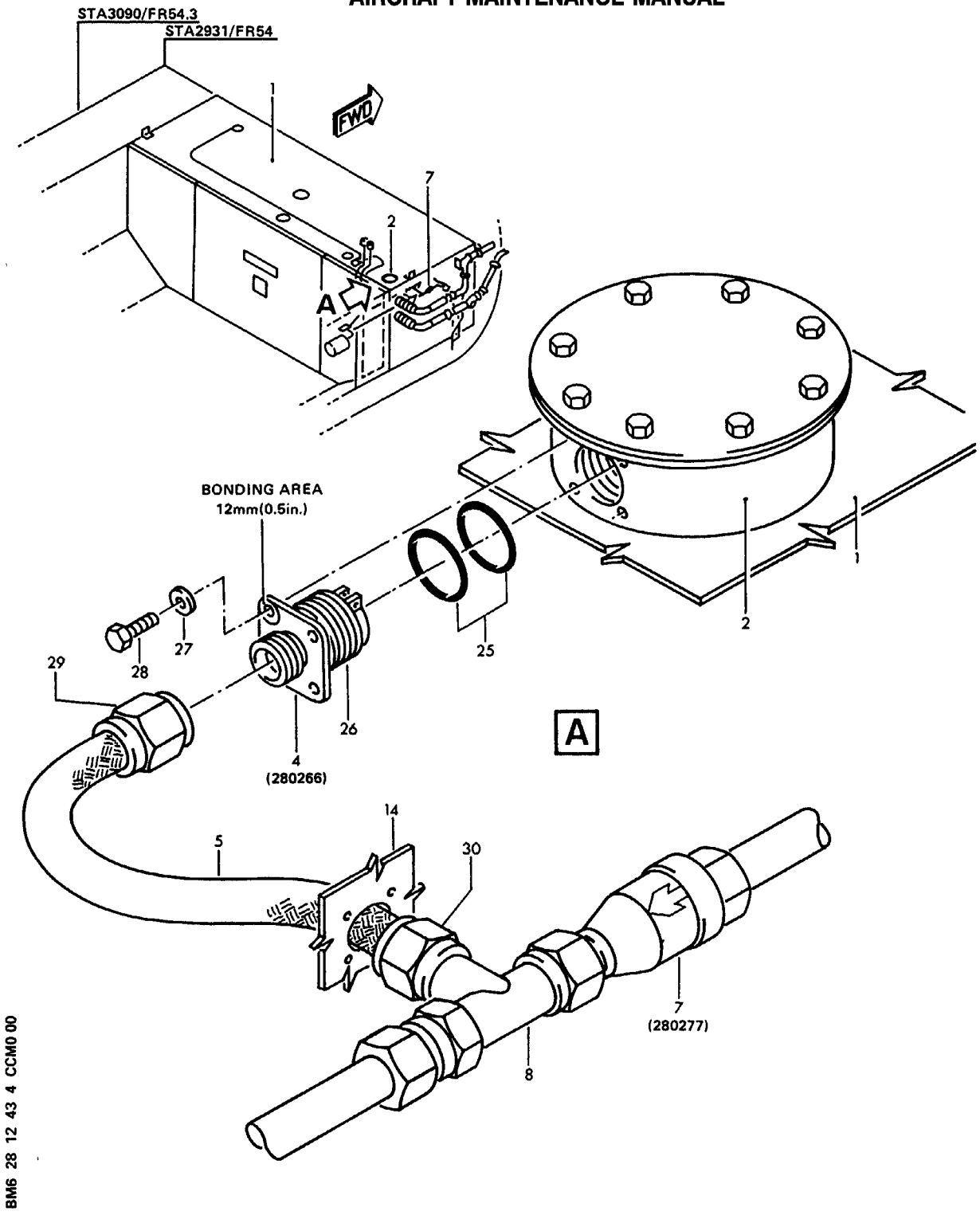








Non-Return Valve - Locations
Figure 402



ACT Non-Return Valve
Figure 403

Post SB 28-2105 For A/C 101-200,

Post SB 28-2108 For A/C 101-200,

(Ref. Fig. 404)

**ON A/C 101-200,

(a)Disconnect the union nut (29) of the air hose (5) from the non-return valve (NRV) (4) on the top surface of the ACT (1).
(b)Move the union nut (29) clear of the NRV (4).
(c)Put a blanking cap on the open end of the air hose (5).
NOTE : Do not disconnect the union nut (30) from the T-piece (8) unless a repair or a new installation is necessary.
(d)Remove the screws (28) and the washers (27) from the connection of the NRV (4) and the NRV housing (2).
NOTE : Identify the screw (28) and the washer (27), removed from the bonding point, for installation in the same position.
(e)Remove the NRV (4) from the NRV housing (2).
(f)Remove and discard the O-rings (25) from the body interface of the NRV (4).
(g)Put a blanking cap on the input connection of the NRV (4).
(h)Put a blanking cap on the flap valve assembly (26) of the NRV (4).
(i)Put a blanking cap in the open port of the NRV housing (2).

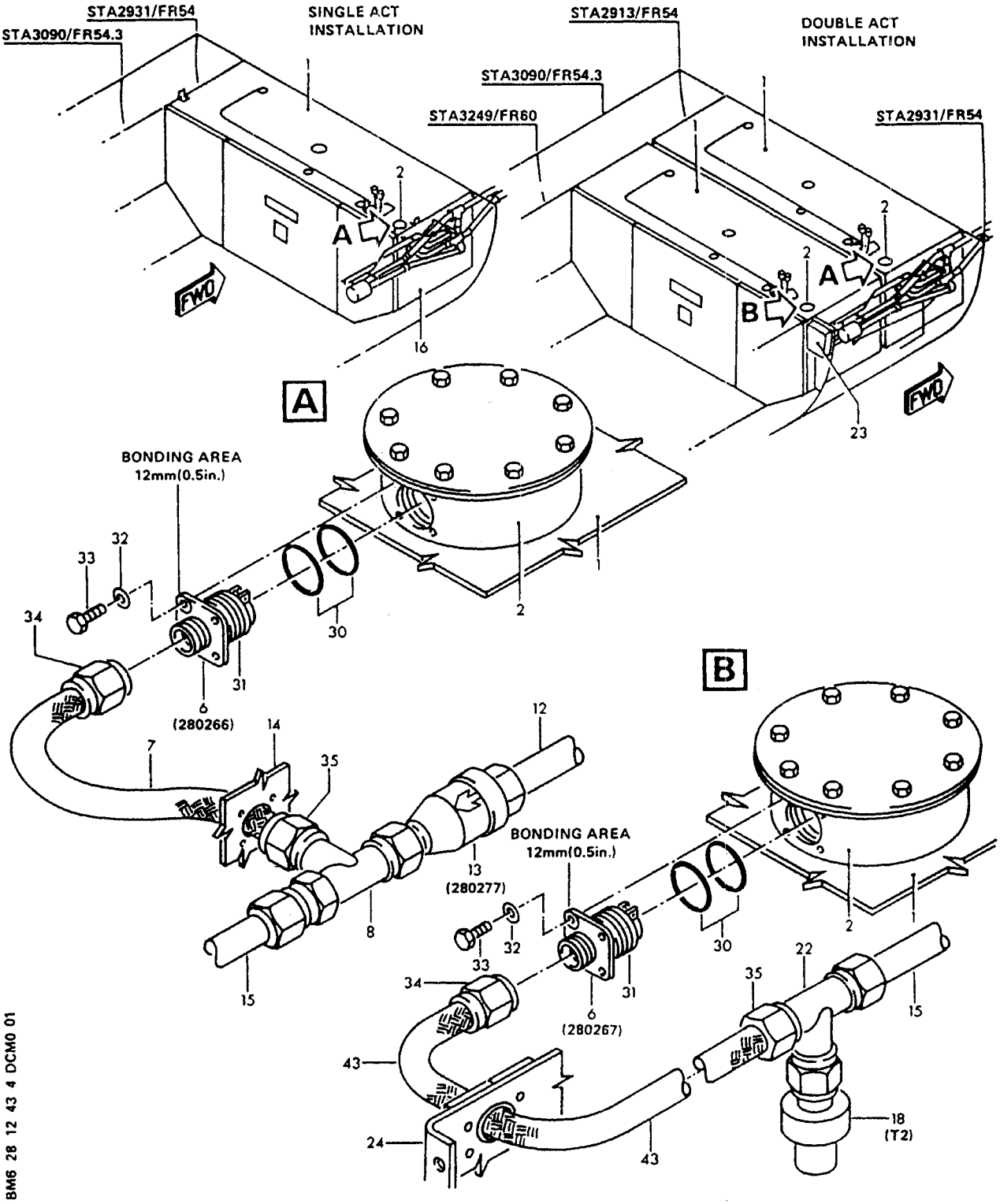
(2)Removal of the Non-Return Valve 280277
(Ref. Fig. 401)

**ON A/C 101-200,

Post SB 28-2105 For A/C 101-200,

Post SB 28-2108 For A/C 101-200,

(a)Disconnect the union nut (34) of the air hose (7) from the NRV (6) on the top surface of the ACT (1).
(b)Move the union nut (34) clear of the NRV (6).
(c)Put a blanking cap on the open end of the air hose (7).
NOTE : Do not disconnect the union nut (35) and remove the air hose (7) unless a repair or a new installation is necessary.
(d)Remove the screws (33) and the washers (32) from the connection of the NRV (6) and the housing (2).
NOTE : Identify the screw (33) and the washer (32), removed from the bonding point, for installation in the same position.
(e)Remove the NRV (6) from the housing (2).
(f)Remove and discard the O-rings (30) from the body interface of the NRV (6).
(g)Put a blanking cap on the input connection of the NRV (6).
(h)Put a blanking cap on the flap valve assembly (31) of the NRV (6).



ACT Non-Return Valve
Figure 404

(i)Put a blanking cap in the open port of the housing (2).

(2)Removal of the NRV 280276
(Ref. Fig. 402)

**ON A/C 101-200,

(Ref. Fig. 405)

**ON A/C 101-200,

Post SB 28-2105 For A/C 101-200,

Post SB 28-2108 For A/C 101-200,

(Ref. Fig. 406)

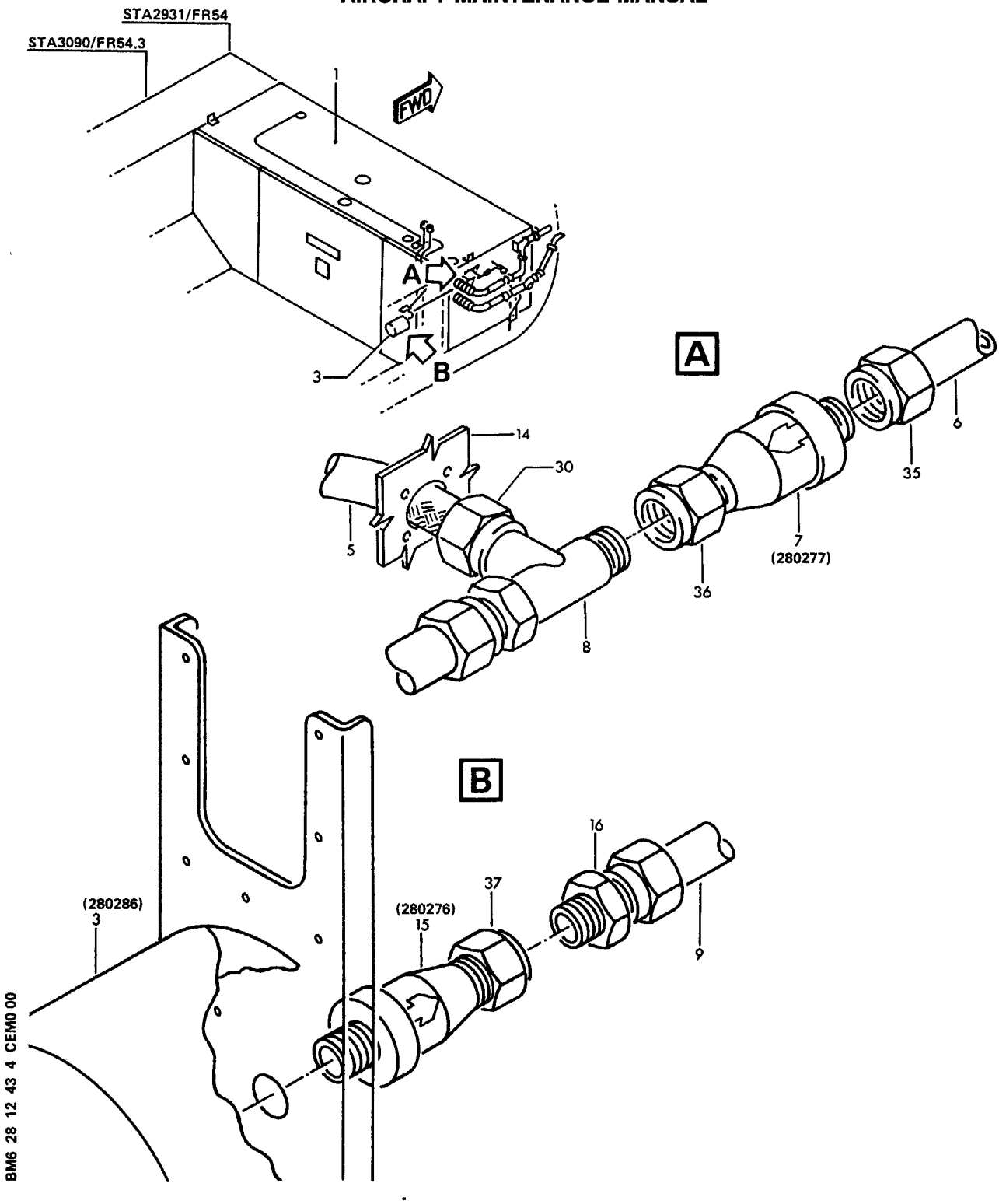
**ON A/C 101-200,

(a)Remove the panel section of the sidewall lining (14) aft of FR54.3.
(b)Disconnect the tube nut (36) of the NRV (7) from the T-piece (8).
CAUTION : HOLD THE NRV (7) IN POSITION BEHIND THE SIDEWALL LINING (14).
(c)Disconnect the union nut (35) of the air pipe (6) from the NRV (7).
(d)Remove the NRV (7) from behind the sidewall lining (14).
NOTE : Do not disconnect the T-piece (8) from:
- the air hose (5),
- the self-sealing coupling T2 (13)
unless a repair or a new installtion is necessary.
(e)Put blanking caps on the open ends of the NRV (7).
(f)Put a blanking cap on the open end of the air pipe (6).
(g)Put a blanking cap on the open and of the T-piece (8).

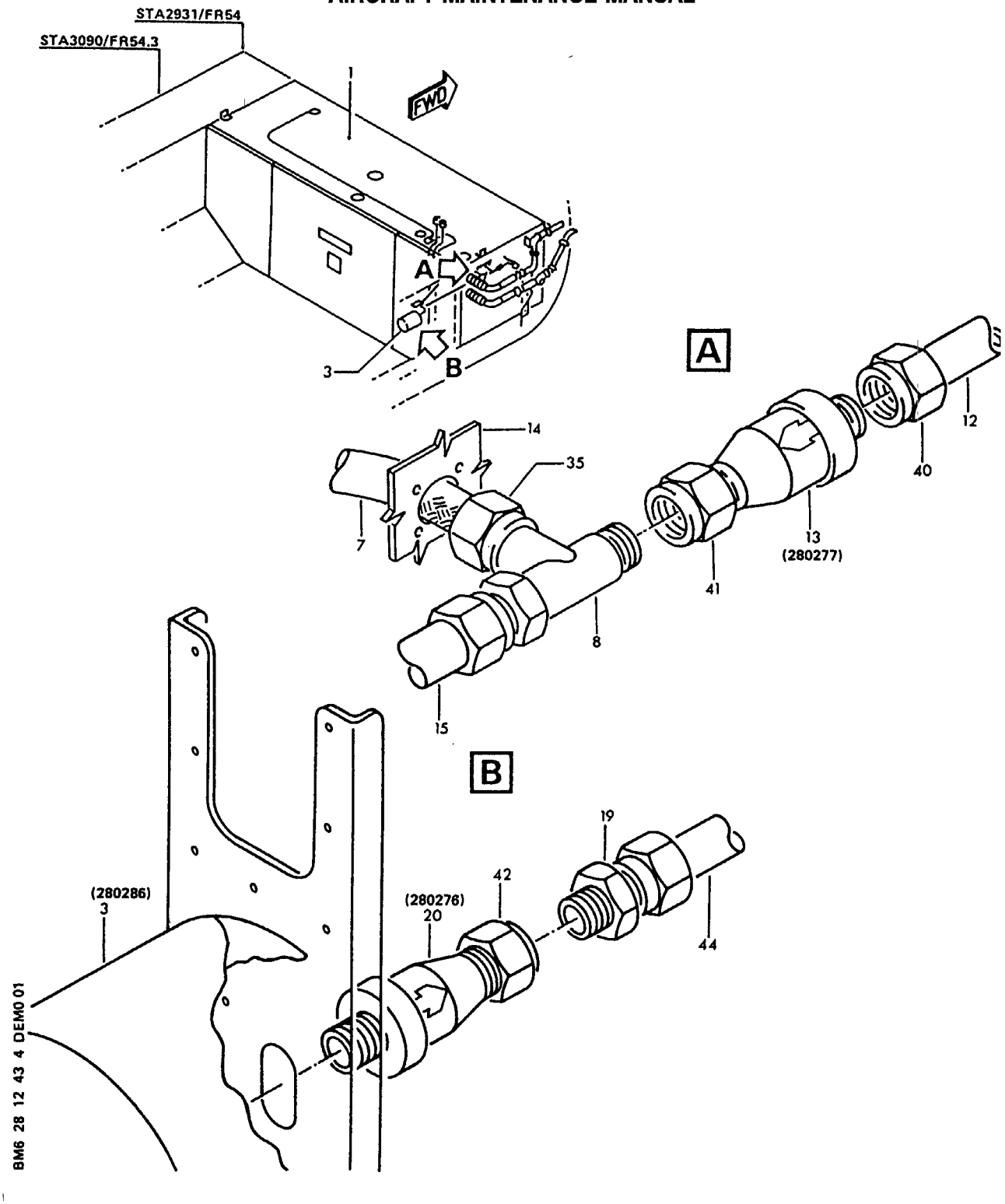
(3)Removal of the Non-Return Valve 280276 (Ref. Fig. 401, 405)
(a)Remove the panel section of the sidewall lining (14) aft of FR54.3.
(b)Disconnect the tube nut (37) of the NRV (15) from the union (16) of the air pipe (9).
CAUTION : HOLD THE NRV (15) IN POSITION BEHIND THE SIDEWALL LINING (14).
(c)Remove the NRV (15) from the air filter (3).
(d)Remove the NRV (15) from behind the sidewall lining (14).
NOTE : Do not disconnect:
- the union (16) from the air pipe (9)
unless a repair or a new installation is necessary.
(e)Put blanking caps on the open ends of the NRV (15).
(f)Put a blanking cap on the open end of the union (16).
(g)Put a blanking cap in the thread of the air filter (3).

**ON A/C 101-200,

Post SB 28-2105 For A/C 101-200,



Non-Return Valves 280276 and 280277
Figure 405



Non-Return Valves 280276 and 280277
Figure 406

Post SB 28-2108 For A/C 101-200,

NOTE : If the aircraft has the double ACT installation, get access to the NRV (20) through the opening for the outer floor panel in the passenger compartment.

NOTE : If the aircraft has the single ACT installation, remove the panel section of the sidewall lining (16) aft of FR54.3 to get access to the NRV (20).

(a)Disconnect the tube nut (42) of the NRV (20) from the union (19) of the air pipe (8).

CAUTION : HOLD THE NRV (20) IN POSITION BEHIND THE SIDEWALL LINING (16).

(b)Remove the NRV (20) from the air filter (3).

(c)Remove the NRV (20) from behind the sidewall lining (16).

NOTE : Do not disconnect:
- the air pipe (8) from the union (19)
unless a repair or a new installation is necessary.

(d)Put blanking caps on the open ends of the NRV (20).

(e)Put a blanking cap on the open end of the union (19).

(f)Put a blanking cap in the thread of the air filter (3).

(3)Removal of the NRV 280277 (Ref. Fig. 402, 406)

NOTE : If the aircraft has the double ACT installation, get access to the NRV (13) through the opening for the outer floor panel in the passenger compartment.

NOTE : If the aircraft has the single ACT installation, remove the panel section of the sidewall lining (16) aft of FR54.3 to get access to the NRV (13).

(a)Disconnect the tube nut (41) of the NRV (13) from the T-piece (14).

CAUTION : HOLD THE NRV (13) IN POSITION BEHIND THE SIDEWALL LINING (16).

(b)Disconnect the union nut (40) of the air pipe (12) from the NRV (13).

(c)Remove the NRV (13) from behind the sidewall lining (16).

NOTE : Do not disconnect:
- the air hose (7) from the T-piece (14),
- the T-piece (14) from the air pipe (15)
unless a repair or a new installation is necessary.

(d)Put blanking caps on the open ends of the NRV (13).

(e)Put a blanking cap on the open end of the air pipe (12).

(f)Put a blanking cap on the open end of the T-piece (14).

**ON A/C 101-200,

C. Preparation for Installation

NOTE : You can not test an NRV for correct operation after installation on the aircraft. Make sure that the replacement NRV is serviceable. Send the NRV for servicing in accordance with the related vendor manual if necessary.

(1)Remove and replace the cartridge of the air filter 280286, if necessary (Ref. 28-28-24, P. Block 401).

(2)Preparation for installation of the NRV 280266 only (Ref. Fig. 401, 403)

(a)Do this step if you install the same NRV (4) again.

1 Clean the interface of the NRV (4) with cleaning agent (Material No. 11-002) and a lint-free cloth.
2 Examine the NRV (4) and look for:
- damage,
- corrosion.

(b)Examine the flap valve assembly (26) and look for:
- damage,
- corrosion,
- correct installation of the spring,
- correct installation of the hinge pin,
- free movement.

(c)Clean the interface of the NRV housing (2) with cleaning agent (Material No. 11-002) and a lint-free cloth.

(d)Make sure that the bonding areas of the NRV housing (2) and the NRV (4) are clear of paint or other contaminants (Ref. 20-28-11, P. Block 1).
NOTE : The bonding areas must be clear for a minimum diameter of 12 mm (0.5 in).

(e)Examine the air hose (5) and look for:
- damage,
- corrosion,
- correct installation on the T-piece (8).

(3)Preparation for installation of the NRV 280277 only (Ref. Fig. 401, 405)

(a)Do this step if you install the same NRV (7) again.
1 Clean the interfaces of the NRV (7) with cleaning agent (Material No. 11-002) and a lint-free cloth.
2 Examine the NRV (7) and look for:
- damage,
- corrosion.

(b)Examine the NRV (7) and make sure that:
1 The valve seat is correct in the body of the NRV (7).
2 The thrust wire is installed in the tube nut (36).
3 The tube nut (36) shows no damage.

(c)Examine the area behind the sidewall lining (14) and make sure that:
1 The air hose (5) is correctly attached to the T-piece (8).
2 The air pipe (6) is clean and shows no damage.
3 The air pipe (6) is correctly attached to the pressure reducing valve 280261 (Ref. 28-28-18, P. Block 401).
4 The union (16) is correctly attached to the NRV 280276 (15).
5 The air pipe (9) is correctly attached to the union (16).

(d)Examine the adjacent area behind the sidewall lining (14) and look for:
- damage,
- corrosion,
- signs of fuel leakage.

(4)Preparation for installation of the NRV 280276 only (Ref. Fig. 401, 405)

(a)Do this step if you install the same NRV (15) again.
1 Clean the interfaces of the NRV (15) with cleaning agent (Material No. 11-002) and a lint-free cloth.
2 Examine the NRV (15) and look for:

- damage,
- corrosion.

(b)Examine the NRV (15) and make sure that:
1 The valve seat is correct in the body of the NRV (15).
2 The thrust wire is installed in the tube nut (37).
3 The tube nut (37) shows no damage.

(c)Examine the area behind the sidewall lining (14) and make sure that:
1 The air hose (5) is correctly attached to the T-piece (8).
2 The air pipe (6) is clean and shows no damage.
3 The air pipe (6) is correctly attached to the pressure reducing valve 280261.
4 The air pipe (9) is correctly attached to the T-piece.
5 The union (16) is correctly attached to the air pipe (9).

(d)Examine the adjacent area behind the sidewall lining (14) and look for:
- damage,
- corrosion,
- signs of fuel leakage.

**ON A/C 101-200,

Post SB 28-2105 For A/C 101-200,

Post SB 28-2108 For A/C 101-200,

C. Preparation for Installation

NOTE : You can not test an NRV for correct operation after installation on the aircraft. Make sure that the replacement NRV is serviceable. Send the NRV for servicing in accordance with the related vendor manual if necessary.

(1)Remove and replace the cartridge of the air filter 280286, if necessary (Ref. 28-28-24, P. Block 401).

NOTE : If the aircraft has the double ACT installation:
- get access to the air filter 280286,
- remove the cartridge of the air filter 280286.

(2)Preparation for Installation of the NRV 280266 (280267) (Ref. Fig. 402, 404)

(a)Do this step if you install the same NRV (6) again.
1 Clean the interface of the NRV (6) with cleaning agent (Material No. 11-002) and a lint-free cloth.
2 Examine the NRV (6) and look for:
- corrosion,
- damage.

(b)Examine the flap valve assembly (31) for:
- corrosion,
- damage,
- correct installation of the spring,

- correct installation of the hinge pin,
- free movement.

(c)Clean the interface of the NRV housing (2) with cleaning agent (Material No. 11-002) and a lint-free cloth.

(d)Make sure that the bonding areas of the NRV housing (2) and the NRV (6) are clear of contaminants (Ref. 20-28-11, P. Block 1).

NOTE : The bonding areas must be clear for a minimum diameter of 12 mm (0.5 in).

(e)Do this step if the aircraft has the single ACT installation.

1 Remove:
- the panel section of the sidewall lining (14) aft of FR54.3,
- the panel section (4) from the sidewall at the AFT cargo door position, fwd of FR60.

2 Examine the air hose (7) for:
- corrosion,
- damage,
- correct installation on the air hose (7) through the sidewall lining (14), fwd of FR54.3,
- correct installation of the union nut (35) to the T-piece (8).

3 Examine the adjacent area behind the sidewall lining (14) for:
- corrosion,
- damage,
- signs of fuel leakage.

(f)Do this step if the aircraft has the double ACT installation and the NRV 280266 (6) is removed from the fwd ACT (1).

1 Remove the panel section of the sidewall lining (14) aft of FR54.3.

2 Examine the air hose (7) for:
- corrosion,
- damage,
- correct installation of the air hose (7) through the sidewall lining (14), fwd of FR54.3,
- correct installation of the union nut (35) to the T-piece (8).

3 Examine the adjacent area behind the sidewall lining (14) for:
- corrosion,
- damage,
- signs of fuel leakage.

(g)Do this step if the aircraft has the double ACT installation and the NRV 280267 (6) is removed from the aft ACT (1).

1 Remove the panel section (5) from the panel section (24) and the sidewall at the AFT cargo door fwd of FR60.

2 Examine the air hose (43) for:
- corrosion,
- damage,
- correct installation of the air hose (43) through the panel section (24), fwd of FR60,
- correct installation of the union nut (35) to the T-piece (22).

3 Examine the adjacent area behind the sidewall lining (14) at the AFT cargo door, for:
- corrosion,
- damage,
- signs of fuel leakage.

(3)Preparation for Installation of the NRV 280276
(Ref. Fig. 402, 406)
(a)Do this step if you install the same NRV (20) again.
1 Clean the interfaces of the NRV (20) with cleaning agent (Material No. 11-002) and a lint-free cloth.
2 Examine the NRV (20) for:
- corrosion,
- damage.
(b)Examine the NRV (20) and make sure that:
- the valve seat is correct in the body of the NRV (20),
- the thrust wire is installed in the tube nut (42).
(c)Do this step if the aircraft has the single ACT installation.
1 Remove the panel section (4) from the sidewall at the AFT cargo door, fwd of FR60.
(d)Do this step if the aircraft has the double ACT installation.
1 Remove the panel section (5) from the panel section (24) and the sidewall at the AFT cargo door fwd of FR60.
(e)Examine the area behind the sidewall lining (14) at FR54.3.
1 Do this step if the aircraft has the single ACT installation.
a Make sure that:
- the air hose (7) is correctly installed through the sidewall lining (14), fwd of FR54.3,
- the union nut (35) is correctly installed on the T-piece (8),
- the air hose (7) has no corrosion or damage.
2 Do this step if the aircraft has the double ACT installation.
a Make sure that:
- The air hoses (7),(43) are correctly installed through the sidewall lining (14), fwd of FR54.3 and the panel section (24), fwd of FR60,
- the union nuts (35) are correctly installed on the T-pieces (8), (22),
- the air hoses (7),(43) have no corrosion or damage.
3 Make sure that:
a The air pipes (10),(11),(12),(15),(44) are clean and have no damage.
b The air pipe (44) is correctly attached to the T-piece (9).
c The air pipe (10) is correctly attached to the T-piece (9) and to the T-piece (23).
d The air pipe (11) is correctly attached to the T-piece (9) and to the air shut-off valve 280260.
e The air pipe (12) is correctly attached to the NRV (13) and to the pressure reducing valve 280261.
f The air pipe (15) is correctly attached to the T-piece (8) and to the T-piece (22).
g The self-sealing coupling T1 (17) is correctly attached to the T-piece (23).
h The self-sealing coupling T2 (18) is correctly attached to the T-piece (22).
i The support brackets are correctly attached to:
- the air shut-off valve 280260,
- the pressure reducing valve 280261,
- the air filter (3),

- the T-pieces (8),(9),(22),(23),
- the aircraft structure.

4 Examine the adjacent area for:
- corrosion,
- damage,
- signs of fuel leakage.

(4)Preparation for Installation of the NRV 280277 (Ref. Fig. 402, 406)

(a)Do this step if you install the same NRV (13) again.

1 Clean the interfaces of the NRV (13) with cleaning agent (Material No. 11-002) and a lint-free cloth.

2 Examine the NRV (13) for:
- corrosion,
- damage.

(b)Examine the NRV (13) and make sure that:
- the valve seat is correct in the body of the NRV (13).
- the thrust wire is installed in the tube nut (41).

(c)Do this step if the aircraft has the single ACT installation.

1 Remove the panel section (4) from the sidewall at the AFT cargo door fwd of FR60.

(d)Do this step if the aircraft has the double ACT installation.

1 Remove the panel section (5) from the panel section (24) and the sidewall at the AFT cargo door fwd of FR60.

(e)Examine the area behind the sidewall lining (14) at FR54.3 and at the AFT cargo door fwd of FR60.

1 Do this step if the aircraft has the single ACT installation.

a Make sure that:
- the air hose (7) is correctly installed through the sidewall lining (14), fwd of FR54.3,
- the union nut (35) is correctly installed on the T-piece (8),
- the air hose (7) has no corrosion or damage.

2 Do this step if the aircraft has the double ACT installation.

a Make sure that:
- the air hoses (7),(43) are correctly installed through the sidewall lining (14), fwd of FR54.3 and the panel section (24), fwd of FR60,
- the union nuts (35) are correctly installed on the T-pieces (8), (22),
- the air hoses (7),(43) have no corrosion or damage.

3 Make sure that:

a The air pipes (10),(11),(12),(15),(44) are clean and have no damage.

b The air pipe (44) is correctly attached to the T-piece (9) and to the union (19) at the NRV (20).

c The air pipe (10) is correctly attached to the T-piece (9) and to the T-piece (23).

d The air pipe (11) is correctly attached to the T-piece (9) and to the air shut-off valve 280260.

e The air pipe (12) is correctly attached to the pressure reducing valve 280261.

f The air pipe (15) is correctly attached to the T-piece (8) and to the T-piece (22).

g The self-sealing coupling T1 (17) is correctly attached to the

T-piece (23).
h The self-sealing coupling T2 (18) is correctly attached to the T-piece (22).
i The support brackets are correctly attached to:
- the air shut-off valve 280260,
- the pressure reducing valve 280261,
- the air filter (3),
- the T-pieces (8),(9),(22),(23),
- the aircraft structure.

4 Examine the adjacent area for:
- corrosion,
- damage,
- signs of fuel leakage.

**ON A/C 101-200,

D. Installation
(1)Installation of the Non-Return Valve 280266 (Ref. Fig. 401, 403)
(a)Remove the blanking cap from the input connection of the NRV (4).
(b)Remove the blanking cap from the flap valve assembly (26) of the NRV (4).
(c)Apply vaseline (Material No. 04-012) to the new O-rings (25).
(d)Put the O-rings (25) in the grooves in the body interface of the NRV (4).
(e)Remove the blanking cap from the NRV housing (2).
(f)Put the NRV (4) in position in the NRV housing (2).
NOTE : Align the screw holes in the flange of the NRV (4) with the screw holes in the NRV housing (2) (angular difference between screw hole centers).
(g)Install the screws (28) and the washers (27) at the connection of the NRV (4) and the NRV housing (2).
NOTE : Make sure that the screw (28) and the washer (27), identified in REMOVAL, are installed at the bonding point.
NOTE : Make sure the the O-rings (25) are correctly installed.
(h)Do a check of the bonding resistance of the NRV (4).
1 Connect one test probe of the bonding tester to an area on the ACT (1) which is not painted.
2 Touch the external surface of the NRV (4) with the other probe.
3 Get a resistance reading between the NRV (4) and the ACT (1).
NOTE : The maximum permitted resistance is:
- for an in-service NRV (4) - 50 milliohms,
- for a new or a serviced NRV (4) - 25 milliohms.
(i)Remove the blanking cap from the air hose (5).
(j)Put the union nut (29) of the air hose (5) on the input connection of the NRV (4).
(k)Tighten the union nut (29).
NOTE : Make sure that the air hose (5) is not twisted.
(2)Installation of the Non-Return Valve 280277 (Ref. Fig. 401, 405)
(a)Remove the blanking cap from the T-piece (8) behind the sidewall lining (14).

(b)Remove the blanking cap from the air pipe (6) behind the sidewall lining (14).
(c)Remove the blanking caps from the NRV (7).
CAUTION : HOLD THE NRV (7) IN POSITION BEHIND THE SIDEWALL LINING (14).
(d)Put the NRV (7) behind the sidewall lining (14).
(e)Put the end of the NRV (7) in the union nut (35) of the air pipe (6).
NOTE : Make sure that the flow indicator on the body of the NRV (7) shows the correct direction. The air flow is through the NRV (7) in the direction of the T-piece (8).
(f)Tighten the union nut (35) by hand.
(g)Put the tube nut (36) of the NRV (7) on the end of the T-piece (8).
(h)Tighten the tube nut (36).
(i)Fully tighten the union nut (35).
(j)Make sure that the air pipe (6) is not stressed.
NOTE : Do not install the panel section of the sidewall lining (14) at this time.

(3)Installation of the Non-Return Valve 280276 (Ref. Fig. 401, 405)
(a)Remove the blanking cap from the union (16) behind the sidewall lining (14).
(b)Remove the blanking caps from the NRV (15).
CAUTION : HOLD THE NRV (15) IN POSITION BEHIND THE SIDEWALL LINING (14).
(c)Put the NRV (15) behind the sidewall lining (14).
(d)Install the NRV (15) to the air filter (3).
NOTE : Make sure that the flow indicator on the body of the NRV (15) shows the correct direction. The air flow is through the NRV (15) away from the air filter (3).
(e)Tighten the tube nut (37).
(f)Make sure that the air pipe (9) is not stressed.
NOTE : Do not install the panel section of the sidewall lining (14) at this time.
(g)Put the tube nut (37) of the NRV (15) on the union (16) of the air pipe (9).

**ON A/C 101-200,

Post SB 28-2105 For A/C 101-200,

Post SB 28-2108 For A/C 101-200,

D. Installation
(1)Installation of the NRV 280266 (280267) (Ref. Fig. 402, 404)
(a)Remove the blanking cap from the input connection of the NRV (6).
(b)Remove the blanking cap from the flap valve assembly (31) of the NRV (6).
(c)Apply vaseline (Material No. 04-012) to the new O-rings (30).
(d)Put the O-rings (30) in the grooves in the body interface of the NRV (6).
(e)Remove the blanking cap from the port of the housing (2) on the top surface of the ACT (1).

(f)Put the NRV (6) in position in the housing (2).
NOTE : You must align the screw holes in the flange of the NRV (6) with the screw holes in the housing (2). There is an angular difference between the screw hole centers.
(g)Install the screws (33) and the washers (32) at the connection of the NRV (6) and the housing (2).
NOTE : Make sure that the screw (33) and the washer (32), identified in REMOVAL, are installed at the bonding point.
NOTE : Make sure the the O-rings (30) are correctly installed.
(h)Do a check of the bonding resistance of the NRV (6).
1 Connect one test probe of the bonding tester to an area of the ACT (1) which is not painted.
2 Touch the external surface of the NRV (6) with the other test probe.
3 Get a resistance reading between the ACT (1) and the NRV (6).
NOTE : The maximum permitted resistance is:
- for an in-service NRV (6) - 50 milliohms,
- for a new or a serviced NRV (6) - 25 milliohms.
(i)Remove the blanking cap from the air hose (7).
(j)Put the union nut (34) of the air hose (7) on the input connection of the NRV (6).
(k)Tighten the union nut (34).
NOTE : Make sure that the air hose (7) is not twisted.
(2)Installation of the NRV 280276 (Ref. Fig. 402, 406)
NOTE : If the aircraft has the single ACT installation, the access is through the opening in the sidewall lining (14), aft of FR54.3.
(a)Remove the blanking cap from the union (19).
(b)Remove the blanking caps from the NRV (20).
CAUTION : HOLD THE NRV (20) IN POSITION BEHIND THE SIDEWALL LINING (14).
(c)Put the NRV (20) in position behind the sidewall lining (14).
(d)Install the NRV (20) to the air filter (3).
NOTE : Make sure that the flow indicator on the body of the NRV (20) shows the correct direction. The air flow is through the NRV (20) away from the air filter (3).
(e)Put the tube nut (42) of the NRV (20) on the union (19) of the air pipe (44).
(f)Tighten the tube nut (42).
NOTE : Make sure that the air pipe (44) is not stressed.
(3)Installation of the NRV 280277 (Ref. Fig. 402, 406)
NOTE : If the aircraft has the double ACT installation, the access is through the opening for the outer floor panel in the passenger compartment.
NOTE : If the aircraft has the single ACT installation, the access is through the opening in the sidewall lining (14), aft of FR54.3.
(a)Remove the blanking cap from the T-piece (8).
(b)Remove the blanking cap from the air pipe (12).
(c)Remove the blanking cap from the NRV (13).
CAUTION : HOLD THE NRV (13) IN POSITION BEHIND THE SIDEWALL LINING (14).
(d)Put the NRV (13) in position behind the sidewall lining (14).
(e)Put the end of the NRV (13) in the union nut (40) of the air pipe (12).
NOTE : Make sure that the flow indicator on the body of the NRV (13) shows the correct direction. The air flow is through the

NRV (13) in the direction of the T-piece (8).
(f)Tighten the union nut (40) by hand.
(g)Put the tube nut (41) of the NRV (13) on the end of the T-piece (8).
(h)Tighten the tube nut (41).
(i)Fully tighten the union nut (40).
NOTE : Make sure that the air pipe (12) is not stressed.

**ON A/C 101-200,

E. Test (Ref. Fig. 401)
(1)Do a functional check of the air pressurization system and the ACT vent system.
(a)Do this step if the NRV 280266 (4) only was removed and installed.
1 Remove the panel section of the sidewall lining (14) aft of FR54.3.
(b)Connect a low-pressure air supply with a gage to the self-sealing coupling T1 (17).
(c)Connect an air pressure gage to the self-sealing coupling T2 (18).
(d)Make sure that the air shut-off valve 280260 is in the 'SHUT' position.
(e)Turn on the air supply to get a pressure of 10 psi (0.69 bar) on the gage at coupling T1 (17).
NOTE : Make sure that the pressure becomes stable immediately.
(f)Shut off the air supply at coupling T1 (17).
(g)Make sure that the pressure at coupling T1 (17) does not change.
NOTE : This checks the reverse leakage of the NRV 280276 (15).
(h)Open the air shut-off valve 280260.
(i)Close the vent valve 280268.
(j)Pressurize the ACT (1) until the pressure at coupling T2 (18) becomes stable.
NOTE : The pressure should be between 5 and 6.5 psi (0.345 and 0.448 bar).
NOTE : This checks the operation of the pressure reducing valve 280261.
(k)Do a check of the connections between the NRV 280276 (15) and the NRV 280277 (7) and look for air leaks.
(l)Shut off the air supply at coupling T1 (17).
(m)Disconnect the air supply at coupling T1 (17).
(n)Vent the system at coupling T1 (17).
(o)Make sure that the air pressure at coupling T2 (18) stays between 5 and 6.5 psi (0.345 and 0.448 bar).
NOTE : This checks the reverse leakage of the NRV 280277 (7).
(p)Vent the system at coupling T2 (18).
(q)Make sure that the pressure at coupling T2 (18) stays at zero.
NOTE : This checks the reverse leakage of the NRV 280266 (4).
(r)Connect the air supply at coupling T1 (17).
(s)Turn on the air supply at coupling T1 (17) until the pressure at coupling T2 (18) becomes stable.
(t)Close the air shut-off valve 280260.
(u)Open the vent valve 280268.

(v)Make sure that the pressure at coupling T2 (18) goes to zero, as the ACT pressure goes to zero.
(w)Shut off the air supply at coupling T1 (17).
(x)Disconnect the air supply at coupling T1 (17).
(y)Vent the system at coupling T1 (17).
(z)Disconnect the air pressure gage at coupling T2 (18).
(aa)Make sure that no tools or other items have been left behind the sidewall lining (14).
(ab)Install the panel section of the sidewall lining (14) aft of FR54.3.

F. Close-Up
(1)Install the right section of the heat shield on the rear wall of the ACT.
(a)Put the right section of the heat shield in position on the rear wall of the ACT.
(b)Connect the quick-release fasteners.
(2)Make sure that the work area is clean and clear of tools and other items.
(3)Install the container or the two half-width containers behind the ACT, if necessary (Ref. 25-52-00, P. Block 1).
(4)Close the AFT cargo door (Ref. 52-30-00, P. Block 1).
(5)Remove the access platform.

**ON A/C 101-200,

Post SB 28-2105 For A/C 101-200,

Post SB 28-2108 For A/C 101-200,

E. Test (Ref. Fig. 402)
(1)Do a functional check of the air pressurization system and the ACT vent system.
NOTE : Get access to the self-sealing couplings T1 (17) and T2 (18) through the opening for the panel section (5).
(a)Remove the panel section (5).
(b)Connect a low-pressure air supply with a gage to the self-sealing coupling T1 (17).
(c)Connect an air pressure gage to the self-sealing coupling T2 (18).
(d)Make sure that the air shut-off valve 280260 is in the "SHUT" position.
(e)Turn on the air supply to get a pressure of 10 psi (0.69 bar) on the gage at the coupling T1 (17).
NOTE : Make sure that the pressure becomes stable immediately.
(f)Shut off the air supply at the coupling T1 (17).
(g)Make sure that the pressure at T1 (17) does not change.
NOTE : This checks the reverse leakage of the NRV (20).
(h)Open the air shut-off valve 280260.
(i)Close the vent valve 280268 (280269).
(j)Turn on the air supply and pressurize the ACT (1) until the pressure at

T2 (18) becomes stable.
NOTE : The pressure on the gage at T2 (18) should be between 5 and 6.5 psi (0.345 and 0.448 bar).
NOTE : This is a check of the operation of the pressure reducing valve 280261.
(k)Do a check for leaks at the connections of the air pipes (10),(11), (12),(15),(44).
(l)Shut off the air supply at T1 (17).
(m)Disconnect the air supply at T1 (17).
(n)Remove the pressure from the system at T1 (17).
(o)Make sure that the pressure at T2 (18) stays between 5 and 6.5 psi (0.345 and 0.448 bar).
NOTE : This is a check of the reverse leakage of the NRV (13).
(p)Remove the pressure from the system at T2 (18).
(q)Make sure that the pressure at T2 (18) stays at zero.
NOTE : This is a check of the reverse leakage of the ACT NRV (6).
(r)Connect the air supply at T1 (17).
(s)Turn on the air supply at T1 (17) until the pressure at T2 (18) becomes stable.
(t)Close the air shut-off valve 280260.
(u)Open the vent valve 280268 (280269).
(v)Make sure that the pressure at T2 (18) goes to zero as the pressure of the ACT (1) goes to zero.
(w)Shut off the air supply at T1 (17).
(x)Disconnect the air supply at T1 (17).
(y)Remove the pressure from the system at T1 (17).
(z)Disconnect the gage at T2 (18).

F. Close-Up (Ref. Fig. 402)
(1)Do this step if the aircraft has the single ACT installation.
(a)Make sure that:
- the area behind the sidewall lining (14) at FR54.3,
- the area behind the sidewall at the AFT cargo door, fwd of FR60 is clean and clear of tools and other items.
(b)Install the panel section of the sidewall lining (14), aft of FR54.3.
(c)Install the panel section (4) to the sidewall at the AFT cargo door, fwd of FR60.
(2)Do this step if the aircraft has the double ACT installation and you have removed/installed the NRV (13) or the NRV (20).
(a)Make sure that the area behind the sidewall lining (14) is clean and clear of tools and other items.
(b)Install the right hand outer floor panel between FR54.2 and FR58, in the passenger compartment.
(c)Install the relevant passenger compartment seats (Ref. 25-21-00, P. Block 401).
(d)Install the panel section (5) to the sidewall at the AFT cargo door, fwd of FR60.
(3)Do this step if the aircraft has the double ACT installation and you have removed/installed the NRV (6) from the fwd ACT (1).
(a)Make sure that:
- the area behind the sidewall lining (14) at FR54.3,

- the area behind the sidewall at the AFT cargo door, fwd of FR60. is clean and clear of tools and other items.

(b) Install the panel section of the sidewall lining (14), aft of FR54.3.

(c) Install the aft ACT (1) (Ref. 28-11-36, P. Block 401).

(d) Install the panel section (5) to the sidewall at the AFT cargo door, fwd of FR60.

(4) Do this step if the aircraft has the double ACT installation and you have removed/installed the NRV (6) from the aft ACT (1).

(a) Make sure that the area behind the sidewall at the AFT cargo door, fwd of FR60, is clean and clear of tools and other items.

(b) Install the panel section (5) to the sidewall at the AFT cargo door, fwd of FR60.

(5) Install the right end section of the heat shield on the rear wall of the ACT (1).

(6) Make sure that the work area is clean and clear of tools and other items.

(7) Close the AFT cargo door (Ref. 52-30-00, P. Block 1).

(8) Remove the access platform.

EXTERNAL VENTILATING SYSTEM DESCRIPTION AND OPERATION

1. General

The boundary of the center tank is adjacent the aircraft zones that follow:

A. Tank upper surface and front face down to pressure floor.	- Pressurized zone between wing center box, MLG well and the cabin floor.
B. Tank rear face.	- MLG well and hydraulics compartment.
C. Tank sides.	- Inner fuel tanks.
D. Lower front face and lower surface.	- Air conditioning compartment (unpressurized zone).

The center-tank external upper-surface and front face down to the pressure floor is sealed by a layer of elastomeric material. The tank lower front-face and lower surface is ventilated and drained through the interface formed between the tank and a vapor seal.

The boundary of the trim tank center section (top, front, bottom and rear face) is adjacent to the tail cone section of the fuselage which is an unpressurized zone. The tank sides are ribs with fuel passages to the tail plane tank outer areas left and right, which are outside the fuselage contour.

The center section upper surface, rear face and partial front face (where no fuel system equipment is positioned) is sealed by a coating of elastomeric material. The trim tank center section lower surface and front face, is ventilated and drained through the interspace formed between the tank and the vapour seal.

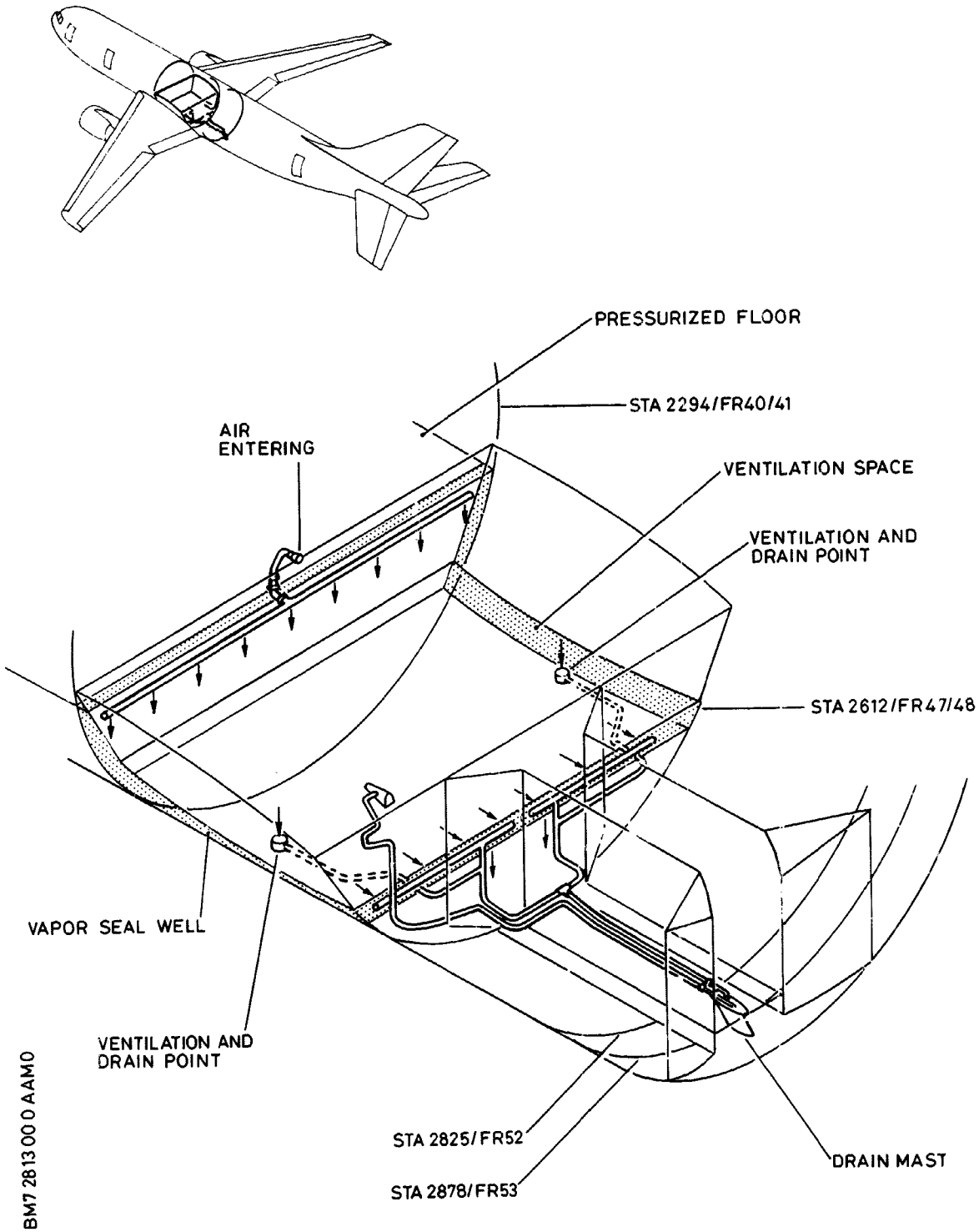
R **ON A/C 101-200,

R The ACT(s) (if installed) has an (have) open drain(s) to vent and drain
R the space between the flexible liner and the rigid container.

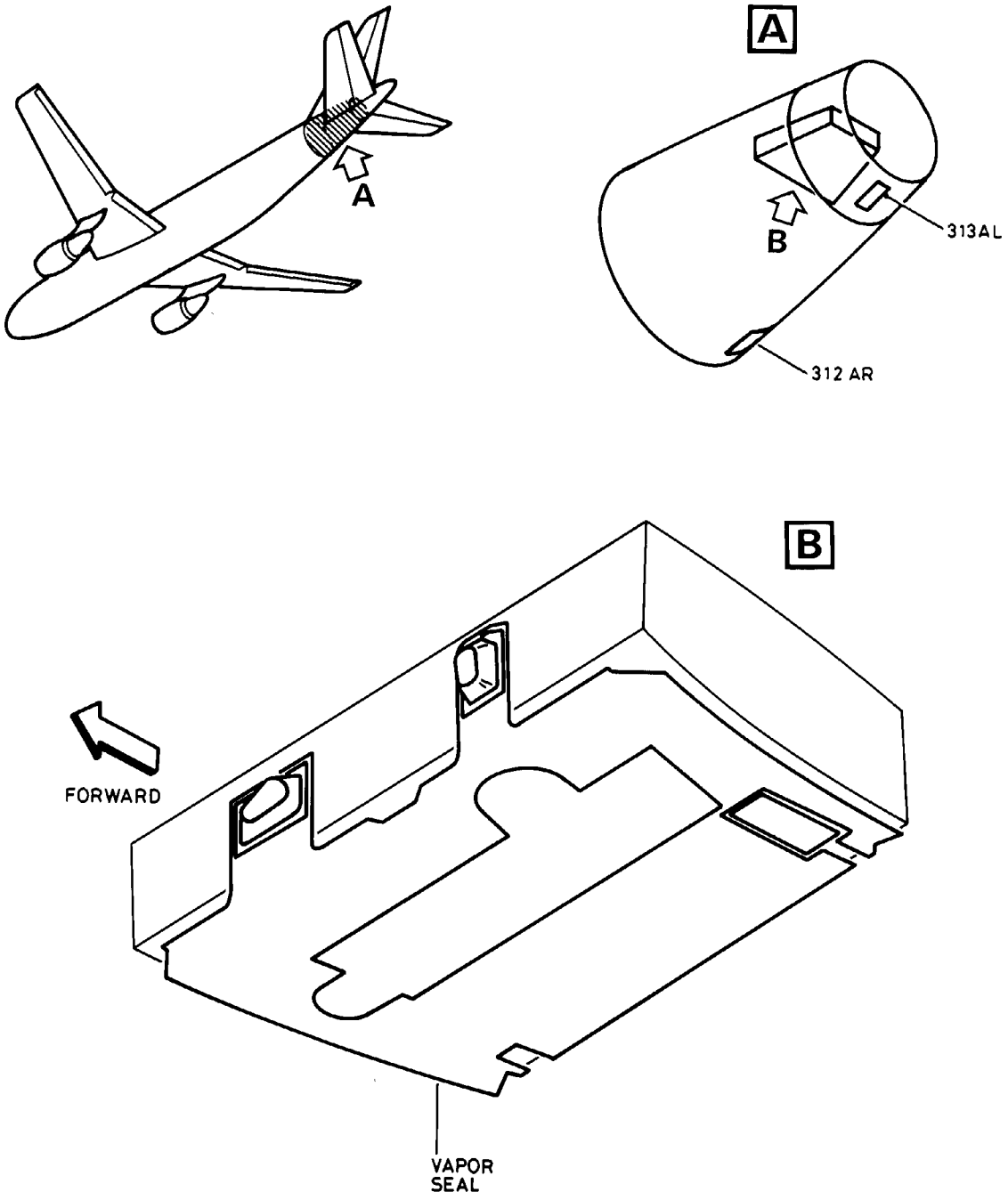
R **ON A/C ALL

2. Description

(Ref. Fig. 001)
(Ref. Fig. 002)
(Ref. Fig. 003)



Vapor Seal - Ventilation, Drainage and Exhaust
Figure 001



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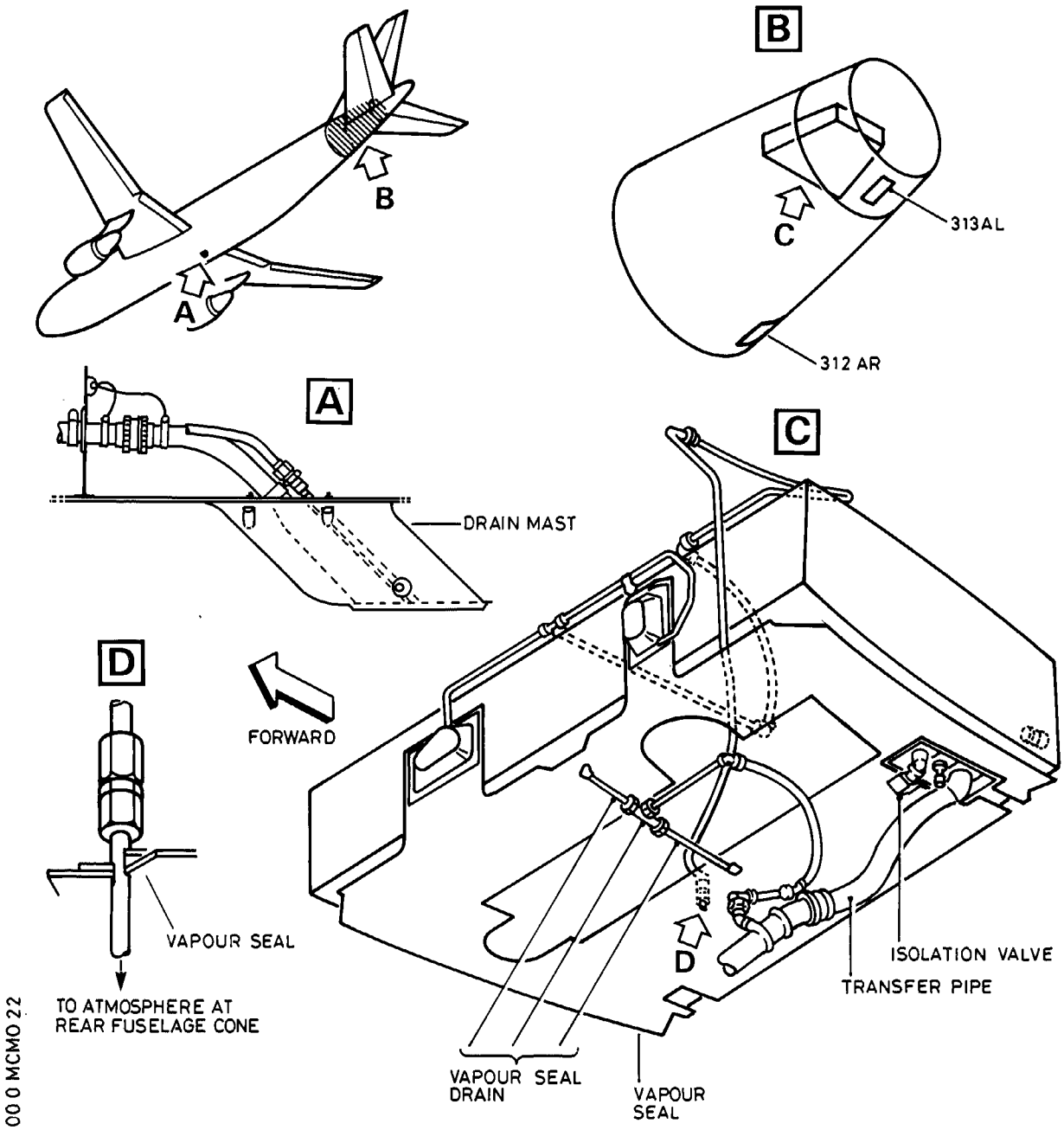
Vapor Seal - Trim Tank
Figure 002



Trim Tank Vapor Seal - Drainage and Exhaust
Figure 003

**ON A/C 101-200,

Post SB 28-2105 For A/C 101-200,

R Post SB 28-2126 For A/C 104-104,

(Ref. Fig. 004)

**ON A/C 101-200,

(Ref. Fig. 005)

**ON A/C 101-200,

Post SB 28-2105 For A/C 101-200,

R Post SB 28-2126 For A/C 104-104,

(Ref. Fig. 006)

**ON A/C 001-100,

(Ref. Fig. 007)

**ON A/C 101-200,

(Ref. Fig. 008)

**ON A/C 001-100,

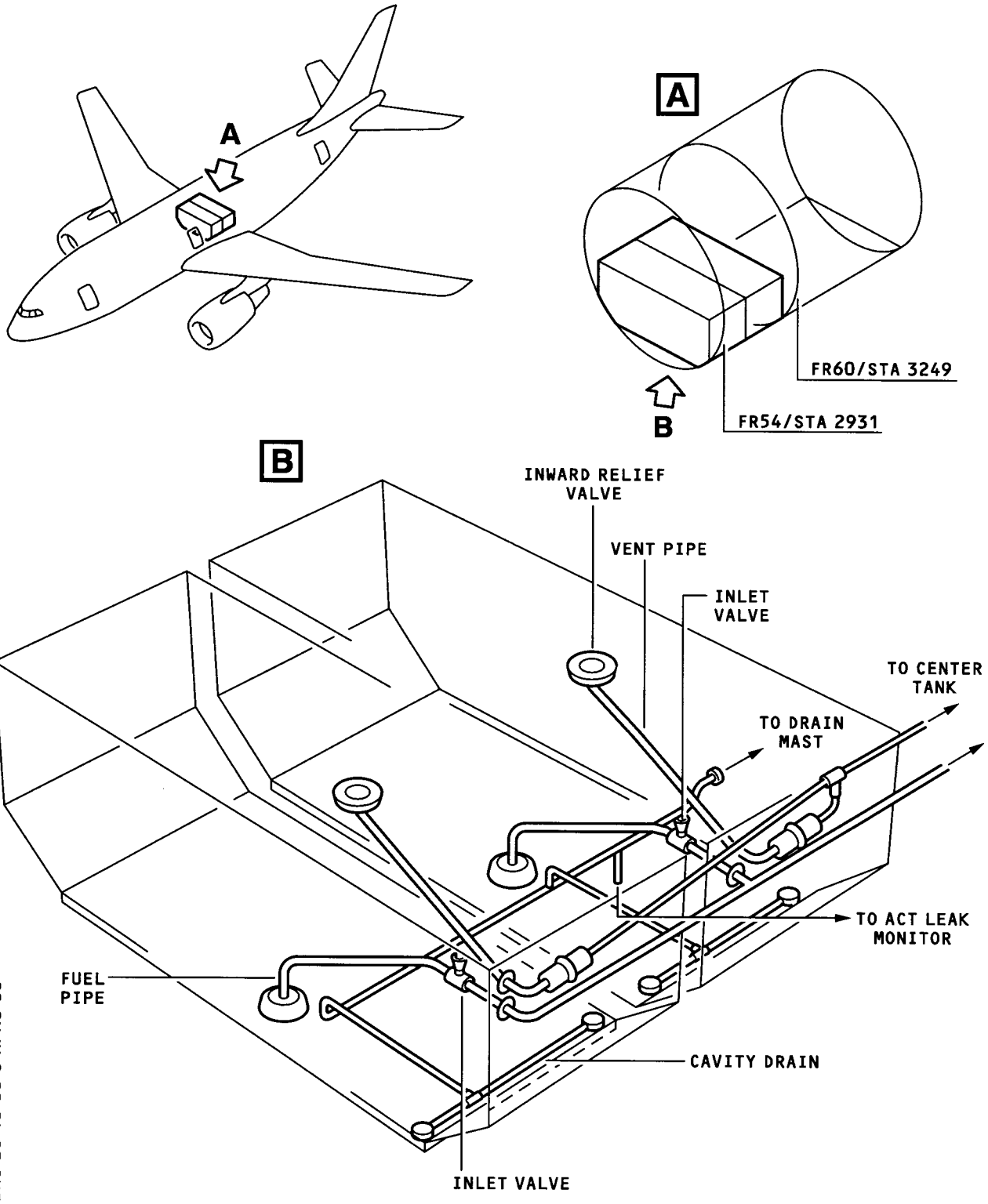
(Ref. Fig. 009)

**ON A/C 101-200,

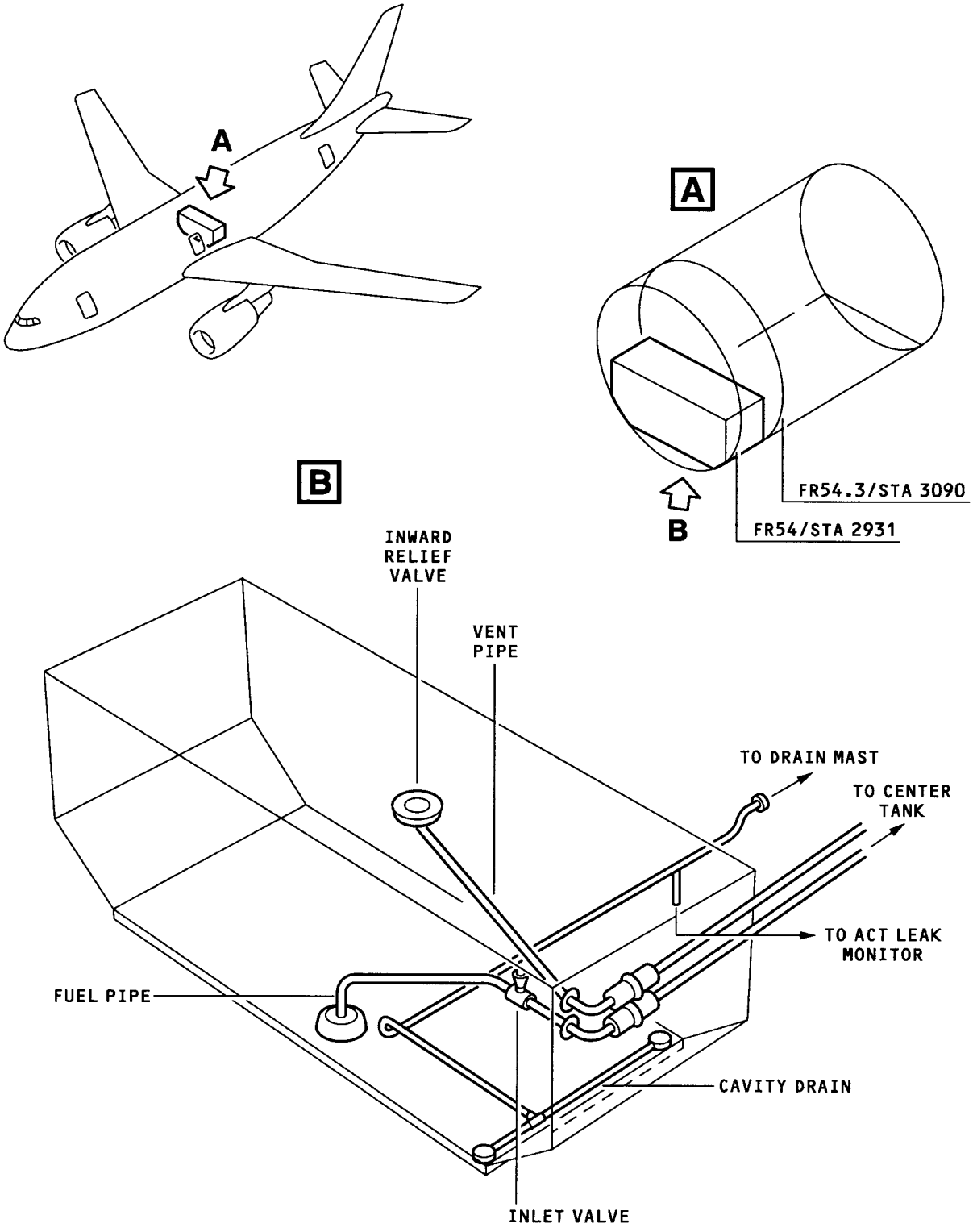
(Ref. Fig. 010)

**ON A/C ALL

A. Vapor Seal
(1)Center Tank
The vapor seal has a flexible glass fiber membrane with a layer of elastomer. In some areas, adjacent to equipment in the air conditioning compartment, the membrane is made of aluminum alloy. The membrane is attached to the pressure floor and fuselage sides to provide a sealed interspace at the tank front face and lower surface. The membrane is

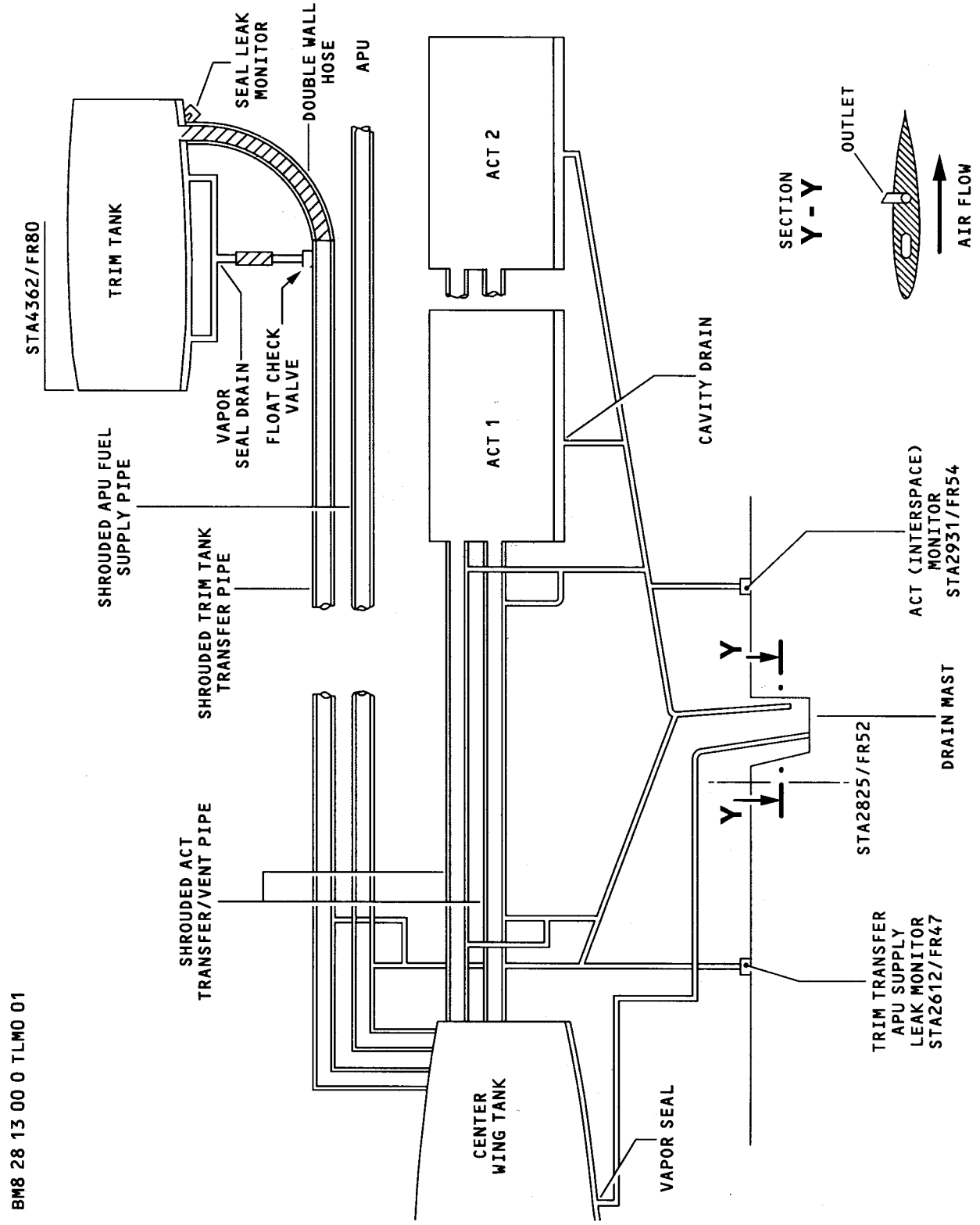


ACT(s) - Drainage
Figure 004



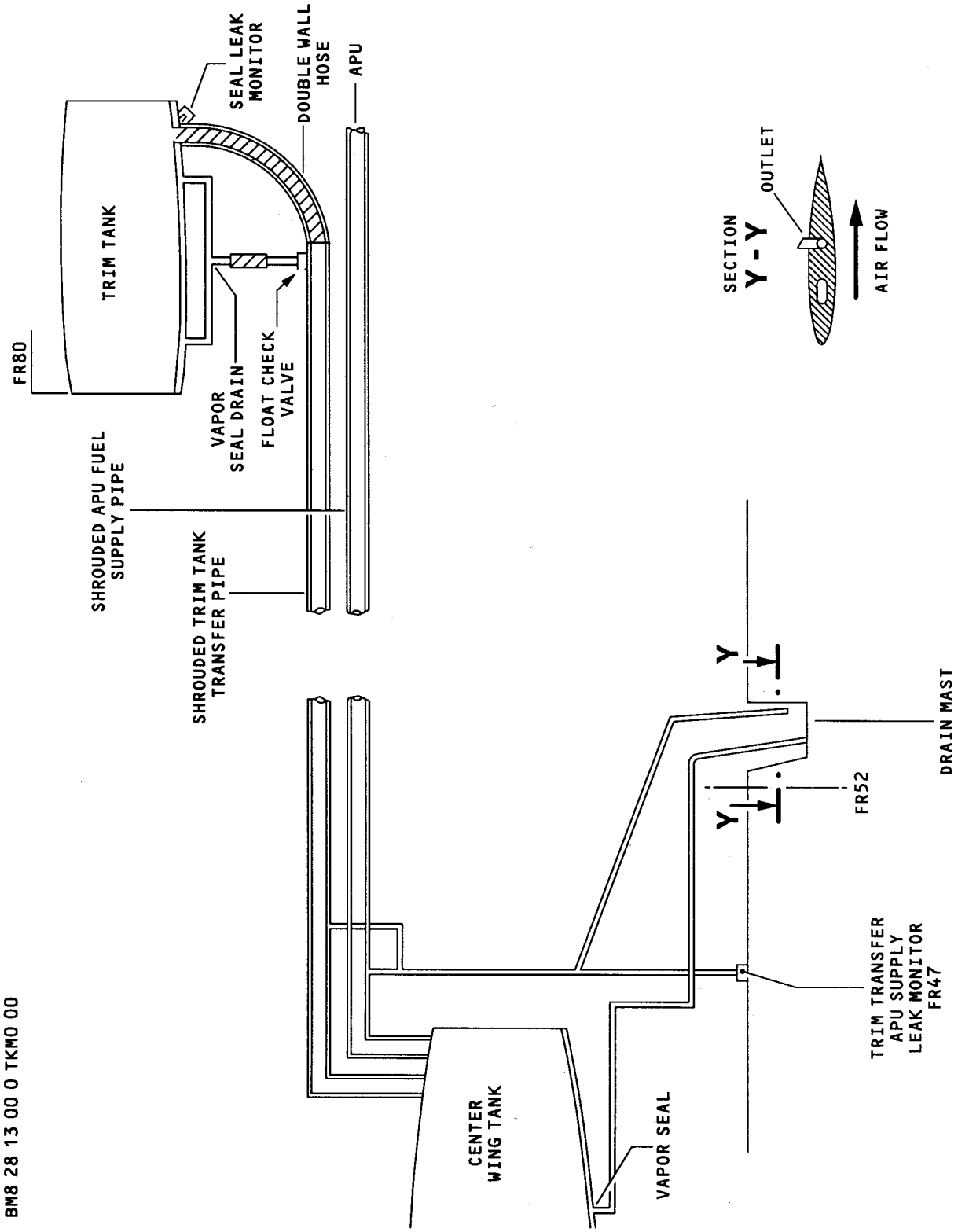
ACT - Drainage
Figure 005

R

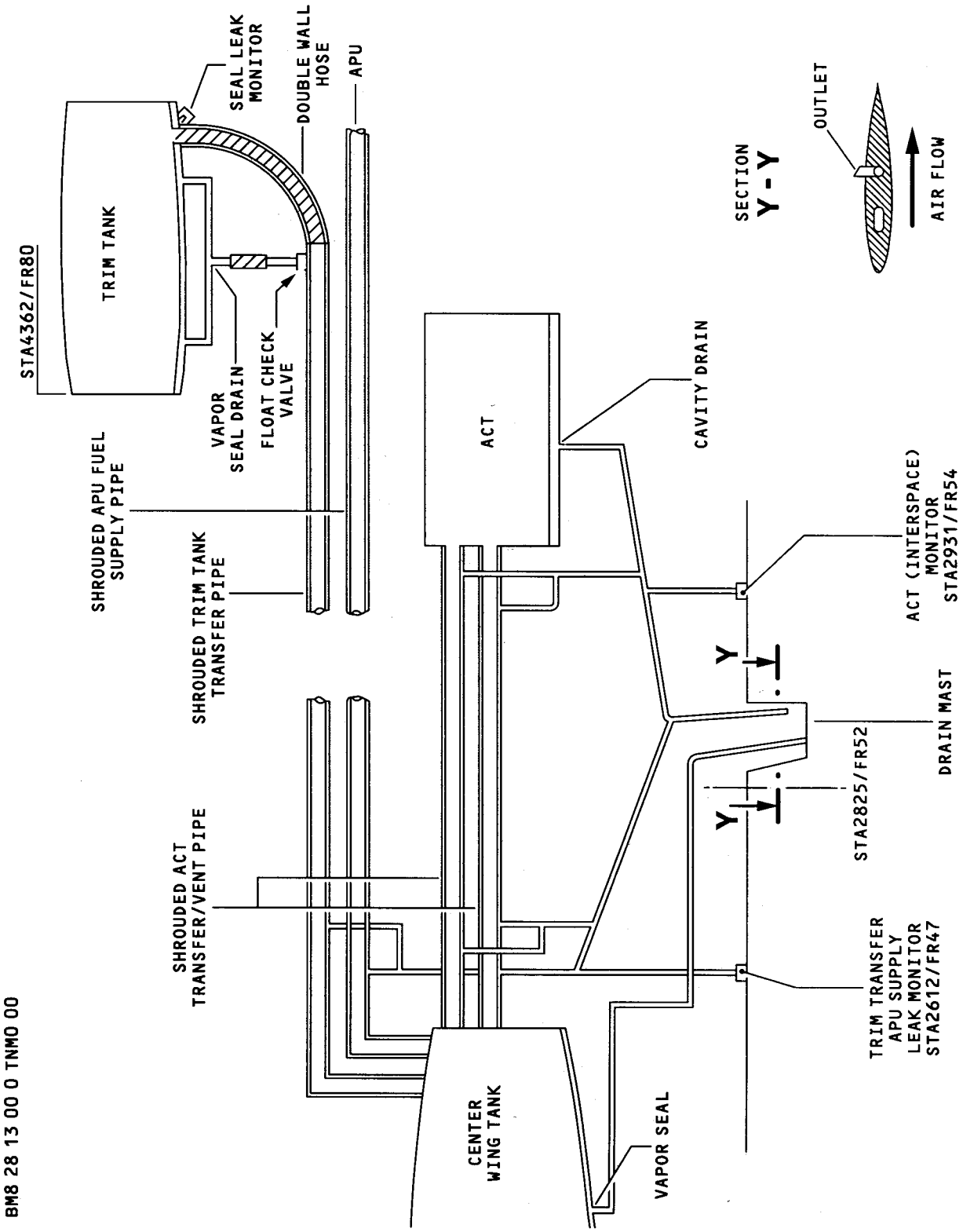


Vapor Seal and Shroud Ventilation System
Figure 006

R

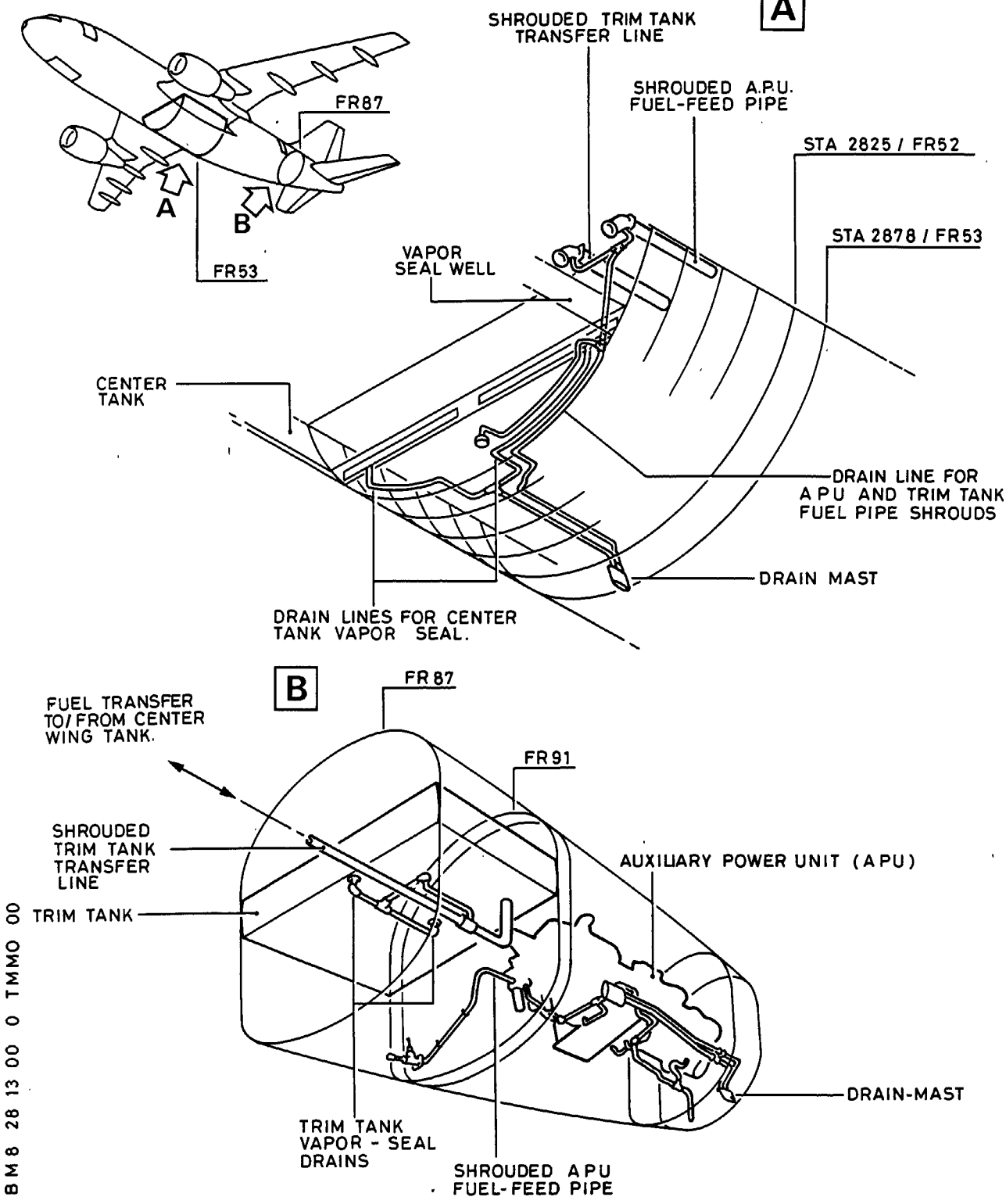


Vapor Seal and Shroud Ventilation System
Figure 007

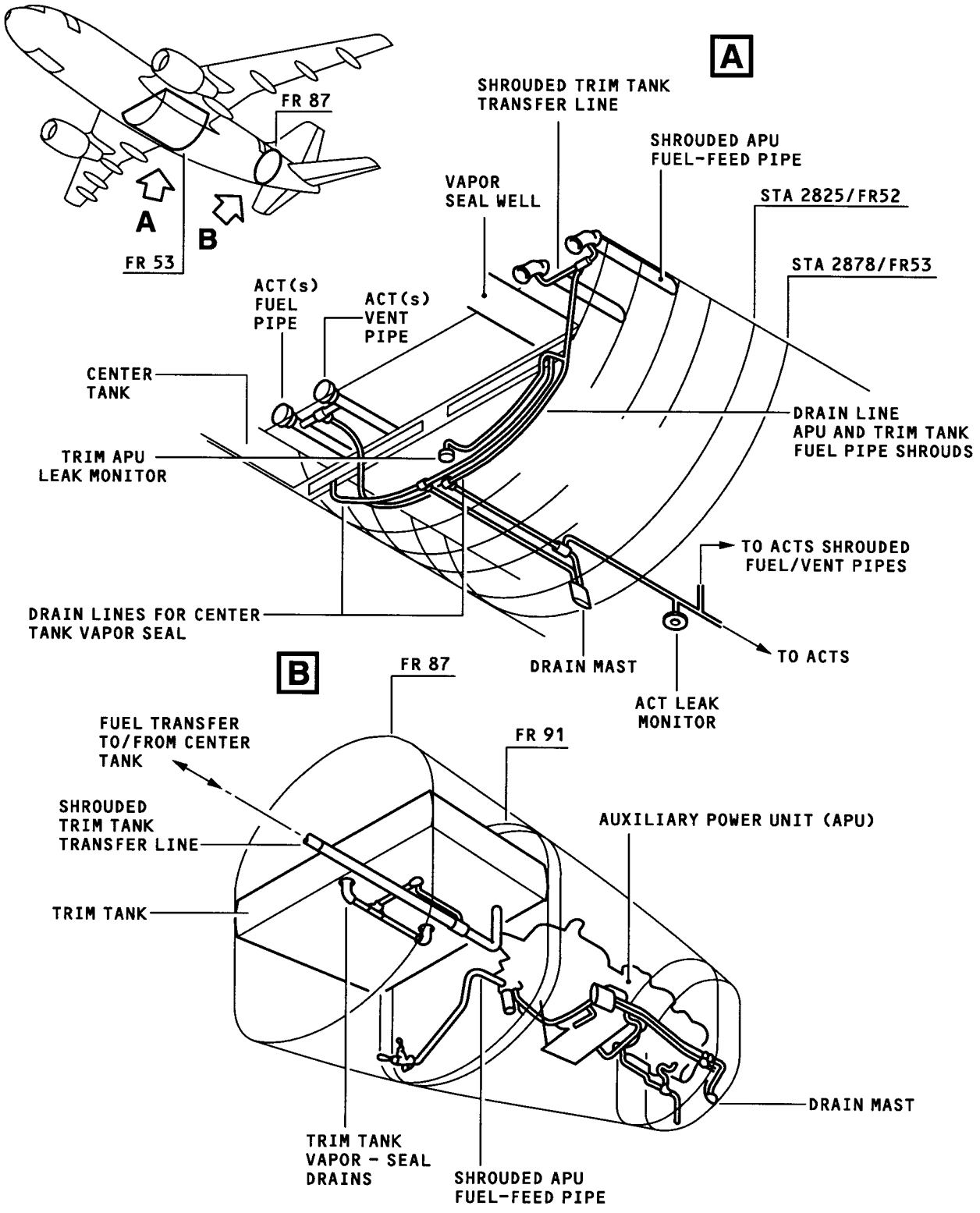


Vapor Seal and Shroud Ventilation System
Figure 008

R



Fuel-Leak Drainage System
Figure 009



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Fuel-Leak Drainage System
Figure 010

R

retained by aluminium-alloy clamp strips and bolts.

(2)Trim Tank
The vapor seal comprises of flexible membrane coated with an elastomer. The membrane is attached to the tank structure front, rear and sides, up to the horizontal stabilizer cut out shield. The membrane is retained by aluminium alloy clamp strips and bolts.

B. Ventilation System
(1)Center Tank
Air flows from the pressurized zone through a line located at FR40/41 which is connected to a transverse distribution pipe immediately below the pressure floor. The distribution pipe has holes drilled along its length through which the air flows by cabin ambient-pressure differential.

(2)Trim Tank
Air flows from the air inlet located at the LH side of the lower rear fuselage cone (FR86/87) via a flexible hose to a T-joint from which two distribution pipes are connected. Air then flows into the vapor seal interspace at the front spar area via the distribution pipes, by ambient pressure differential.

C. Drainage and Exhaust

(1)Center Tank
A drainage and exhaust network at low points in the base of the vapor seal is connected to an outlet in a drain mast located in the fuselage bottom skin. The system network forms the ventilation-air exhaust path and liquid drain path. The drain points are located each side of the vapor seal at FR47/48 and the drain mast between FR52 and FR53.
(2)Trim Tank
A drainage and exhaust network at two low points in the base of the trim-tank vapor seal is connected to the trim-tank transfer pipe shroud. The shroud drain line is connected to an outlet in the drain mast located in the fuselage bottom skin between FR52 and FR53. The system network forms the ventilation-air exhaust path and the liquid drain path in the trim-tank fuel transfer line and the A.P.U. fuel feed line.

**ON A/C 101-200,

(3)ACT(s) (if installed)
The interspace drain(s) in the ACT(s) (if installed) are connected to the drain mast. An outward differential pressure will be maintained across the liner wall if a lower pressure exists at the drain mast outlet than at the Wing-vent-tank NACA intake. To make sure that the differential pressure is not greater than the tank liner can withstand, an inward relief valve (IRV) is installed.

**ON A/C 001-100,

(3)Not applicable.

(4)Leak Monitor
Fuel that drains from the vapor seal(s) and shroud(s) can be detected by a leak monitor. The leak monitor is a manually operated drain valve installed in the fuselage bottom skin at FR47.

**ON A/C 101-200,

(4)Leak Monitors
Fuel that drains from the vapor seals and shrouds can be detected by leak monitors. The leak monitors are manually operated drain valves installed in the fuselage bottom skin at FR47 and FR54.1.

WARNING : LANDING GEAR - MAKE SURE THAT THE GROUND SAFETIES AND CHOCKS ARE IN POSITION.

FLIGHT CONTROLS - MAKE SURE THAT THE GROUND SAFETIES AND NOTICES ARE IN POSITION.

MAKE SURE THAT YOU ISOLATE THE ELECTRICAL CIRCUITS UPON WHICH WORK IS IN PROGRESS.

OBEY THE SAFETY PRECAUTIONS IN 28-00-00, P. BLOCK 301.

MAKE SURE THAT THE FIRE FIGHTING EQUIPMENT IS AVAILABLE AND ADEQUATE.

1. Functional Test - Center Tank System

A. Reason for the Job
(1)Free flow test of system lines.
(2)Leak test of external ventilation of center tank.

B. Equipment and Materials

	ITEM	DESIGNATION
	A.	Access platform 2.5 m (8 ft)
R	B.	Ground Pressure Generator (GPG) to supply
R		clean air and regulate for pressures upto
R		20 mb (0.29 psi) or if available:
		- Locally supplied clean air connected to a Fisher Type S301 Gas Regulator that can regulate for pressures upto 20 mb (0.29 psi).
	C.	Blanking Caps/Plugs
	D.	Leak Detecting Soap Solution

**ON A/C 001-100, 105-200,

Post SB 28-2063 For A/C 001-100,105-200,

	E.	Rubber Plug (Quantity 16)

**ON A/C ALL

Referenced Procedures

- 20-28-11, P. Block 301	Electrical Bonding
- 28-00-00, P. Block 301	Fuel - General
- 28-13-21, P. Block 801	Vapor Seals Approved Repairs
- 32-12-11, P. Block 301	Main Gear Main Door

C. Procedure

**ON A/C 001-100,

(Ref. Fig. 501) (Sheet 1/2)

**ON A/C 101-200,

(Ref. Fig. 502) (Sheet 1/2)

**ON A/C 001-100,

(Ref. Fig. 501) (Sheet 2/2)

**ON A/C 101-200,

(Ref. Fig. 502) (Sheet 2/2)

**ON A/C 001-100, 105-200,

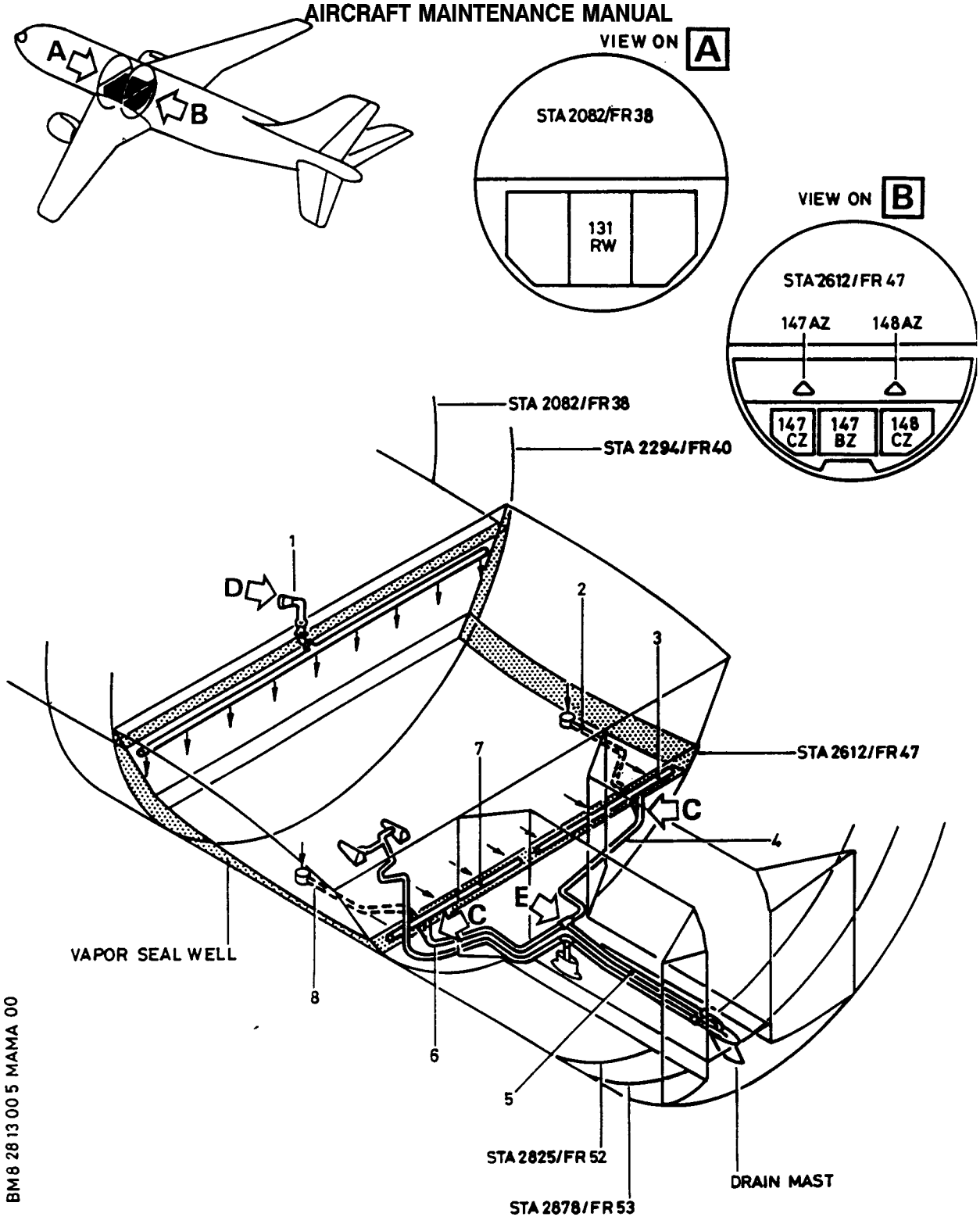
Post SB 28-2063 For A/C 001-100,105-200,

(Ref. Fig. 503)

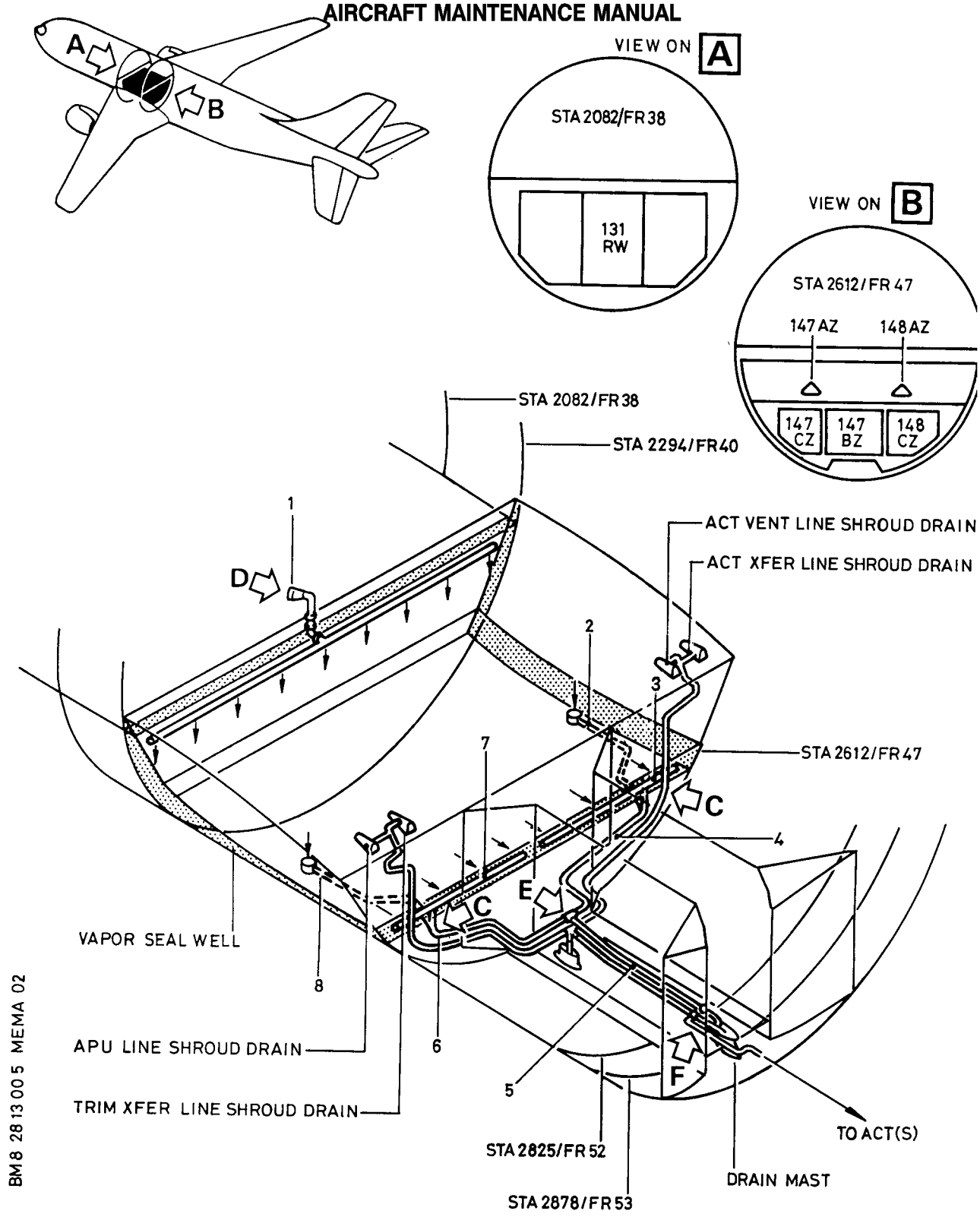
**ON A/C ALL

(1)Job Set-Up
(a)Open main landing gear bay doors (Ref. 32-12-11, P. Block 301).
(b)Position access platform.
(c)Remove the access doors 147CZ, 147BZ and 148CZ.
(d)Disconnect vent lines (3,7) and drainage lines (2,8) from junctions on lines (4,6).
(e)Remove the access door 131RW.
(f)Remove the nuts (19) and (21) and the bolts (13) and (18).
(g)Remove the bonding strap (20) from the pipe (12) and the preseal assembly (17).
(h)Remove fasteners (11), securing the pipe (12) to the bracket (10).
(j)Loosen hose clips (14) and (16).
(k)Remove the pipe (12), the sleeve (15) and the hose clips (14) and (16).
(2)Test

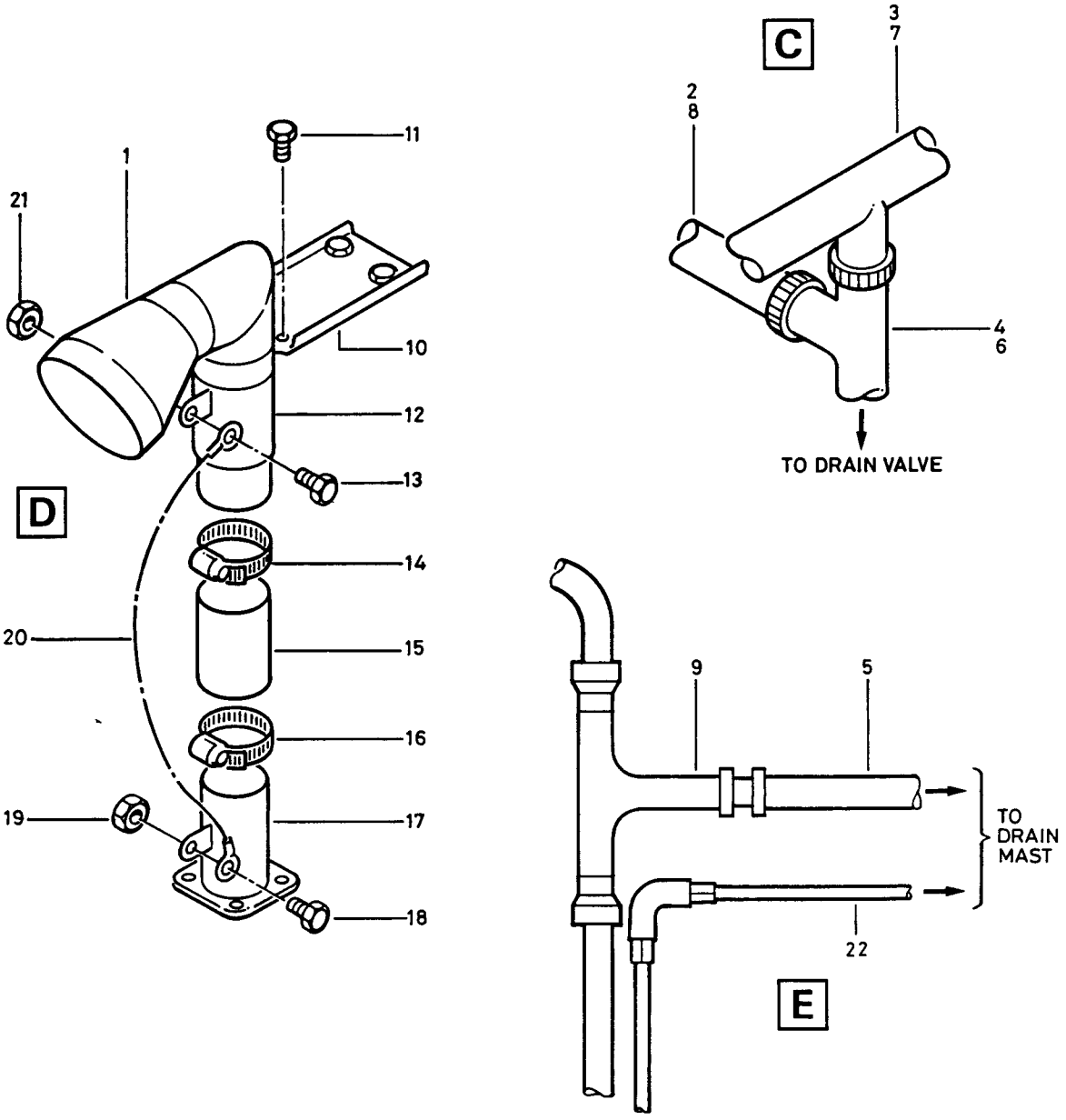
CAUTION : BEFORE YOU START THE TEST, MAKE SURE THAT THE TEST EQUIPMENT INCLUDES A SAFETY SYSTEM TO PREVENT ANY OVERPRESSURE WHICH COULD DAMAGE THE AIRCRAFT. THE PRESSURE MUST NOT RISE ABOVE 10 MB (0.145 PSI) DURING THE LEAK TEST.



Flow/Leak Test - Center Tank External
Ventilating System (Sheet 1/2)
Figure 501



Flow/Leak Test - Center Tank External
Ventilating System (Sheet 1/2)
Figure 502



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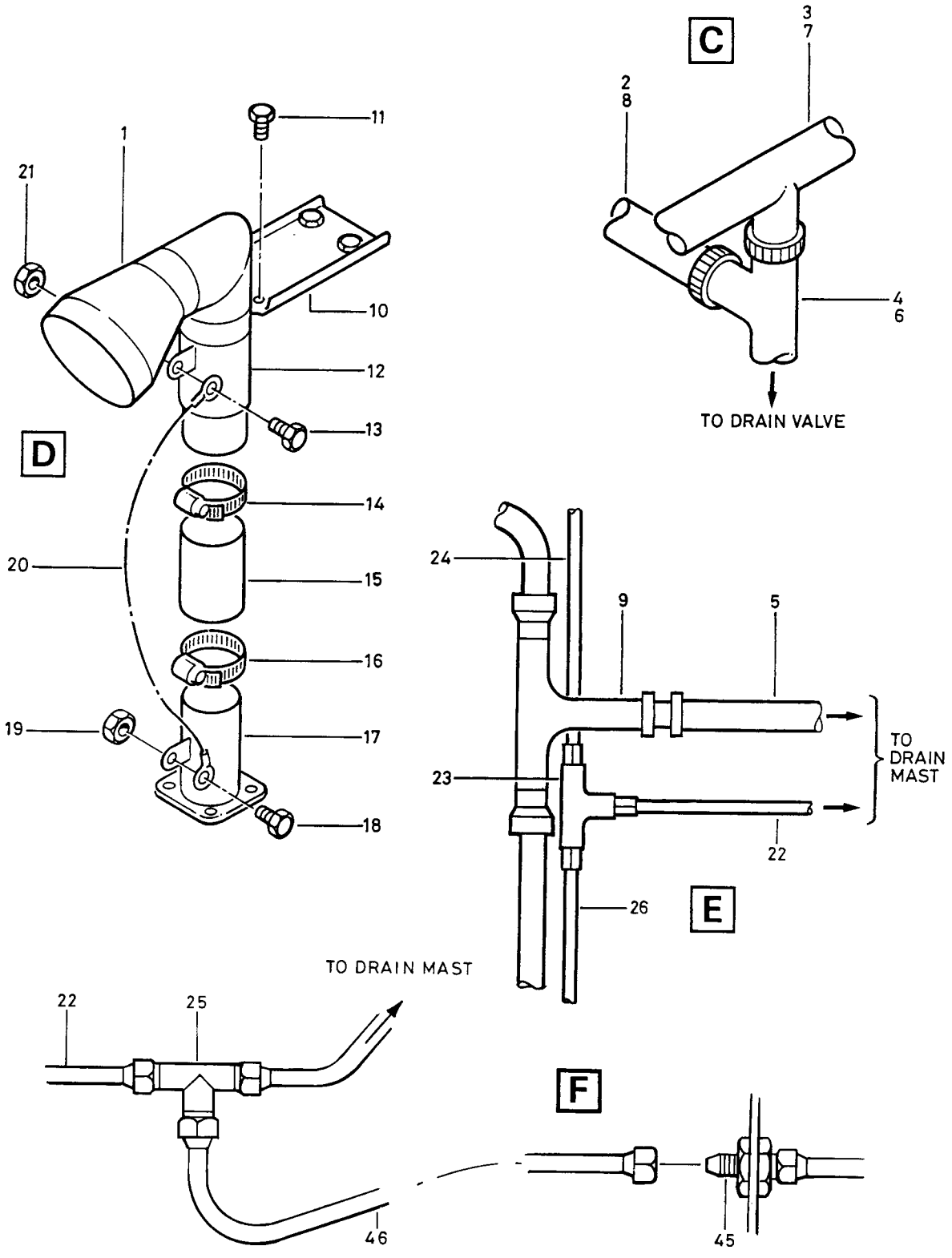
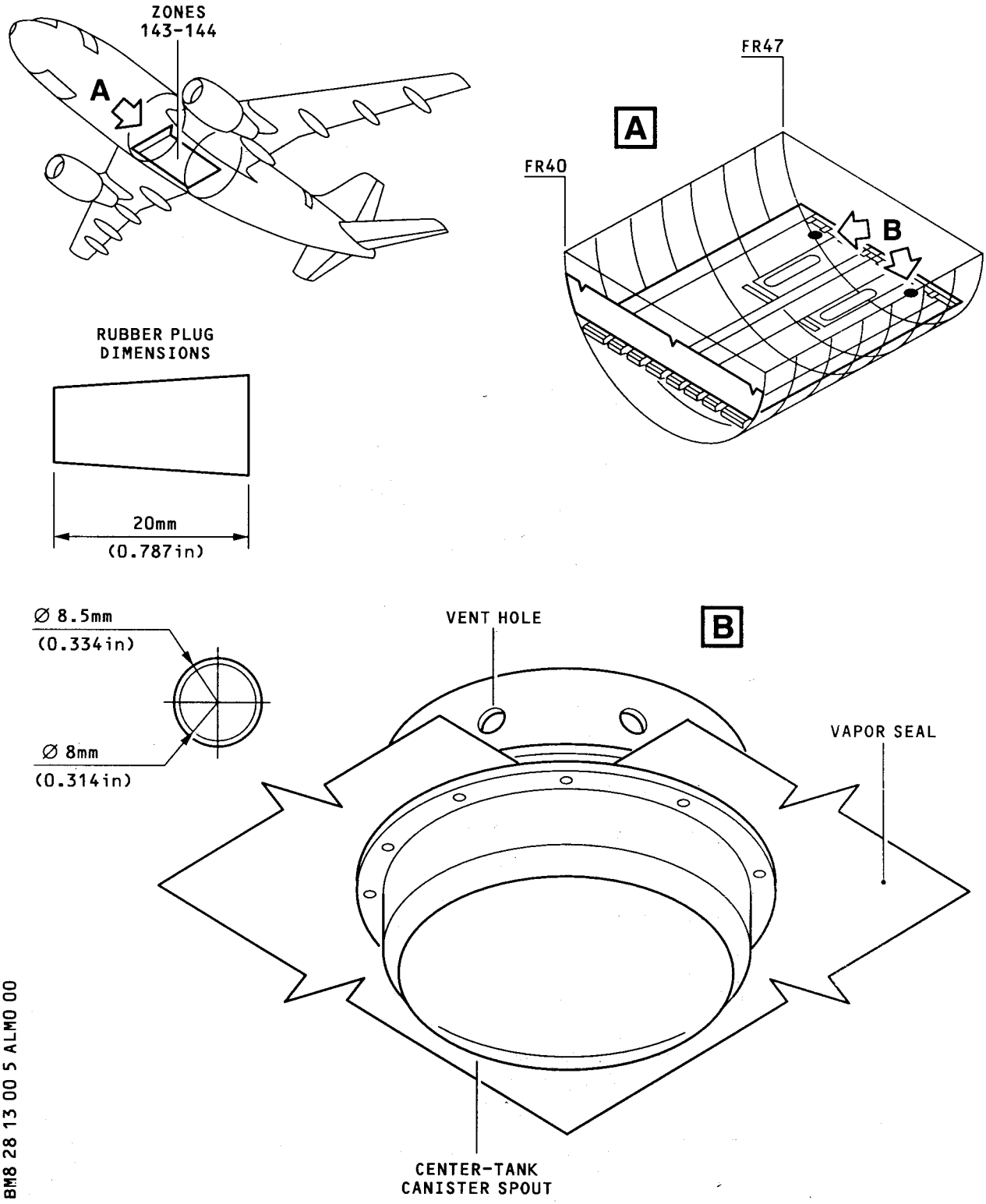
Flow/Leak Test - Center Tank External
Ventilating System (Sheet 2/2)
Figure 501



Flow/Leak Test - Center Tank External
Ventilating System (Sheet 2/2)
Figure 502

R



Vent Holes in Center-Tank Canister Spouts
Figure 503

ACTION	RESULT
Test of system lines:	
1. Pipe (12):	
- Make sure that the pipe (12) is clear and free from obstruction and manually make sure that the valve (1) operates freely.	
2. Preseal assembly (17), the vent lines (3) and (7), the drainage lines (2) and (8):	
- Connect the air supply to the preseal assembly (17) then set the maximum pressure to 20 mb (0.29 psi).	
- Start the air supply.	- Air flows from the vent lines (3) and (7) and the drainage lines (2) and (8).
- Stop the air supply.	- The air flow stops.
3. Lines (4), (5) and (6) and the drainmast:	
- Connect the air supply to the vent port on the junction, on line (4).	
- Start the air supply.	- Air flows from the drainage line junction, on line (4), the vent and drainage line junctions on line (6) and from the drainmast.
- Stop the air supply.	- The air flow stops.
NOTE : If no air flows from the lines tested, remove the applicable line and clear the obstruction.	
4. Disconnect pipe (5) from T-piece (9) and install a blanking cap on the open end of the T-piece.	
5. Connect the vent lines (3) and (7) and the drainage lines (2) and (8) to the junctions on lines (4) and (6).	
Leak test:	

ACTION	RESULT

CAUTION : BEFORE YOU CONNECT THE GPG AIR SUPPLY TO THE AIRCRAFT, MAKE SURE THAT THE GPG PRESSURE GAGE IS ACCURATE IN THE RANGE 0 TO 10 MB (0 TO 0.145 PSI). IF NECESSARY, INSTALL A SEPARATE PRESSURE GAGE ACCURATE IN THE RANGE 0 TO 10 MB (0 TO 0.145 PSI) BETWEEN THE AIR SUPPLY AND THE CONNECTION POINT ON THE AIRCRAFT.

6. Connect the air supply to the preseal assembly (17) then set the maximum pressure to 10 mb (0.145 psi).

   - Start the air supply and slowly pressurize the system at 10 mb (0.145 psi) for 30 minutes minimum (to stabilize the pressure).

   - Stop the air supply and monitor the pressure. — The pressure must not decrease more than 7mb (0.10 psi) in 30 seconds.

   - Release the pressure.

     NOTE : If the pressure drop exceeds the limit, use a soap solution to locate leaks in the lines or vapor seal. If a leak is found in the lines, repair as necessary. If a leak is found in the vapor seal, repair the vapor seal (Ref. 28-13-21, P. Block 801).

   - Do the test again, make sure the pressure drop is within limits.

   (3)Close-Up
   (a)Disconnect the air supply from the preseal assembly (17).
   (b)Install the pipe (12) and the sleeve (15) to the preseal assembly (17) and install the hose clips (14) and (16).
   (c)Install the fasteners (11) to attach the pipe (12) to the bracket (10).
   (d)Install the bonding strap (20) to the pipe (12) and the preseal assembly (17) with the nuts (19) and (21) and the bolts (13) and (18).
   (e)Remove the blanking cap from T-piece (9) and connect pipe (5).
   (f)Make sure that the work area is clean and clear of all tools and other items of equipment.

   CAUTION : MAKE SURE THAT ALL THE FASTENERS AND PIP PINS ARE CORRECTLY INSTALLED AND SECURED WHEN YOU INSTALL THE ACCESS DOORS AT FR47.

   (g)Install the access doors 131RW, 147CZ, 147BZ and 148CZ.
   (h)Remove the access platform.

(j)Close the main landing-gear bay-doors (Ref. 32-12-11, P. Block 301).

**ON A/C 001-100, 105-200,

Post SB 28-2063 For A/C 001-100,105-200,

CAUTION : BEFORE YOU START THE TEST, MAKE SURE THAT THE TEST EQUIPMENT INCLUDES A SAFETY SYSTEM TO PREVENT ANY OVERPRESSURE WHICH COULD DAMAGE THE AIRCRAFT. THE PRESSURE MUST NOT RISE ABOVE 10 MB (0.145 PSI) DURING THE TEST.

ACTION	RESULT
Test of system lines: 1. Pipe (12): - Make sure that the pipe (12) is clear and free from obstruction and manually make sure that the valve (1) operates freely.	
2. Preseal assembly (17), the vent lines (3) and (7), the drainage lines (2) and (8) and the center-tank canister spouts: - Connect the air supply to the preseal assembly (17) then set the maximum pressure to 20 mb (0.29 psi).	
- Start the air supply.	- Air flows from the vent lines (3) and (7), the drainage lines (2) and (8) and the vent holes in the two center-tank canister spouts.
- Stop the air supply.	- The air flow stops.
3. Lines (4), (5) and (6) and the drainmast: - Connect the air supply to the vent port on the line (4) junction.	
- Start the air supply.	- Air flows from the drainage line junction on line (4), the vent and drainage line junctions on line (6) and from the drainmast.
- Stop the air supply.	- The air flow stops.

ACTION	RESULT

NOTE : If air does not flow from the lines tested, remove the applicable line and clear the obstruction.

4. Connect the vent lines (3) and (7) and the drainage lines (2) and (8) to the junctions on the lines (4) and (6).

Leak test:

5. Disconnect pipe (5) from the T-piece (9) and install a blanking cap on the open end of the T-piece.

6. Install the rubber plugs in the vent holes of the two center-tank canister spouts.

CAUTION : BEFORE YOU CONNECT THE GPG AIR SUPPLY TO THE AIRCRAFT, MAKE SURE THAT THE GPG PRESSURE GAGE IS ACCURATE IN THE RANGE 0 TO 10 MB (0 TO 0.145 PSI). IF NECESSARY, INSTALL A SEPARATE PRESSURE GAGE ACCURATE IN THE RANGE 0 TO 10 MB (0 TO 0.145 PSI) BETWEEN THE AIR SUPPLY AND THE CONNECTION POINT ON THE AIRCRAFT.

7. Connect the air supply to the preseal assembly (17) and set the maximum pressure to 10 mb (0.145 psi).

   - Start the air supply and slowly pressurize the system at 10 mb (0.145 psi) for 30 minutes minimum (to stabilize the pressure).

   - Stop the air supply and monitor the pressure.
     - The pressure must not decrease more than 7 mb (0.10 psi) in 30 seconds.

   - Release the pressure.

     NOTE : If the pressure drop exceeds the limit:
     - Pressurize the system at 10 mb (0.145 psi) and use the soap solution to locate the leak(s) in the lines and/or the vapor seal.
     - Repair any leaks in the lines as applicable.
     - Repair any leaks in the vapor seal as detailed in 28-13-21, P. Block 801.
     - Do the test again and make sure the pressure drop is within the limits.

(3)Close-Up
(a)Disconnect the air supply from the preseal assembly (17).
(b)Install the pipe (12) and the sleeve (15) on the preseal assembly (17) and attach with the hose clips (14) and (16).
(c)Install the fasteners (11) to attach the pipe (12) to the bracket (10).
(d)Install the bonding strap (20) to the pipe (12) and the preseal assembly (17) with the nuts (19) and (21) and the bolts (13) and (18).
(e)Remove the blanking cap from the T-piece (9) and connect the pipe (5).
(f)Remove the rubber plugs from the two center-tank canister spouts.
(g)Make sure that the work area is clean and clear of all tools and other items of equipment.

CAUTION : MAKE SURE THAT ALL THE FASTENERS AND PIP PINS ARE CORRECTLY INSTALLED AND SECURED WHEN YOU INSTALL THE ACCESS DOORS AT FR47.

(h)Install the access doors 131RW, 147CZ, 147BZ and 148CZ.
(j)Remove the access platform.
(k)Close the main landing-gear bay doors (Ref. 32-12-11, P. Block 301).

**ON A/C ALL

2. Functional Test - Trim Tank System

A. Reason for the Job
(1)Free flow test of vent/drain system and vapor seal.
(2)Pressure test of vent/drain system and vapor seal.
(3)Leak test of vapor seal covers and access panels.
(4)Leak test of O-ring seals.
(5)Trim Tank and ACT Combined Vent/Drain System Leak Test

B. Equipment and Materials

ITEM	DESIGNATION
A.	Access Platform 4.8 m (16 ft)
B.	Access Platform 2.5 m (8 ft) (if applicable)
C.	Clean air supplied and regulated for pressures upto 345 mb (5 psi). Use the list that follows for the selection of the Ground Pressure Generators (GPG's): - Type APICS (P/N 6000KTQ or 6200KTQ) or - Type GP120 (P/N 68001-400-2) or - Type GP30 (P/N 68001-606-1) or - Type S10 or equivalent or (if available) - Locally supplied clean air connected to a Fisher Type S301 Gas Regulator that can

ITEM	DESIGNATION
	regulate for pressures upto 345 mb (5 psi).
D. 97A28002542000	Adapter, Drain Mast
E. 97A28002534000	Adapter, Venting Vapor Seal
F. 97A28002549000	Adapter, O-ring seals
G.	Leak Detecting Soap Solution
H.	Container 1 liter (0.26 US Gal)
J.	Blanking Plugs/Caps
Referenced Procedures	
- 28-13-21, P. Block 801	Vapor Seals
- 28-13-31, P. Block 601	Drain Shroud
- 28-25-00, P. Block 301	Refuel/Defuel System
- 32-12-11, P. Block 301	Main Gear Main Door (if applicable)
- 55-00-00, P. Block 301	Stabilizers - General

C. Free Flow Test of Vent/Drain System and Vapor Seal.

**ON A/C 101-200,

(Ref. Fig. 502)

**ON A/C ALL

(Ref. Fig. 504) (Sheet 1/3)
(Ref. Fig. 504) (Sheet 2/3)
(Ref. Fig. 504) (Sheet 3/3)

(1)Job Set-Up

(a)Make trimmable horizontal stabilizer (THS) and vertical stabilizer safe (Ref. 55-00-00, P. Block 301).

**ON A/C 001-100,

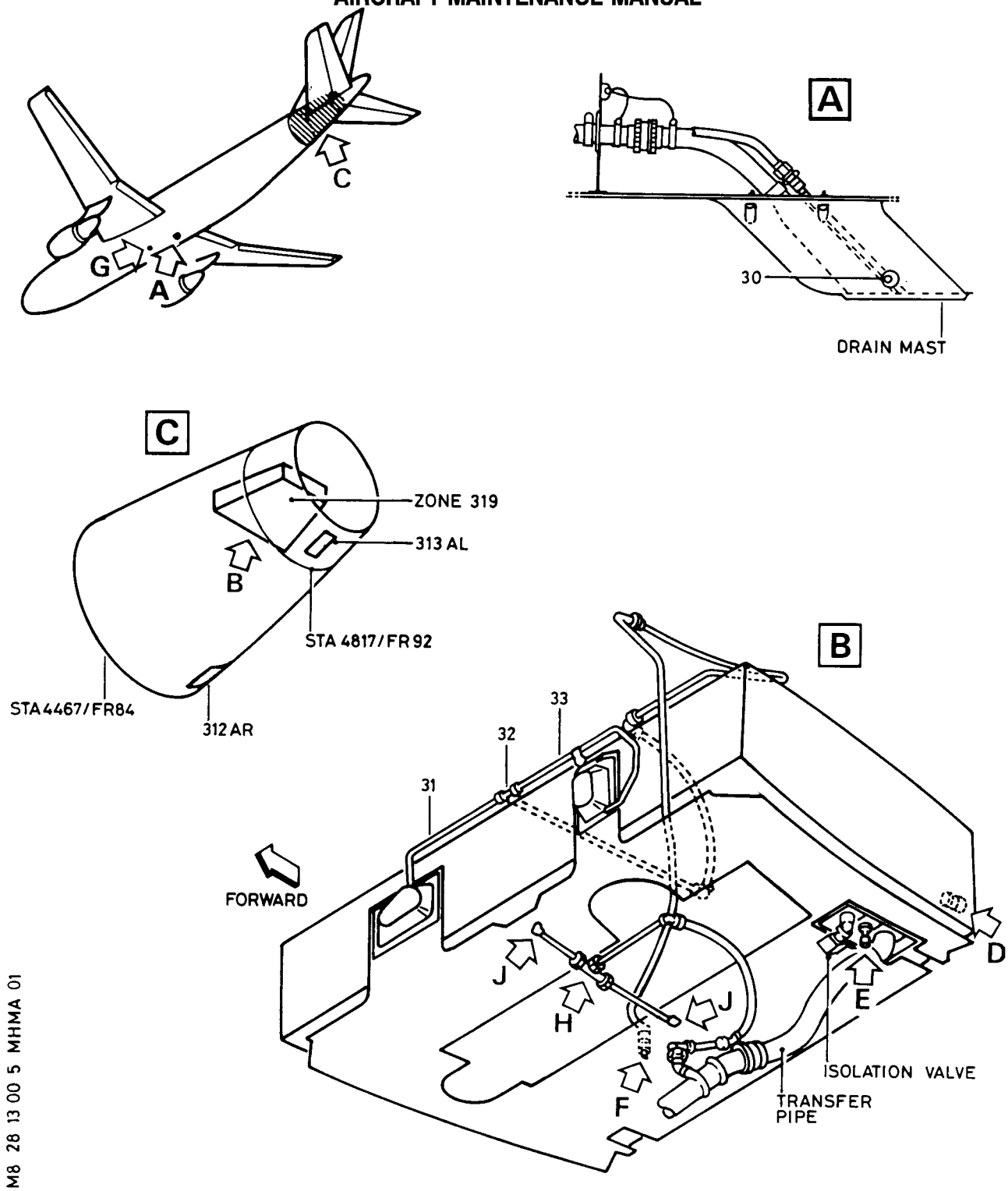
(b)Not applicable.
(c)Not applicable.
(d)Not applicable.

**ON A/C 101-200,

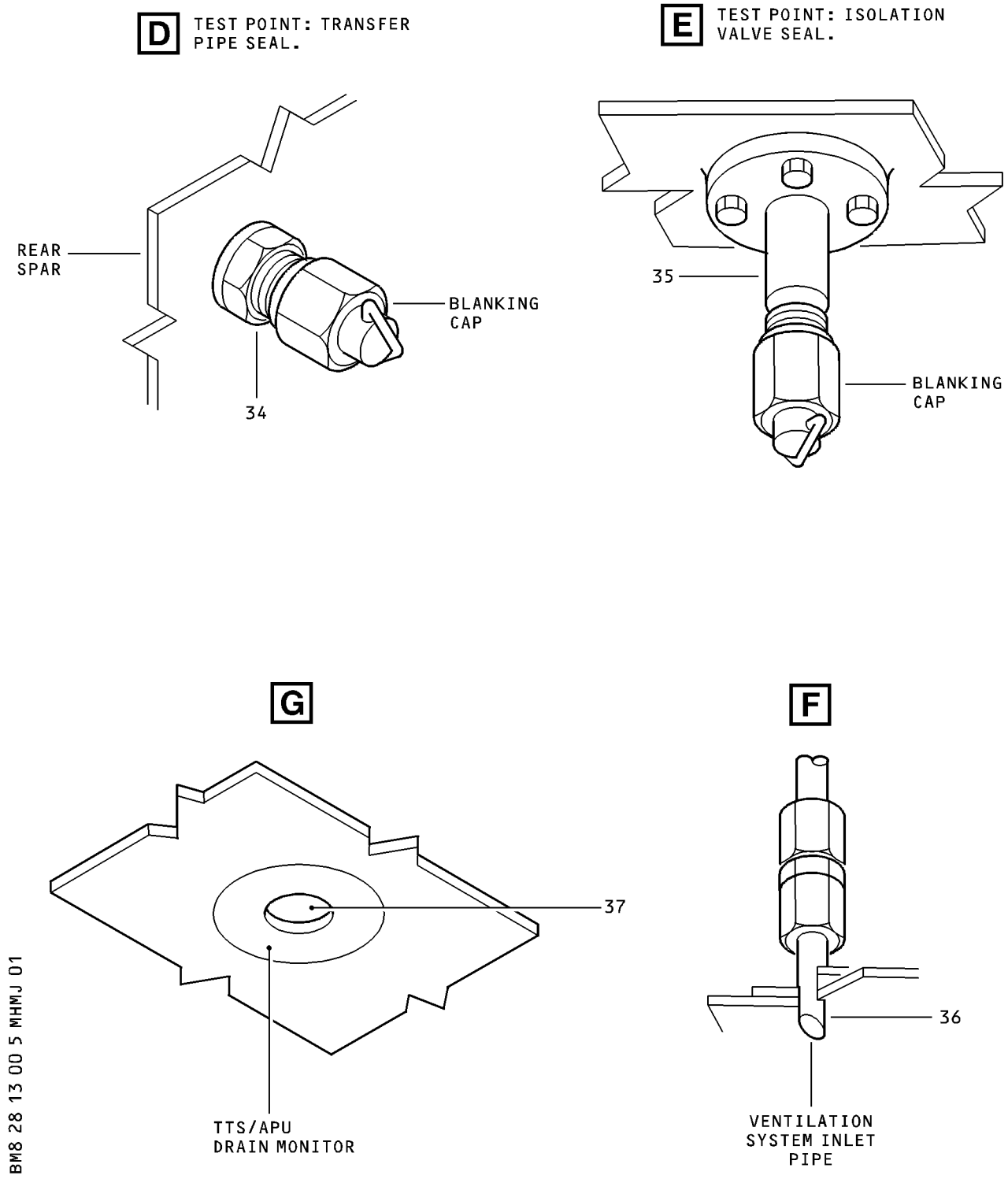
(b)Open the right hand main-landing-gear bay door (Ref. 32-12-11, P. Block 301) and position the access platform.
(c)Remove the access panels 147CZ, 147BZ and 148CZ.
(d)Disconnect the pipe (24) from the T-piece (23) and cap the open end of the T-piece (23).

**ON A/C ALL

(e)At STA2612/FR 47, put the container below the TTS/APU drain monitor and push (in) the plunger (37). If fuel is present, carry out the leak test (Ref. 28-13-31, P. Block 601).

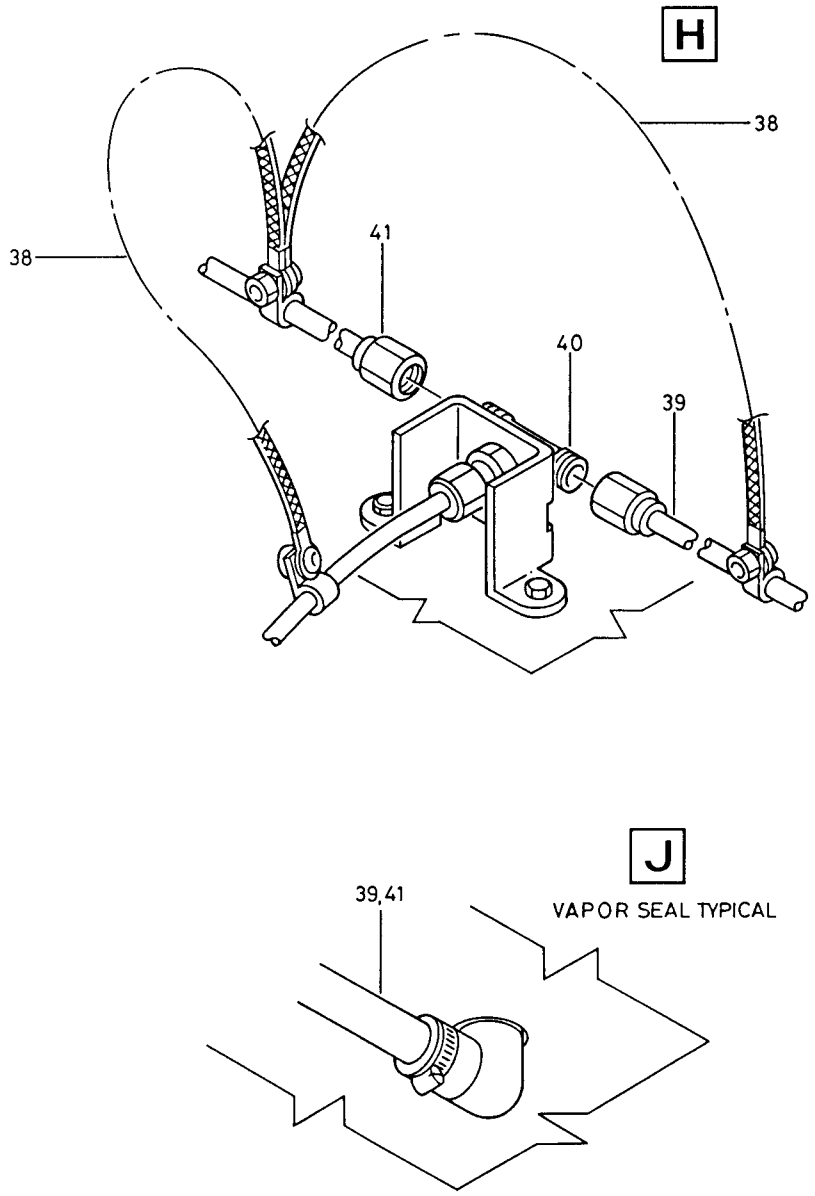


Functional Test - Trim Tank System
(Sheet 1/3)
Figure 504



Functional Test - Trim Tank System
(Sheet 2/3)
Figure 504

R



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Functional Test - Trim Tank System
(Sheet 3/3)
Figure 504

NOTE : The drain monitor must not leak fuel.

(f)Release (out) the plunger (37) and remove the container.
(g)Position the access platform and open the access door 312AR.
(h)In zone 319, connect the adapter PN 97A28002534000 to the ventilation system inlet-pipe (36).
(j)Connect the air supply to the adapter PN 97A28002534000.
(k)Disconnect the pipe (31) from the T-piece (32). Cap the open line end and the T-piece.
(l)Disconnect the pipes (39) and (41) from the T-piece (40). Make sure that you do not damage the bonding leads (38) or the vapor seal. Cap the open ends of T-piece (40).
(m)Blank the APU ventilation air intake at FR95 to avoid any air leak of the system.

(2)Test

CAUTION : BEFORE YOU START THE TEST, MAKE SURE THAT THE TEST EQUIPMENT INCLUDES A SAFETY SYSTEM TO PREVENT ANY OVERPRESSURE WHICH COULD DAMAGE THE AIRCRAFT.

ACTION	RESULT
1. In zone 319:	
- Set the air supply maximum pressure to 20 mb (0.29 psi).	
- Start the air supply.	In zone 319: - The air flows from the pipes (39) and (41).
- Stop the air supply.	- The air flow stops.
2. Remove the caps and connect pipe (31) to T-piece (32).	
3. Disconnect pipe (33) from T-piece (32). Cap the open line end and the T-piece.	
- Start the air supply.	- The air flows from the pipes (39) and (41).
- Stop the air supply.	- The air flow stops.
4. Remove the caps, and connect pipe (33) to T-piece (32) and pipes (39) and (41) to T-piece (40).	
- Start the air supply.	At FR 52/53: - The air flows from the drainmast outlet (30).

ACTION	RESULT
5. At FR 47: - Push (in) the plunger (37) on the APU/TTS drain monitor. - Release (out) the plunger (37). - Stop the air supply.	At FR 47: - The air flows from the drain monitor. - The air flow from the drain monitor stops. At FR 52/53: - The air flow from the drain mast outlet (30) stops.

NOTE : If there is no air flow from the lines tested, disconnect the lines and clear the obstruction and do the test again.

**ON A/C 001-100,

(3)Close-Up
(a)Remove the blank from the APU ventilation air intake at FR95.
(b)In zone 319, disconnect the air supply from the adapter PN 97A28002534000, then remove the adapter from the ventilation system inlet-pipe (36).
(c)Make sure that the work area in zone 319 is clean and clear of tools and miscellaneous items of equipment.
(d)Close the access door 312AR and remove the access platform.
(e)Put the horizontal and vertical stabilizers back to the normal operation condition (Ref. 55-00-00, P. Block 301).

**ON A/C 101-200,

(3)Close-Up
(a)Remove the blank from the APU ventilation air-intake at FR95.
(b)In zone 319, disconnect the air supply from the adapter PN 97A28002534000, then remove the adapter from the ventilation system inlet-pipe (36).
(c)Make sure that the work area in zone 319 is clean and clear of tools and miscellaneous items of equipment.
(d)Close the access door 312AR and remove the access platform.
(e)In the main-landing-gear bay, remove the caps from the open ends of the T-piece (23) and reconnect the pipes (22) and (24).
(f)Make sure that the work area in the main-landing-gear bay is clean and clear of tools and miscellaneous items of equipment.
(g)Install the access panels 147CZ, 147BZ, 148CZ.
(h)Remove the access platform and close the right hand main-landing-gear bay-door (Ref. 32-12-11, P. Block 301).
(j)Put the horizontal and vertical stabilizers back to the normal operation condition (Ref. 55-00-00, P. Block 301).

**ON A/C ALL

D. Pressure Test of Vent/Drain System and Vapor Seal.

**ON A/C 001-100,

(Ref. Fig. 504)

**ON A/C 101-200,

(Ref. Fig. 504)
(Ref. Fig. 505)

**ON A/C 001-100,

(1)Job Set-Up
(a)Make the trimmable horizontal stabilizer (THS) and the vertical stabilizer safe (Ref. 55-00-00, P. Block 301).
(b)Put the access platform in position and open the access door 312AR.
(c)In zone 319, connect the adapter PN 97A28002534000 to the ventilation system inlet-pipe (36).

CAUTION : BEFORE YOU CONNECT THE GPG AIR SUPPLY TO THE AIRCRAFT, MAKE SURE THAT THE GPG PRESSURE GAGE IS ACCURATE IN THE RANGE 0 TO 10 MB (0 TO 0.145 PSI). IF NECESSARY, INSTALL A SEPARATE PRESSURE GAGE ACCURATE IN THE RANGE 0 TO 10 MB (0 TO 0.145 PSI) BETWEEN THE AIR SUPPLY AND THE CONNECTION POINT ON THE AIRCRAFT.

(d)Connect the air supply to the adapter PN 97A28002534000.
(e)At STA FR 52/53:
1 Install the adapter PN 97A28002542000 onto the drain mast outlet (30).
2 Blank off the open line end on the adapter.
(f)Blank the APU ventilation air-intake at FR95 to avoid any air leak of the system.

**ON A/C 101-200,

(1)Job Set-Up
(a)Make the trimmable horizontal stabilizer (THS) and the vertical stabilizer safe (Ref. 55-00-00, P. Block 301).
(b)Open the right hand main-landing-gear bay door (Ref. 32-12-11, P. Block 301) and position the access platform.
(c)On the right hand side of the main-landing-gear bay, adjacent to STA2612/FR 47, disconnect the pipeline (47) from the union (48).
(d)Blank the open end of the pipeline (47).

(e)On the lower right hand side of the main-landing-gear bay at STA2931/FR 54, disconnect the pipeline (46) from the union (45).
(f)Blank the open end of the pipeline (46).

NOTE : The ACT vent/drain system is now isolated from the trim tank/APU vent/drain system.

(g)Put the access platform in position and open the access door 312AR.
(h)In zone 319, connect the adapter PN 97A28002534000 to the ventilation system inlet pipe (36).

CAUTION : BEFORE YOU CONNECT THE GPG AIR SUPPLY TO THE AIRCRAFT, MAKE SURE THAT THE GPG PRESSURE GAGE IS ACCURATE IN THE RANGE 0 TO 10 MB (0 TO 0.145 PSI). IF NECESSARY, INSTALL A SEPARATE PRESSURE GAGE ACCURATE IN THE RANGE 0 TO 10 MB (0 TO 0.145 PSI) BETWEEN THE AIR SUPPLY AND THE CONNECTION POINT ON THE AIRCRAFT.

(j)Connect the air supply to the adapter PN 97A28002534000.
(k)At STA FR 52/53:
1 Install the adapter PN 97A28002542000 onto the drain mast outlet (30).
2 Blank off the open line end on the adapter.
(l)Blank the APU ventilation air intake at FR95 to avoid any air leak of the system.

**ON A/C ALL

(2)Test

CAUTION : BEFORE YOU START THE TEST, MAKE SURE THAT THE TEST EQUIPMENT INCLUDES A SAFETY SYSTEM TO PREVENT ANY OVERPRESSURE WHICH COULD DAMAGE THE AIRCRAFT. THE PRESSURE MUST NOT RISE ABOVE 10 MB (0.145 PSI) DURING THE LEAK TEST.

ACTION	RESULT
1. In zone 319: - Set the air supply maximum pressure to 10 mb (0.145 psi).	
2. Start the air supply and slowly pressurize the system to 10 mb (0.145 psi) for at least 30 minutes to stabilize the air pressure.	
3. Stop the air supply and make sure that the pressure drop does not exceed 7 mb (0.10 psi) over a period of 30 seconds.	

ACTION	RESULT

4. Release the pressure.

NOTE : If the pressure drop exceeds the limit, use a soap solution to locate the leak(s). If a leak is found in the lines, repair as necessary. If a leak is found in the vapor seal, repair the seal (Ref. 28-13-21, P. Block 801).

(3)Close-Up
(a)Remove the blank from the APU ventilation air-intake at FR95.
(b)In zone 319, disconnect the air supply from the adapter PN 97A28002534000, then remove the adapter from the ventilation system inlet-pipe (36).
(c)Make sure that the work area in zone 319 is clean and clear of tools and miscellaneous items of equipment.
(d)Close the access door 312AR and remove the access platform.
(e)On the drain mast at STA FR 52/53 remove the blank from the adapter PN 97A28002542000.
(f)Remove the adapter PN 97A28002542000 from the drain mast outlet (30).
(g)Put the horizontal and vertical stabilizers back to the normal operation condition (Ref. 55-00-00, P. Block 301).

**ON A/C 101-200,

(h)On the lower right hand side of the main-landing-gear bay at STA2931/FR 54, remove the blank from the pipeline (46).
(j)Connect the pipeline (46) to the union (45).
(k)On the right hand side of the main-landing-gear bay, adjacent to STA2612/FR 47, remove the blank from the pipeline (47).
(l)Connect the pipeline (47) to the union (48).

NOTE: The ACT vent/drain system is now connected to the trim tank/APU vent/drain system.

(m)Make sure that the work area is clean and clear of tools and miscellaneous items of equipment.
(n)Remove the access platform and close the right hand main-landing-gear bay door (Ref. 32-12-11, P. Block 301).

**ON A/C ALL

E. Leak Test of Vapor Seal Covers and Access Panels.

**ON A/C 001-100,

(Ref. Fig. 504)

**ON A/C 101-200,

(Ref. Fig. 504)
(Ref. Fig. 505)

**ON A/C 001-100,

(1)Job Set-Up
(a)Make the trimmable horizontal stabilizer (THS) and the vertical stabilizer safe (Ref. 55-00-00, P. Block 301).
(b)Put the access platform in position and open the access door 312AR.
(c)In zone 319, connect the adapter PN 97A28002534000 to the ventilation system inlet pipe (36).

CAUTION : BEFORE YOU CONNECT THE GPG AIR SUPPLY TO THE AIRCRAFT, MAKE SURE THAT THE GPG PRESSURE GAGE IS ACCURATE IN THE RANGE 0 TO 10 MB (0 TO 0.145 PSI). IF NECESSARY, INSTALL A SEPARATE PRESSURE GAGE ACCURATE IN THE RANGE 0 TO 10 MB (0 TO 0.145 PSI) BETWEEN THE AIR SUPPLY AND THE CONNECTION POINT ON THE AIRCRAFT.

(d)Connect the air supply to the adapter PN 97A28002534000.
(e)At FR 52/53:
1 Install the adapter PN 97A28002542000 onto the drain mast outlet (30).
2 Blank off the open line end on the adapter.
(f)Blank off the APU ventilation air-intake at FR95 to avoid any air leak of the system.

**ON A/C 101-200,

(1)Job Set-Up
(a)Make the trimmable horizontal stabilizer (THS) and the vertical stabilizer safe (Ref. 55-00-00, P. Block 301).
(b)Open the right hand main-landing-gear bay-door (Ref. 32-12-11, P. Block 301) and put the access platform in position.
(c)On the right hand side of the main-landing-gear bay, adjacent to STA2612/FR 47, disconnect the pipeline (47) from the union (48).
(d)Blank the open end of the pipeline (47).
(e)On the lower right hand side of the main-landing-gear bay at STA2931/FR 54, disconnect the pipeline (46) from the union (45).
(f)Blank the open end of the pipeline (46).

NOTE : The ACT vent/drain system is now isolated from the trim tank/APU vent/drain system.

(g)Put the access platform in position and open the access door 312AR.
(h)In zone 319, connect the adapter PN 97A28002534000 to the ventilation

system inlet pipe (36).

CAUTION : BEFORE YOU CONNECT THE GPG AIR SUPPLY TO THE AIRCRAFT, MAKE SURE THAT THE GPG PRESSURE GAGE IS ACCURATE IN THE RANGE 0 TO 10 MB (0 TO 0.145 PSI). IF NECESSARY, INSTALL A SEPARATE PRESSURE GAGE ACCURATE IN THE RANGE 0 TO 10 MB (0 TO 0.145 PSI) BETWEEN THE AIR SUPPLY AND THE CONNECTION POINT ON THE AIRCRAFT.

(j)Connect the air supply to the adapter PN 97A28002534000.
(k)At FR 52/53:
1 Install the adapter PN 97A28002542000 onto the drain mast outlet (30).
2 Blank off the open line end on the adapter.
(l)Blank off the APU ventilation air-intake at FR95 to avoid any air leak of the system.

**ON A/C ALL

(2)Test

CAUTION : BEFORE YOU START THE TEST, MAKE SURE THAT THE TEST EQUIPMENT INCLUDES A SAFETY SYSTEM TO PREVENT ANY OVERPRESSURE WHICH COULD DAMAGE THE AIRCRAFT. THE PRESSURE MUST NOT RISE ABOVE 10 MB (0.145 PSI) DURING THE LEAK TEST.

ACTION	RESULT
1. In zone 319: - Set the air supply maximum pressure to 10 mb (0.145 psi).	
2. Start the air supply and slowly pressurize the system at 10 mb (0.145 psi).	- The system is pressurized.
3. Keep the pressure throughout the test.	
4. Use the soap solution, examine the areas that follow for leaks:	
- The refuel/transfer valve cover and access panel (LH side front spar).	- No leaks are permitted.
- The pump pressure switch cover and access panel (RH side front spar).	- No leaks are permitted.
- The access panels 319 AB/BB	- No leaks are permitted.

ACTION	RESULT

(lower surface).

5. Release the pressure.

NOTE : If the refuel/transfer valve vapor-seal-cover leaks, reseal the cover and repeat the test.

(3)Close-Up
(a)Remove the blank from the APU ventilation air intake at FR95.
(b)In zone 319, disconnect the air supply from the adapter PN 97A28002534000, then remove the adapter from the ventilation system inlet pipe (36).
(c)Make sure that the work area in zone 319 is clean and clear of tools and other items of equipment.
(d)Close the access door 312AR and remove the access platform.
(e)On the drain mast at FR 52/53 remove the blank from the adapter PN 97A28002542000.
(f)Remove the adapter PN 97A28002542000 from the drain mast outlet (30).
(g)Put the horizontal and vertical stabilizers back to the normal operation condition (Ref. 55-00-00, P. Block 301).

**ON A/C 101-200,

(h)On the lower right hand side of the main landing gear bay at STA2931/FR 54, remove the blank from the pipeline (46).
(j)Connect the pipeline (46) to the union (45).
(k)On the right hand side of the main landing gear bay, adjacent to STA2612/FR 47, remove the blank from pipeline (47).
(l)Connect the pipeline (47) to the union (48).
(m)Make sure that the work area is clean and clear of tools and miscellaneous items of equipment.
(n)Remove the access platform and close the right hand main landing gear bay door (Ref. 32-12-11, P. Block 301).

NOTE: The ACT vent/drain system is now connected to the trim tank/APU vent/drain system.

**ON A/C ALL

F. Leak Test of O-ring Seals
(Ref. Fig. 504)

(1)Job Set-Up
(a)Make trimmable horizontal stabilizer (THS) and vertical stabilizer safe (Ref. 55-00-00, P. Block 301).
(b)Put the access platform in position. Open the access door 313AL.

(c)In zone 319, remove the blanking cap and install the adapter PN 97A28002549000:
- on test point (34) for transfer pipe seals
- on test point (35) for isolation valve seals.

(d)Connect the air supply to the adapter PN 97A280025490000.

(e)Set the air supply maximum pressure to 345 mb (5 psi).

(2)Test

CAUTION : BEFORE YOU START THE TEST, MAKE SURE THAT THE TEST EQUIPMENT INCLUDES A SAFETY SYSTEM TO PREVENT ANY OVERPRESSURE WHICH COULD DAMAGE THE AIRCRAFT.

NOTE : Leak test of seals may be carried out simultaneously if two sets of tools are available.

ACTION	RESULT
1. In zone 319: - Start the air supply and slowly pressurize the seals under test to 345 mb (5 psi).	
2. Stop the air supply: - Make sure the pressure remains stable for at least 15 minutes. Soap solution may be used to locate leaks.	- No leaks permitted.
3. Release pressure.	

(3)Close-Up

(a)In zone 319, disconnect the air supply from the adapter PN 97A28002549000.

(b)Remove adapter PN 97A28002549000 from test points (34) and (35) and install the blanking caps.

(c)Make sure that the work area is clean and clear of tools and miscellaneous items of equipment.

(d)Close the access door 313AL and remove the access platform.

(e)Put the horizontal and vertical stabilizers back to the normal operation condition (Ref. 55-00-00, P. Block 301).

**ON A/C 101-200,

G. Trim Tank and ACT Combined Vent/Drain System Leak Test.
(Ref. Fig. 504)

(1)Job Set-Up

(a)Defuel the ACT(s) (Ref. 28-25-00, P. Block 301).

(b)Make the trimmable horizontal stabilizer (THS) and the vertical

stabilizer safe (Ref. 55-00-00, P. Block 301).

(c)At FR 52/53:

1 Install the adapter PN 97A28002542000 onto the drain mast outlet (30).

2 Blank off the open line end on the adapter.

(d)Put the access platform in position below zone 311/312 and open the access door 312AR.

(e)In zone 319, connect the adapter PN 97A28002534000 to the ventilation system inlet pipe (36).

CAUTION : BEFORE YOU CONNECT THE GPG AIR SUPPLY TO THE AIRCRAFT, MAKE SURE THAT THE GPG PRESSURE GAGE IS ACCURATE IN THE RANGE 0 TO 10 MB (0 TO 0.145 PSI). IF NECESSARY, INSTALL A SEPARATE PRESSURE GAGE ACCURATE IN THE RANGE 0 TO 10 MB (0 TO 0.145 PSI) BETWEEN THE AIR SUPPLY AND THE CONNECTION POINT ON THE AIRCRAFT.

(f)Connect the air supply to the adapter PN 97A28002534000.

(g)At STA4905/FR95, put a suitable blank into the APU ventilation air intake to prevent an air leak of the vent/drain system.

(2)Test

CAUTION : BEFORE YOU START THE TEST, MAKE SURE THAT THE TEST EQUIPMENT INCLUDES A SAFETY SYSTEM TO PREVENT ANY OVERPRESSURE WHICH COULD DAMAGE THE AIRCRAFT. THE PRESSURE MUST NOT RISE ABOVE 10 MB (0.145 PSI) DURING THE LEAK TEST.

ACTION	RESULT
1. In zone 319: - Set the air supply maximum pressure to 10 mb (0.145 psi). NOTE : Make sure that the air supply delivers a flow rate of 50 liters (13 US GALS) per minute.	
2. Start the air supply and slowly pressurize the system at 10 mb (0.145 psi) for at least 30 minutes to stabilize the air pressure.	- The vent/drain system is pressurized at 10 mb (0.145 psi).
3. Stop the air supply.	
4. Make sure that the pressure drop does not exceed 7 mb (0.10 psi) over a period of 30 seconds.	

ACTION	RESULT
5. At the air supply: - Release the air pressure.	- The air pressure within the vent/drain system is released.

NOTE : If the pressure drop exceeds the limit, use the soap solution to locate the leaks. If the leak is found in the lines, repair as necessary. If the leak is found in the vapor-seal, repair the seal (Ref. 28-13-21, P. Block 801).

(3)Close-Up
(a)In zone 319, disconnect the air supply from the adapter PN 97A28002534000, then remove the adapter from the ventilation system inlet pipe (36).
(b)Make sure that the work area in zone 319 is clean and clear of tools and other items of equipment.
(c)Close the access door 312AR and remove the access platform.
(d)On the drain mast at FR 52/53, remove the blank from the adapter PN 97A28002542000.
(e)Remove the adapter PN 97A28002542000 from the drain mast outlet (30).
(f)At STA4905/FR95, remove the blank from the APU ventilation air intake.
(g)Put the THS and vertical stabilizers back to the normal operation condition (Ref. 55-00-00, P. Block 301).

3. Functional Test ACT(s) System (with ACT(s) Installed)

A. Reasons for the Job
(1)Free flow of air through the system lines.
(2)Leak test of the system lines.
(3)Test the opening of the Inward Relief Valve(s).

B. Equipment and Materials

ITEM	DESIGNATION
A.	Access Platform 2.7 m (9 ft)
B.	Access Platform 2.5 m (8 ft)
C.	Clean air supplied and regulated for pressures upto 20 mb (0.29 psi). Use the list that follows for the selection of the Ground Pressure Generators (GPG's): - Type APICS (P/N 6000KTQ or 6200KTQ) or - Type GP120 (P/N 68001-400-2) or - Type GP30 (P/N 68001-606-1) or - Type S10 or equivalent. or (if available)

ITEM	DESIGNATION
	- Locally supplied clean air connected to a Fisher Type S301 Gas Regulator that can regulate for pressures upto 20 mb (0.29 psi).
D.	Blanking Plugs/Caps
E.	Container 1 Liter (0.26 US Gal)
F.	Manometer, for pressures up to 20 mb (0.29 psi)
G. 97A28002542000	Adapter, Drain Mast
H.	Leak Detecting Soap Solution
Referenced Procedures	
- 12-11-28, P. Block 301	Fuel
- 25-52-00, P. Block 1	Semi Automatic Cargo Loading
- 28-00-00, P. Block 301	Fuel General
- 28-13-31, P. Block 601	Drain Shroud
- 28-25-00, P. Block 301	Refuel/Defuel System
- 28-28-00, P. Block 501	ACT Transfer System
- 32-12-11, P. Block 301	Main Gear Main Door
- 52-30-00, P. Block 1	Cargo Compartment Doors

C. Procedure (ACT fitted)

R **ON A/C 101-103, 105-200,

R Post SB 28-2105 For A/C 101-103,105-200,

C. Procedure (ACT 1 fitted)

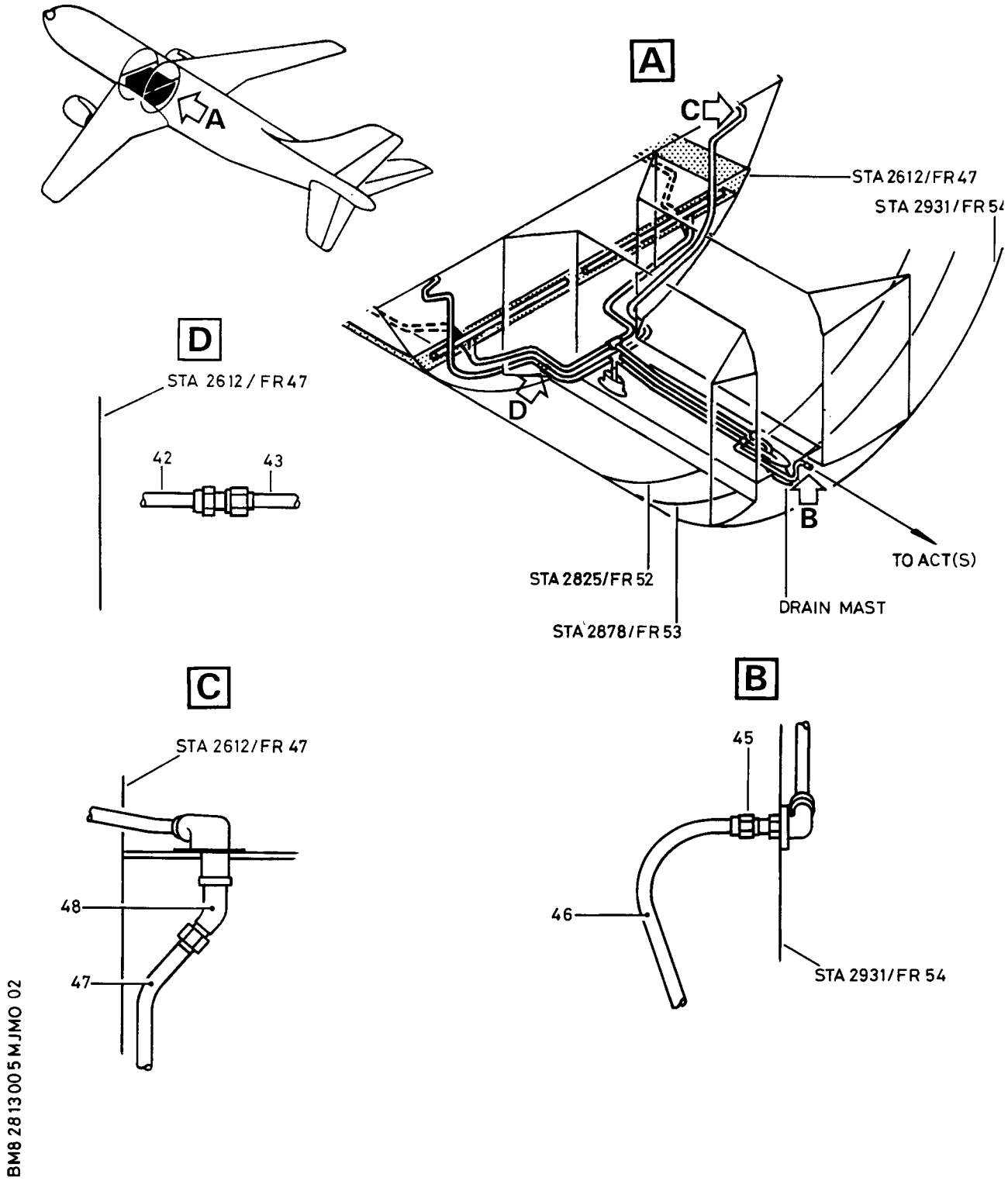
NOTE 1: If the two ACTs are to be installed, install ACT 1 and do the functional test (Ref. Para. C.). When ACT 1 has been satisfactorily tested, install ACT 2, then do the functional test of ACT 2 (Ref. Para. D.).

NOTE 2: If ACT 2 is to be installed, do the functional test of ACT 1 (Ref. Para. C.). After installation of ACT 2, do the functional test of ACT 2 (Ref. Para. D.).

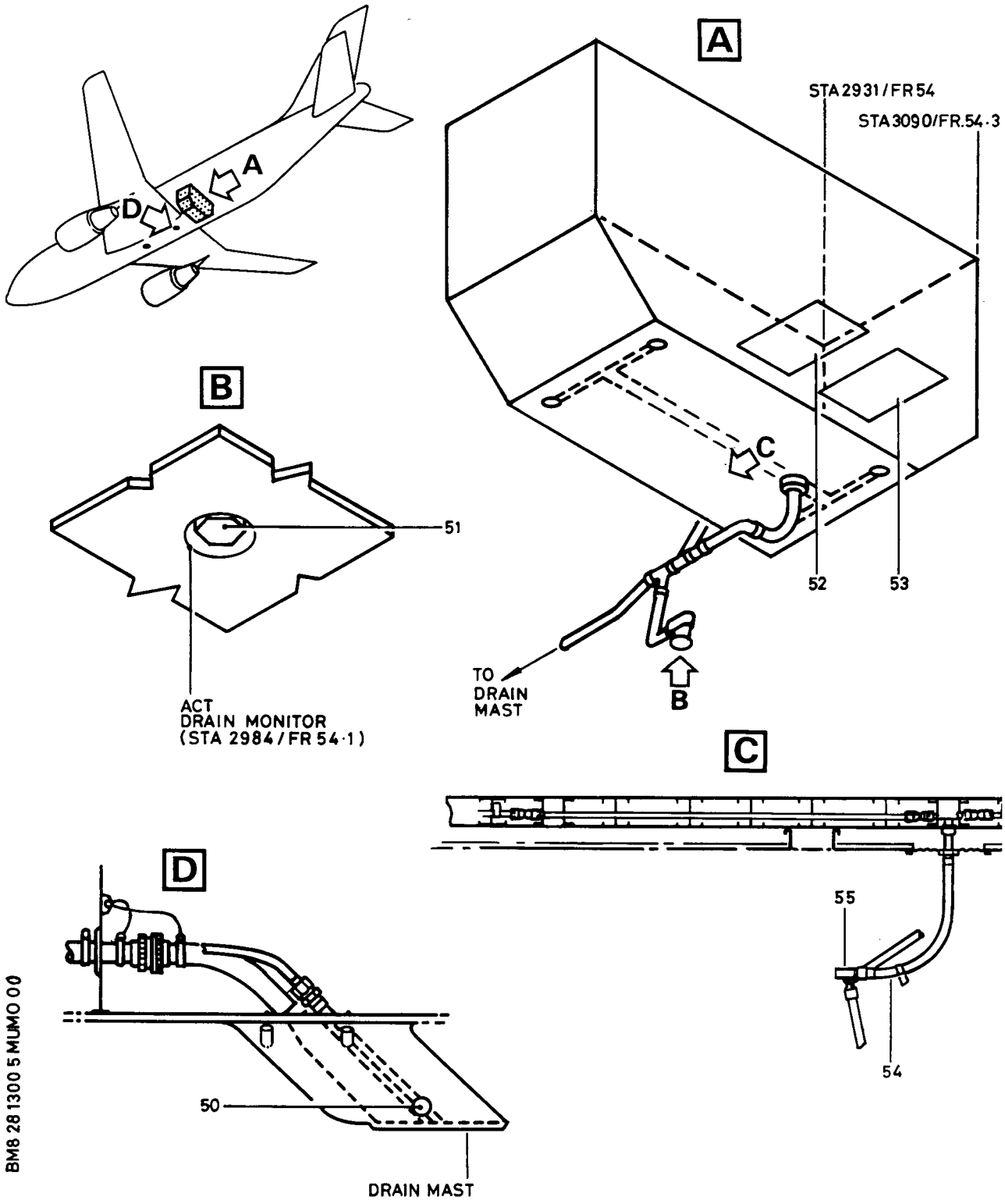
NOTE 3: If ACT 1 and 2 are already installed do the functional test of ACT 1 and 2 (Ref. Para. E.).

**ON A/C 101-200,

(Ref. Fig. 505)
(Ref. Fig. 506)



Functional Test ACT(s) System
Figure 505



Functional Test ACT System
(With ACT Installed)
Figure 506

R **ON A/C 101-103, 105-200,

R Post SB 28-2105 For A/C 101-103,105-200,

(Ref. Fig. 507)

**ON A/C 101-200,

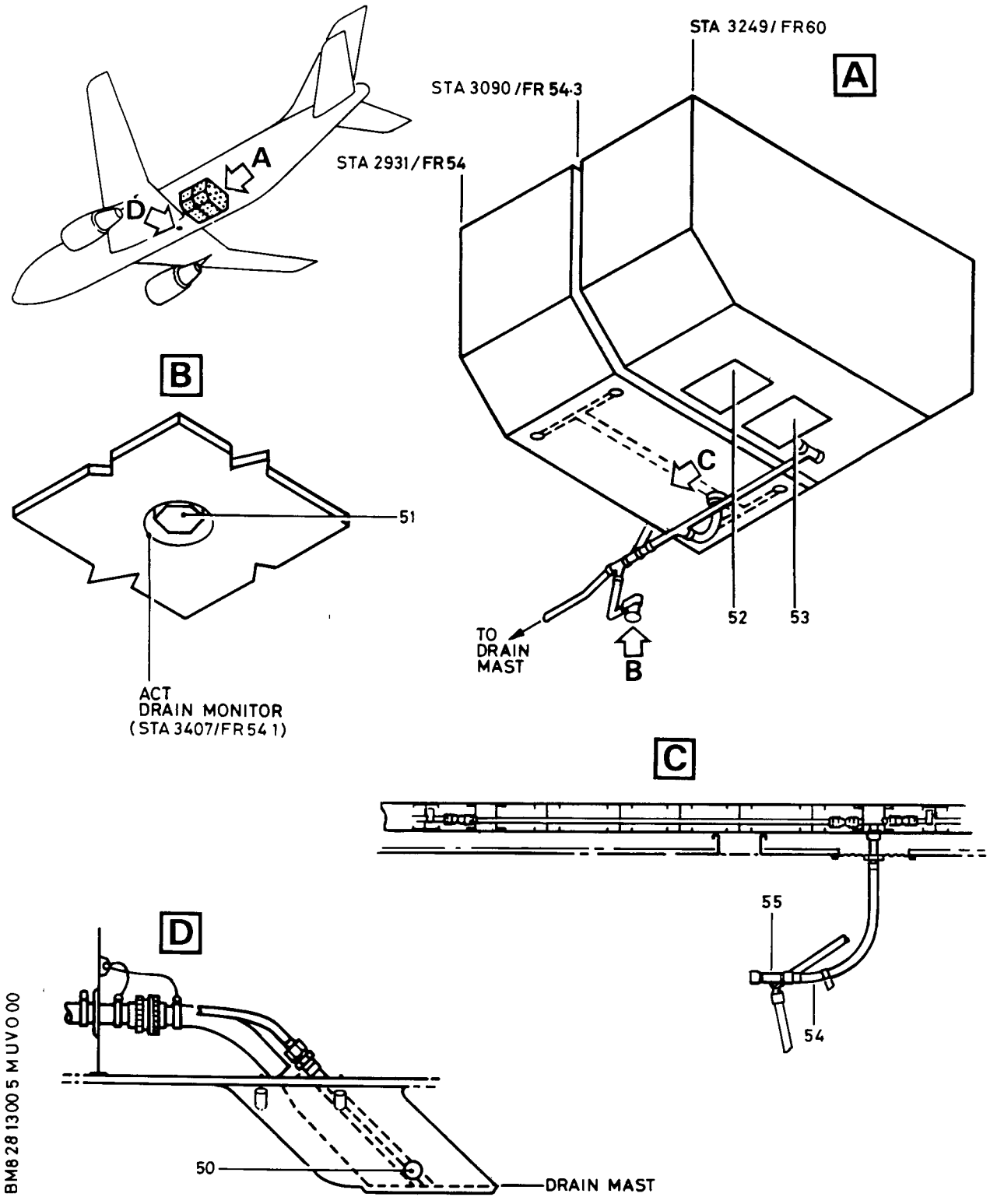
(1)Job Set-Up
(a)Defuel the ACT(s) (Ref. 28-25-00, P. Block 301).
(b)Open the right-hand main-landing-gear bay door (Ref. 32-12-11, P. Block 301) and put the access platform in position.
(c)Disconnect the Auxiliary Power Unit (APU) and the trim transfer-pipe shroud drainpipe (42) and (43) at the straight connection on the left-hand side of the main-landing-gear-bay between FR 47 and FR 48.
(d)Install a suitable pressure retaining blank to the open end of the aft facing connection (43). Cap the open end of the fwd facing connection (42).

NOTE : The trim tank/APU vent/drain system is now isolated from the ACT vent/drain system.

(e)On the right-hand side of the main-landing-gear bay, adjacent to STA2612/FR47, disconnect the pipeline (47) from the union (48).
(f)Blank the open end of the union (48).
(g)On the lower right-hand side of the main-landing-gear bay at STA2931/FR54, disconnect the pipeline (46) from the union (45).
(h)Connect the air supply to the pipeline (46). Connect the manometer to the air supply, between the air supply control valve and the pipeline (46).
(j)At STA2984/FR54.1, put the container below the ACT(s) drain monitor and push (in) the plunger (51). If trapped fuel is released, carry out the leak test (Ref. 28-13-31, P. Block 601).

NOTE : The drain monitor must not leak fuel.

(k)Release (out) the plunger (51) and remove the container.
(l)Position the access platform and open the aft cargo-compartment door (Ref. 52-30-00, P. Block 1).
(m)If necessary, remove the cargo containers located behind the ACT (Ref. 25-52-00, P. Block 1).
(n)In the aft cargo compartment, remove the floor panels Z151 EF (52) and Z152 EF (53), to get access to the interspace drain connections.
(p)Put the container below the interspace drain coupling (55).
(q)Disconnect the drain hose (54) from the drain coupling (55).
(r)Cap the open end of the drain hose (54).
(2)Test



Functional Test ACT(s) System
(With ACT 1 Installed)
Figure 507

CAUTION : BEFORE YOU START THE TEST, MAKE SURE THAT THE TEST EQUIPMENT INCLUDES A SAFETY SYSTEM TO PREVENT ANY OVERPRESSURE WHICH COULD DAMAGE THE AIRCRAFT.

ACTION	RESULT
Free Flow Test of System Lines	
1. In the main-landing-gear bay: - Set the air supply maximum pressure to 20 mb (0.29 psi).	
- Start the air supply.	Below the fuselage: - The air flows from the drain mast outlet (50). In the main-landing-gear bay: - The air flows from the pipeline (47) adjacent to STA2612/FR47.
- Stop the air supply.	- The air flow stops.
2. In the main-landing-gear bay: - Disconnect the air supply from the pipeline (46) and connect the air supply and the manometer to the union (45). - Install a pressure retaining blank onto the open end of the pipeline (46). - Remove the blank from the union (48).	
- Start the air supply.	In the aft cargo compartment: - The air flows from the drain coupling (55).
- Stop the air supply.	- The air flow stops.
3. In the aft cargo compartment: - Remove the cap from the drain hose (54) and connect the hose (54) to the coupling (55).	
4. In the main-landing-gear bay: - Start the air supply.	
5. At STA2984/FR54.1 - Push (in) the plunger (51) on the ACT(s) drain monitor.	At STA2984/FR54.1: - Air flows from ACT(s) drain monitor.

ACTION	RESULT
- Release (out) the plunger (51).	- The air flow stops. In the main-landing-gear bay: - The air flows from the union (48).

6. In the main-landing-gear bay:
   - Stop the air supply and release the pressure.

   NOTE : If there is no air flow from the lines tested, disconnect the lines and clear the obstruction.

7. In the main-landing-gear bay:
   - Connect the pipeline (47) to the union (48).

Leak Test of the System Lines

8. Set the air supply maximum pressure to 20 mb (0.29 psi).

   NOTE : Make sure that the air supply delivers a flow rate of 50 liters per minute.

9. At FR52/53: - Install the adapter PN 97A28002542000 onto the drain mast outlet (50). - Install the blank onto the open line end of the adapter.	- All the vent/drain outlets are blanked.
10. Start the air supply and slowly pressurize the system at 10 mb (0.145 psi) for at least 30 minutes to stabilize the air pressure.	- The system pressure reads 10 mb (0.145 psi).
- Close the air supply control.	- The system pressure stays stable or falls slowly.
- Stop the air supply.	
- Make sure that the pressure indication on the manometer does not fall by more that 0.5 mb (0.0072 psi) in 30 seconds.	

   NOTE 1 : A fall in pressure of 0.5 mb (0.0072 psi) is equal to a fall of

ACTION	RESULT

5 mm (0.12 in) at the manometer.

NOTE 2 : If the pressure drop does exceed the limit, use the soap solution to locate the leaks. If a leak is found, repair as necessary. Do the test again and make sure that the pressure drop is within the limit.

Inward Relief Valve Test ACT 1

11. Set the air supply maximum pressure to 20 mb (0.29 psi).

NOTE : Make sure that the air supply delivers a flow rate of 20 liters per minute.

12. Start the air supply and slowly pressurize the system.
- The ACT 1 Inward Relief Valve opens.
- The pressure becomes stable at approximately 15 mb (0.22 psi).

- Stop the air supply.
- The ACT 1 Inward Relief Valve closes.

13. Release the pressure.

(3) Close-Up

(a) In the main-landing-gear bay at STA2931/FR54, disconnect the air supply and the manometer from the union (45).
(b) Remove the blank from the pipeline (46).
(c) Connect the pipeline (46) to the union (45).
(d) On the left hand side of the main-landing-gear bay between FR 47 and FR 48:
1 Remove the cap from the fwd facing vent/drain connection (42).
2 Remove the blank from the aft facing vent/drain connection (43).
3 Connect the APU and the trim transfer-pipe shroud drainpipe (42) to the vent/drain system (43).

NOTE : The trim tank/APU vent/drain system is now connected to the ACT vent/drain system.

(e) Do a functional test of the Inward Relief Valve (Ref. 28-28-00, P. Block 501) to make sure the valve has closed.
(f) Do the Trim Tank and ACT Combined Vent/Drain System Leak Test (Ref. para. 2. G.).
(g) Make sure that the work area in the main-landing-gear bay is clean and clear of tools and miscellaneous items of equipment.
(h) Remove the access platform and close the right hand main-landing-gear bay door (Ref. 32-12-11, P. Block 301).
(j) In the aft cargo compartment:

1 Remove the container.
2 Make sure that the work area is clean and clear of tools and miscellaneous items of equipment.

(k)Install the aft cargo compartment floor panels Z151 EF (52) and Z152 EF (53).
(l)If necessary, install the cargo container(s) behind the ACT (Ref. 25-52-00, P. Block 1).
(m)Remove the access platform and close the aft cargo-compartment door (Ref. 52-30-00, P. Block 1).
(n)At FR 52/53:
1 Remove the blank from the adapter on the drain mast.
2 Remove the adapter PN 97A28002542000 from the drain mast outlet.
(p)If necessary, refuel the ACT to the required quantity (Ref. 12-11-28, P. Block 301).

**ON A/C 101-200,

Post SB 28-2105 For A/C 101-200,

D. Procedure (ACT 2 fitted)

**ON A/C 101-200,

Post SB 28-2105 For A/C 101-200,

(Ref. Fig. 505)

**ON A/C 101-200,

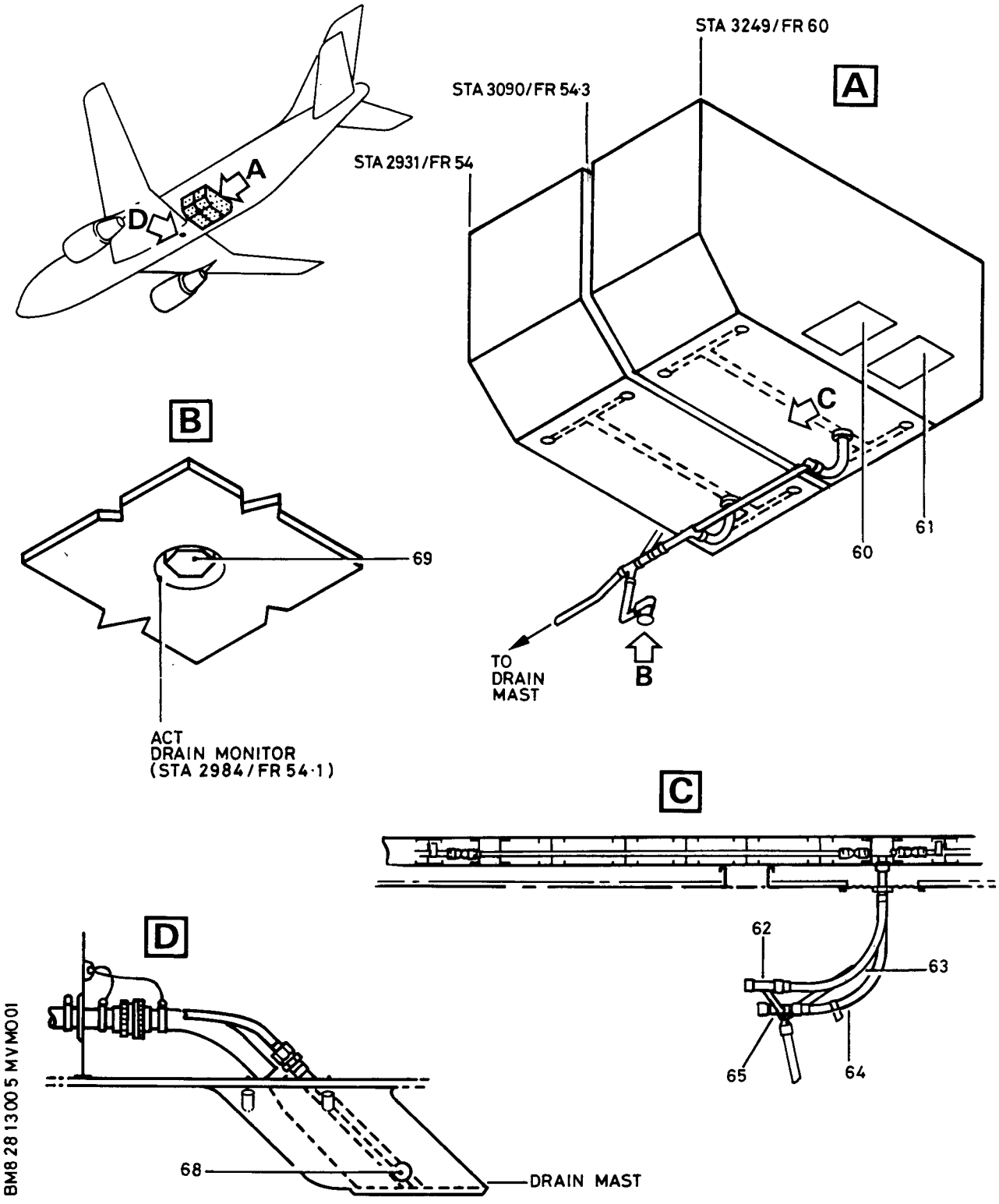
Post SB 28-2105 For A/C 101-200,

(Ref. Fig. 508)

**ON A/C 101-200,

Post SB 28-2105 For A/C 101-200,

(1)Job Set-Up
(a)Defuel the ACT(s) (Ref. 28-25-00 P. Block 301).
(b)Open the right-hand main-landing-gear bay door (Ref. 32-12-11, P. Block 301) and put the access platform in position.
(c)Disconnect the Auxiliary Power Unit (APU) and the trim transfer-pipe shroud drainpipe (42) and (43) at the straight connection on the left-hand side of the main-landing-gear-bay between FR 47 and FR 48.
(d)Install a suitable pressure retaining blank onto the open end of the aft facing connection (43). Cap the open end of the fwd facing



Functional Test ACT(s) System
(ACT 1 and 2 Installed)
Figure 508

R

connection (42).

NOTE: The trim tank/APU vent/drain system is now isolated from the ACT vent/drain system.

(e)On the right-hand side of the main-landing-gear bay, adjacent to STA2612/FR47, disconnect the pipeline (47) from the union (48).
(f)Blank the open end of the union (48).
(g)On the lower right hand side of the main-landing-gear bay at STA2931/FR54, disconnect the pipeline (46) from the union (45).
(h)Connect the air supply to the pipeline (46). Connect the manometer to the air supply, between the air supply control valve and the pipeline (46).
(j)At STA2984/FR54.1, place the container below the ACT(s) drain monitor and push (in) the plunger (69). If trapped fuel is released, carry out the leak test (Ref. 28-13-31, P. Block 601).

NOTE: The drain monitor must not leak fuel.

(k)Release (out) the plunger (69) and remove the container.
(l)Position the access platform and open the aft cargo-compartment door (Ref. 52-30-00, P. Block 1).
(m)If necessary, remove the cargo containers located behind the ACT(s) (Ref. 25-52-00, P. Block 1).
(n)In the aft cargo compartment, remove the floor panels Z151 GF (60) and Z152 GF (61), to get access to the interspace drain connections.
(p)Place the container below the interspace drain coupling (62).
(q)Disconnect the drain hose (63) from the drain coupling (62).

**ON A/C 101-200,

Post SB 28-2105 For A/C 101-200,

(r)Cap the open end of the drain hose (63).

**ON A/C 101-200,

Post SB 28-2105 For A/C 101-200,

(2)Test

CAUTION : BEFORE YOU START THE TEST, MAKE SURE THAT THE TEST EQUIPMENT INCLUDES A SAFETY SYSTEM TO PREVENT ANY OVERPRESSURE WHICH COULD DAMAGE THE AIRCRAFT.

ACTION	RESULT
Free Flow Test of System Lines	
1. In the main-landing-gear bay:	
- Set the air supply maximum pressure to 20 mb (0.29 psi).	
- Start the air supply.	Below the fuselage at FR 52/53: - The air flows from the drain mast outlet (68). In the main-landing-gear bay: - The air flows from the pipeline (47) adjacent to STA2612/FR47
- Stop the air supply.	- The air flow stops.
2. In the main-landing-gear bay:	
- Disconnect the air supply from the pipeline (46) and connect the air supply and the manometer to the union (45).	
- Install a pressure retaining blank onto the open end of the pipeline (46).	
- Remove the blank from the union (48).	
**ON A/C 101-200,	
Post SB 28-2105 For A/C 101-200,	
- Start the air supply.	In the aft cargo compartment: - The air flows from the drain coupling (62).
- Stop the air supply.	- The air flow stops.
3. In the aft cargo compartment:	
- Remove the cap from the drain hose (63) and connect the hose (63) to the coupling (62).	
**ON A/C 101-200,	
Post SB 28-2105 For A/C 101-200,	
4. In the main-landing-gear bay:	

ACTION	RESULT
- Start the air supply.	
5. At STA2984/FR54.1 - Push (in) the plunger (69) on the ACT(s) drain monitor.	At STA2984/FR54.1: - The air flows from the ACT(s) drain monitor.
- Release (out) the plunger (69).	- The air flow stops. In the main-landing-gear bay: - The air flows from the union (48).
6. In main landing gear bay: - Stop the air supply and release the pressure.	
NOTE : If there is no air flow from the lines tested, disconnect the lines and clear the obstruction.	
- Connect the pipeline (47) to the union (48).	
Leak Test of the System Lines 7. Set the air supply maximum pressure to 20 mb (0.29 psi).	
NOTE : Make sure that the air supply delivers a flow rate of 50 liters per minute.	
8. Below the fuselage at FR52/53: - Install the adapter PN 97A28002542000 onto the drain mast outlet (68). - Install the blank onto the open line end of the adapter.	- All the vent/drain outlets are now blanked.
9. In the main-landing-gear bay: - Start the air supply and slowly pressurise the system at 10 mb (0.145 psi) for at least 30 minutes to stabilize the air pressure.	- The system pressure reads 10 mb (0.145 psi).
- Close the air supply control.	- The system pressure stays stable or falls slowly.
- Stop the air supply.	
- Make sure that the pressure indication	

ACTION	RESULT

on the manometer does not fall by more than 0.5 mb (0.0072 psi) in 30 seconds.

NOTE 1 : A fall in pressure of 0.5 mb (0.0072 psi) is equal to a fall of 5 mm (0.12 in) at the manometer.

NOTE 2 : If the pressure drop does exeed the limit, use the soap solution to locate the leak. If a leak is found, repair as necessary. Do the test again and make sure that the pressure drop is within the limit.

Inward Relief Valve Test (ACT 2)

**ON A/C 101-200,

Post SB 28-2105 For A/C 101-200,

10. In the aft cargo compartment:
- Disconnect the drain hose (64) from the coupling (65)
- Install a pressure retaining blank onto the coupling (65)
- Cap the open end of the drain hose (64)

- ACT 1 is now isolated from the system.

**ON A/C 101-200,

Post SB 28-2105 For A/C 101-200,

11. In the main-landing-gear bay:
- Set the air supply maximum pressure to 20 mb (0.29 psi).

NOTE : Make sure that the air supply delivers a flow rate of 20 liters per minute.

12. Start the air supply and slowly pressurize the system.

- The ACT 2 Inward Relief Valve opens.
- The pressure becomes stable at approximately 15 mb (0.22 psi).

- Stop the air supply.

- The ACT 2 Inward Relief Valve closes.

13. Release the pressure.

ACTION	RESULT
**ON A/C 101-200,	
Post SB 28-2105 For A/C 101-200,	
14.In the aft cargo compartment: - Remove the cap from the drain hose (64) - Remove the blank from the coupling (65) - Connect the drain hose (64) to the coupling (65)	- ACT 1 is now connected to the system.
**ON A/C 101-200,	
Post SB 28-2105 For A/C 101-200,	

(3)Close-Up
(a)In the main-landing-gear bay at STA2931/FR54, disconnect the air supply and the manometer from the union (45).
(b)Remove the blank from the pipeline (46).
(c)Connect the pipeline (46) to the union (45).
(d)On the left-hand side of the main-landing-gear-bay between FR 47 and FR 48:
1 Remove the cap from the fwd facing vent/drain connection (42).
2 Remove the blank from the aft facing vent/drain connection (43).
3 Connect the APU and the trim transfer-pipe shroud drainpipe (42) to the vent/drain system (43).

NOTE : The trim tank/APU vent/drain system is now connected to the ACT vent/drain system.

(e)Do a functional test of the Inward Relief Valve (Ref. 28-28-00, P. Block 501) to make sure the valve has closed.
(f)Do the Trim Tank and ACT Combined Vent/Drain System Leak Test (Ref. para. 2. G.).
(g)Make sure that the work area in the main-landing-gear bay is clean and clear of tools and miscellaneous items of equipment.
(h)Remove the access platform and close the right-hand main-landing-gear bay door (Ref. 32-12-11, P. Block 301).
(j)In the aft cargo compartment:
1 Remove the container.
2 Make sure that the work area is clean and clear of tools and miscellaneous items of equipment.
(k)Install the aft cargo compartment floor panels Z151 GF (60) and

Z152 GF (61).
(l)If necessary, install the cargo container(s) behind the ACT(s) (Ref. 25-52-00, P. Block 1).
(m)Remove the access platform and close the aft cargo-compartment door (Ref. 52-30-00, P. Block 1).
(n)At FR 52/53:
1 Remove the blank from the adapter on the drain mast.
2 Remove the adapter PN 97A28002542000 from the drain mast outlet.
(p)If necessary, refuel the ACT(s) to the required quantity (Ref. 12-11-28, P. Block 301).

**ON A/C 101-200,

Post SB 28-2105 For A/C 101-200,

E. Procedure (ACT 1 and 2 fitted)

**ON A/C 101-200,

Post SB 28-2105 For A/C 101-200,

(Ref. Fig. 505, 508)

**ON A/C 101-200,

Post SB 28-2105 For A/C 101-200,

(1)Job Set-Up
(a)Defuel the ACTs (Ref. 28-25-00, P. Block 301).
(b)Open the right-hand main-landing-gear bay door (Ref. 32-12-11, P. Block 301) and put the access platform in position.
(c)Disconnect the Auxiliary Power Unit (APU) and the trim transfer-pipe shroud drainpipe (42) and (43) at the straight connection on the left-hand side of the main-landing-gear bay between FR 47 and FR 48.
(d)Install a suitable pressure retaining blank to the open end of the aft facing connection (43). Cap the open end of the fwd facing connection (42).

NOTE: The trim tank/APU vent/drain system is now isolated from the ACT vent/drain system.

(e)On the right-hand side of the main-landing-gear bay, adjacent to STA2612/FR47, disconnect the pipeline (47) from the union (48).
(f)Blank the open end of the union (48).
(g)On the lower right-hand side of the main-landing-gear bay at STA2931/FR54, disconnect the pipeline (46) from the union (45).

(h)Connect the air supply to the pipeline (46). Connect the manometer to the air supply, between the air supply control valve and the pipeline (46).

(j)At STA2984/FR54.1, place the container below the ACT(s) drain monitor and push (in) the plunger (69). If trapped fuel is released, carry out the leak test (Ref. 28-13-31, P. Block 601).

NOTE: The drain monitor must not leak fuel.

(k)Release (out) the plunger (69) and remove the container.

(l)Position the access platform and open the aft cargo-compartment door (Ref. 52-30-00, P. Block 1).

(m)If necessary, remove the cargo containers located behind the ACT(s) (Ref. 25-52-00, P. Block 1).

(n)In the aft cargo compartment, remove the floor panels Z151 GF (60) and Z152 GF (61), to get access to the interspace drain connections.

(p)Place the container below the interspace drain coupling (62).

(q)Disconnect the drain hose (63) from the drain coupling (62).

**ON A/C 101-200,

Post SB 28-2105 For A/C 101-200,

(r)Cap the open end of the drain hose (63).

**ON A/C 101-200,

Post SB 28-2105 For A/C 101-200,

(2)Test

CAUTION : BEFORE YOU CONTINUE WITH THE TEST, MAKE SURE THAT THE TEST EQUIPMENT INCLUDES A SAFETY SYSTEM TO PREVENT ANY OVERPRESSURE WHICH COULD DAMAGE THE AIRCRAFT.

ACTION	RESULT
Free Flow Test of System Lines 1. In the main-landing-gear bay: - Set the air supply maximum pressure to 20 mb (0.29 psi).	
- Start the air supply.	Below the fuselage at FR 52/53: - The air flows from the drain mast outlet (68). In the main-landing-gear bay:

ACTION	RESULT
	- The air flows from the pipeline (47) adjacent to STA2612/FR47.
- Stop the air supply.	- The air flow stops.
2. In the main-landing-gear bay: - Disconnect the air supply from the pipeline (46) and connect the air supply and the manometer to the union (45). - Install a pressure retaining blank onto the open end of the pipeline (46). - Remove the blank from the union (48).	
**ON A/C 101-200,	
Post SB 28-2105 For A/C 101-200,	
	In the aft cargo compartment:
- Start the air supply.	- The air flows from the drain coupling (62).
- Stop the air supply.	- The air flow stops.
3. In the aft cargo compartment: - Install a pressure retaining blank onto the open end of the coupling (62).	
4. Place the container below the drain coupling (65).	
5. Disconnect the drain hose (64) from the coupling (65).	
6. Cap the open end of the drain hose (64).	
7. In the main-landing-gear bay: - Start the air supply.	In the aft cargo compartment: - The air flows from the drain coupling (65).
- Stop the air supply.	- The air flow stops.
8. In the aft cargo compartment: - Remove the cap from the drain hose (64) and connect the	

ACTION	RESULT
hose to the coupling (65). NOTE: ACT 2 is isolated from the system.	
**ON A/C 101-200,	
Post SB 28-2105 For A/C 101-200,	
9. In the main-landing-gear bay: - Start the air supply.	
10.At STA2984/FR54.1 - Push (in) the plunger (69) on the ACT(s) drain monitor.	At STA2984/FR54.1: - The air flows from the ACT(s) drain monitor.
- Release (out) the plunger (69).	- The air flow stops.
11.In the main-landing-gear bay: - The air flows from the union (48).	
- Stop the air supply and release the pressure.	
NOTE : If there is no air flow from the lines tested, disconnect the lines and clear the obstruction.	
- Connect the pipeline (47) to the union (48).	
Leak Test ACT 1 12.In the main-landing-gear bay: - Set the air supply maximum pressure to 20 mb (0.29 psi).	
NOTE : Make sure that the air supply delivers a flow rate of 50 liters per minute.	
13.At FR 52/53: - Install the adapter PN 97A28002542000 onto the drain mast outlet (68).	
- Install the blank onto the open line end of the adapter.	- All the vent/drain outlets are now blanked.

ACTION	RESULT
14.In the main-landing-gear bay: - Start the air supply and slowly pressurize the system at 10 mb (0.145 psi) for at least 30 minutes to stabilize the air pressure.	- The system pressure reads 10 mb (0.145 psi).
- Close the air supply control.	- The system pressure stays stable or falls slowly.
- Stop the air supply.	
- Make sure that the pressure indication on the manometer does not fall by more than 0.5 mb (0.0072 psi) in 30 seconds. NOTE 1 : A fall in pressure of 0.5 mb (0.0072 psi) is equal to a fall of 5 mm (0.12 in) at the manometer. NOTE 2 : If the pressure drop does exceed the limit, use the soap solution to locate the leak. If a leak is found, repair as necessary. Do the test again and make sure that the pressure drop is within the limit.	
Inward Relief Valve Test ACT 1 15.Set the air supply maximum pressure to 20 mb (0.29 psi). NOTE : Make sure that the air supply delivers a flow rate of 20 liters per minute.	
16.Start the air supply and slowly pressurize the system	- The ACT 1 Inward Relief Valve opens. - The pressure becomes stable at approximately 15 mb (0.22 psi).
- Stop the air supply.	- The ACT 1 Inward Relief Valve closes.
17.Release the pressure.	

**ON A/C 101-200,

Post SB 28-2105 For A/C 101-200,

Leak Test of ACT 2

ACTION	RESULT
18.In the aft cargo compartment: - Remove the cap from the hose (63) and the blank from the the coupling (62) - Connect the hose (63) to the coupling (62).	- ACT 2 is now connected to the system.
19.In the aft cargo compartment: - Disconnect the drain hose (64) from the coupling (65) - Install a pressure retaining blank onto the open end of the coupling (65) and cap the open end of the drain hose (64).	- ACT 1 is now isolated from the system.
**ON A/C 101-200,	
Post SB 28-2105 For A/C 101-200,	
20.In the main-landing-gear bay: - Start the air supply and slowly pressurize the system at 10 mb (0.145 psi) for at least 30 minutes to stabilize the air pressure.	- The system pressure reads 10 mb (0.145 psi).
- Close the air supply control.	- The system pressure stays stable or falls slowly.
- Stop the air supply.	
- Make sure that the pressure indication on the manometer does not fall by more than 0.5 mb (0.0072 psi) in 30 seconds.	
NOTE 1 : A fall in pressure of 0.5 mb (0.0072 psi) is equal to a fall of 5 mm (0.12 in) at the manometer.	
NOTE 2 : If the pressure drop does exceed the limit, use the soap solution to locate the leak. If a leak is found, repair as necessary. Do the test again and make sure that the pressure drop is within the limit.	
Inward Relief Valve Test ACT 2	
21.Set the air supply maximum pressure to 20 mb (0.29 psi).	

ACTION	RESULT
NOTE : Make sure that the air supply delivers a flow rate of 20 liters per minute.	
22. Start the air supply and slowly pressurize the system.	- The ACT 2 Inward Relief Valve opens. - The pressure becomes stable at approximately 15 mb (0.22 psi).
- Stop the air supply.	- The ACT 2 Inward Refief Valve closes.

23. Release the pressure.

(3)Close-Up
(a)In the main-landing-gear bay at STA2931/FR54, disconnect the air supply and the manometer from the union (45).
(b)Remove the blank from the pipeline (46).
(c)Connect the pipeline (46) to the union (45).
(d)On the left-hand side of the main-landing-gear bay between FR 47 and FR 48:
1 Remove the cap from the fwd facing vent/drain connection (42).
2 Remove the blank from the aft facing vent/drain connection (43).
3 Connect the APU and the trim transfer-pipe shroud drainpipe (42) to the vent/drain system (43).

NOTE : The trim tank/APU vent/drain system is now connected to the ACT vent/drain system.

**ON A/C 101-200,

Post SB 28-2105 For A/C 101-200,

(e)In the aft cargo compartment:
1 Remove the blank from the drain hose coupling (65) and the cap from the drain hose (64).
2 Connect the drain hose (64) to the coupling (65).

NOTE: ACT 1 is now connected to the system.

**ON A/C 101-200,

Post SB 28-2105 For A/C 101-200,

(f)Do a functional test of the Inward Relief Valve (Ref. 28-28-00,

P. Block 501) to make sure the valve has closed.
(g)Do the Trim Tank and ACT Combined Vent/Drain System Leak Test (Ref. para. 2. G.).
(h)Make sure that the work area in the main-landing-gear bay is clean and clear of tools and miscellaneous items of equipment.
(j)Remove the access platform and close the main-landing-gear bay door (Ref. 32-12-11, P. Block 301).
(k)Make sure that the work area in the aft cargo compartment is clean and clear of tools and miscellaneous items of equipment.
(l)Install the aft cargo compartment floor panels Z151 GF (60) and Z152 GF (61).
(m)If necessary, install the cargo container(s) behind ACT 2 (Ref. 25-52-00, P. Block 1).
(n)Remove the access platform and close the aft cargo compartment door (Ref. 52-30-00, P. Block 1).
(p)At FR 52/53:
1 Remove the blank from the adapter on the drain mast.
2 Remove the adapter PN 97A28002542000 from the drain mast outlet.
(q)If necessary, refuel the ACT(s) to the required quantity (Ref. 12-11-28, P. Block 301).

**ON A/C 101-200,

4. Functional Test - ACT(s) System (ACT(s) removed)

A. Reason for the job
(1)Perform the functional test of the interspaces and drain/vent system for free flow and leakage rate (ACT's not installed).

B. Equipment and Materials

ITEM	DESIGNATION
A.	Access Platform 2.5 m (8 ft)
B.	Clean air supplied and regulated for pressures upto 20 mb (0.29 psi). Use the list that follows for the selection of the Ground Pressure Generators (GPG's): - Type APICS (P/N 6000KTQ or 6200KTQ) or - Type GP120 (P/N 68001-400-2) or - Type GP30 (P/N 68001-606-1) or - Type S10 or equivalent. or (if available) - Locally supplied clean air connected to a Fisher Type S301 Gas Regulator that can regulate for pressures upto 20 mb (0.29 psi).
C.	Container 1 Liter (0.26 US Gal)
D.	Leak Detecting Soap Solution

ITEM	DESIGNATION
E.	Blanking Plugs/Caps
F.	Adapter, Drain Mast
Referenced Procedures	
- 28-00-00, P. Block 301	Fuel General
- 28-13-31, P. Block 601	Drain Shroud
- 32-12-11, P. Block 301	Main Gear Main Door

C. Procedure (ACT removed)
(Ref. Fig. 505)

**ON A/C 101-200,

Post SB 28-2105 For A/C 101-200,

R Post SB 28-2126 For A/C 104-104,

C. Procedure (ACT 1 and 2 removed)
(Ref. Fig. 505)

**ON A/C 101-200,

(Ref. Fig. 509)

**ON A/C 101-200,

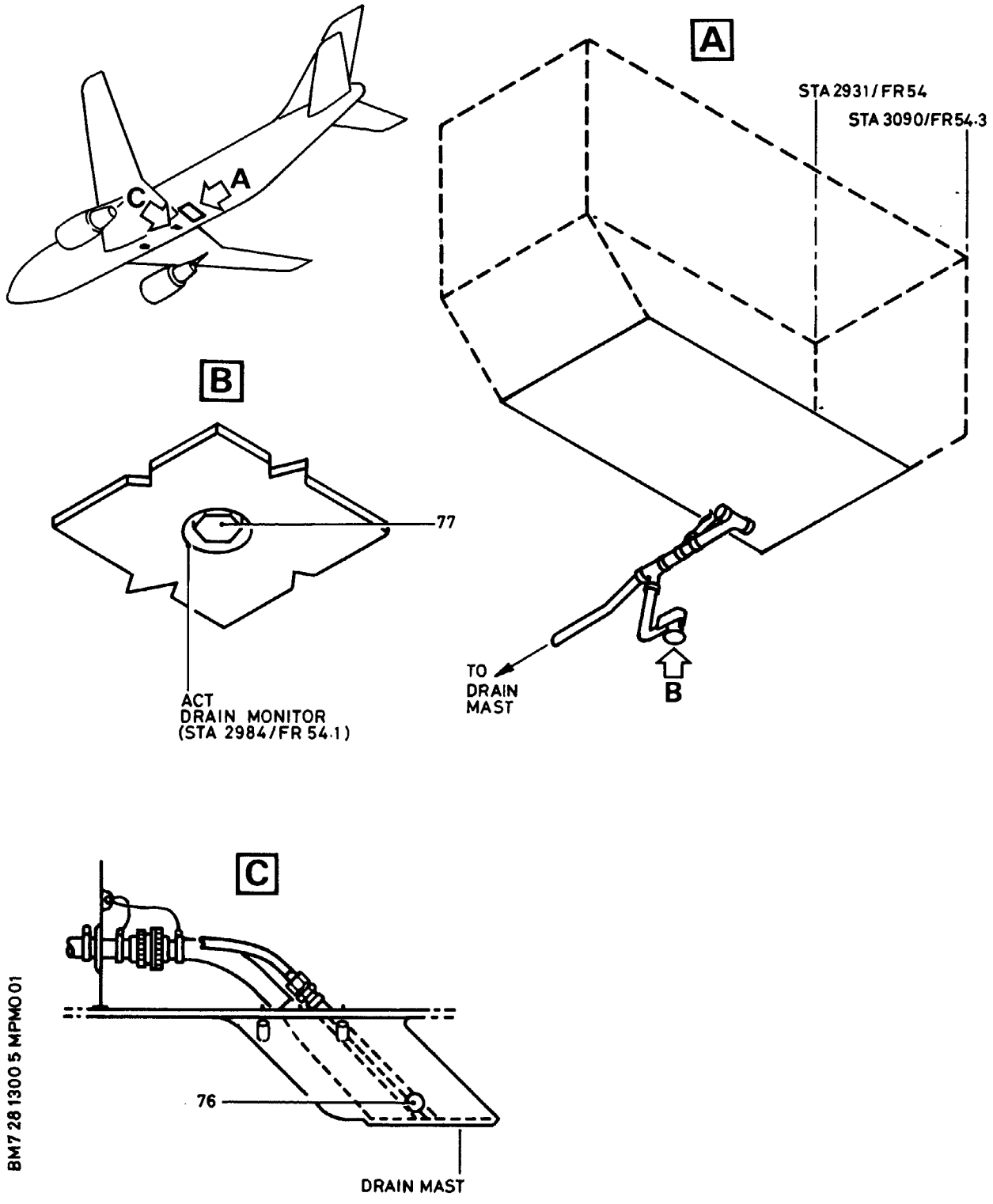
Post SB 28-2105 For A/C 101-200,

R Post SB 28-2126 For A/C 104-104,

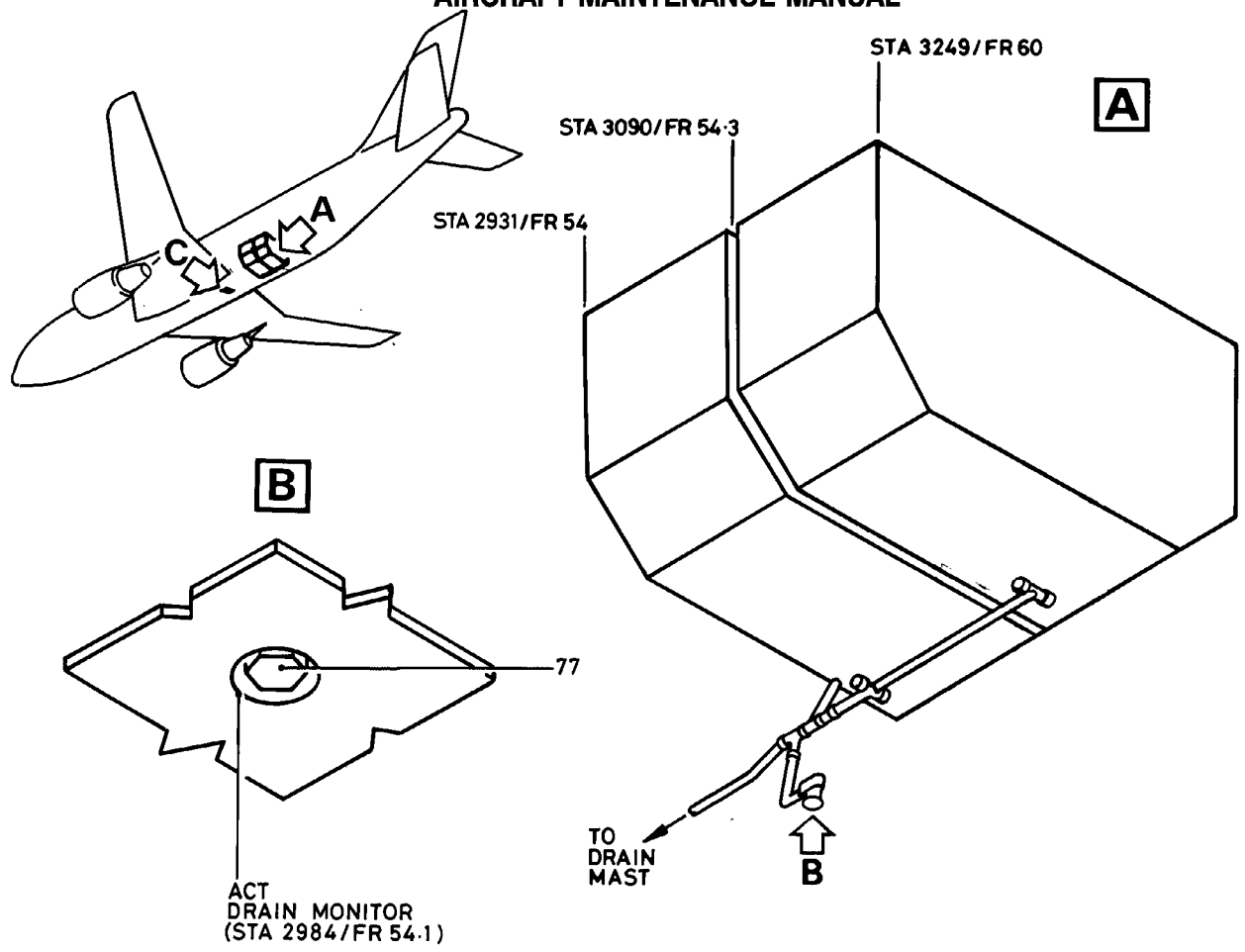
(Ref. Fig. 510)

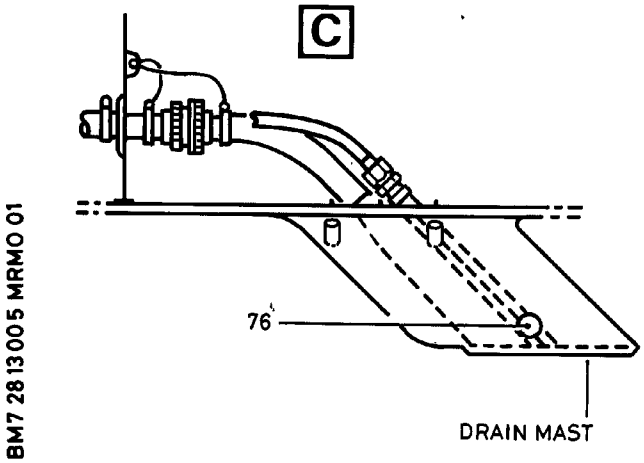
**ON A/C 101-200,

(1) Job Set-Up
(a) Open the right hand main-landing-gear bay door (Ref. 32-12-11, P. Block 301) and position the access platform.
(b) Disconnect the Auxiliary Power Unit (APU) and the trim transfer-pipe shroud drainpipe (42) and (43) at the straight connection on the left-hand side of the main-landing-gear-bay between FR 47 and FR 48.
(c) Install a suitable pressure retaining blank onto the open end of the aft facing connection (43). Cap the open end of the fwd facing connection (42).



Functional Test - ACT System
(ACT Removed)
Figure 509





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Functional Test - ACTs System
(ACT 1 and 2 Removed)
Figure 510

NOTE: The trim tank/APU vent/drain system is now isolated from the ACT vent/drain system.

(d) On the right hand side of the main-landing-gear bay, adjacent to STA2612/FR47, disconnect the pipeline (47) from the union (48).
(e) Blank the open end of the union (48).
(f) On the lower right hand side of the main-landing-gear bay at STA2931/FR54, disconnect the pipeline (46) from the union (45).
(g) Connect the air supply to the pipeline (46).
(h) At STA2984/FR54.1, place the container below the ACT(s) drain monitor and push (in) the plunger (77). If trapped fuel is released, carry out the leak test (Ref. 28-13-31, P. Block 601).

NOTE: The drain monitor must not leak fuel.

(j) Release (out) the plunger (77) and remove the container.

(2) Test

CAUTION: BEFORE PROCEEDING WITH THE TEST, MAKE SURE THAT THE TEST EQUIPMENT INCLUDES A SAFETY SYSTEM TO PREVENT ANY OVERPRESSURE WHICH COULD DAMAGE THE AIRCRAFT.

ACTION	RESULT
Free Flow Test of System Lines	
1. In the main-landing-gear bay:	
- Set the air supply maximum pressure to 20 mb (0.29 psi).	
- Start the air supply.	- The air flows from the drain mast outlet (76), and the pipeline (47) adjacent to STA2612/FR47.
- Stop the air supply.	- The air flow stops.
2. Disconnect the air supply from the pipeline (46) and connect the air supply to the union (45).	
3. Install a pressure retaining blank onto the open end of the pipeline (46).	
4. Remove the blank from the union (48) and blank the open end of the pipeline (47).	
5. Start the air supply.	
6. At STA2984/FR54.1	At STA2984/FR54.1:

ACTION	RESULT
- Push (in) the plunger (77) on the ACT(s) drain monitor.	- The air flows from the ACT(s) drain monitor.
- Release (out) the plunger (77).	- The air flow stops.

7. In the main-landing-gear bay:
   - The air flows from the union (48).

   - Stop the air supply and release the pressure.

     NOTE: If there is no airflow from the lines tested, disconnect the lines and clear obstruction.

   - Remove the blank from the pipeline (47)
   - Connect the pipeline (47) to the union (48).

Leak Test

8. At FR 52/53:
   - Install the adapter PN 97A28002542000 onto the drain mast outlet (76).

   - Install the pressure retaining blank onto the open line end of the adapter PN 97A28002542000. — All the vent/drain outlets are now blanked.

9. In the main-landing-gear bay:
   - Start the air supply and slowly pressurize the system to 20 mb (0.29 psi) for at least 30 minutes to stabilize the air pressure. — The system pressure reads 20 mb (0.29 psi).

   - Close the air supply control — The system pressure remains stable.

   - Stop the air supply

   - Make sure that the pressure remains stable.

     NOTE: If the pressure drops, use the soap solution to locate the leaks in the lines. If a leak is found, repair as necessary. Repeat the test until the pressure remains stable.

ACTION	RESULT

10.Release the pressure.

(3)Close-Up
(a)In the main-landing-gear bay at STA2931/FR54, disconnect the air supply from the union (45).
(b)Remove the blank from the pipeline (46) and connect the pipeline (46) to the union (45).
(c)On the left hand side of the main-landing-gear bay between FR 47 and FR 48:
1 Remove the cap from the fwd facing vent/drain connection (42).
2 Remove the blank from the aft facing vent/drain connection (43).
3 Connect the APU and the trim transfer-pipe shroud drainpipe (42) to the vent/drain system (43).

NOTE: The trim tank/APU vent/drain system is now connected to the ACT vent/drain system.

(d)Make sure that the work area is clean and clear of tools and miscellaneous items of equipment.
(e)Remove the access platform and close the right hand main-landing-gear bay door (Ref. 32-12-11, P. Block 301).
(f)At FR 52/53:
1 Remove the blank from the adapter on the drain mast.
2 Remove the adapter PN 97A28002542000 from the drain mast outlet.

**ON A/C 001-100,

3. Not applicable.
4. Not applicable.

**ON A/C ALL

5. Trim Tank Fuel Transfer Pipe - Shroud Pressure Test

A. Reason for the Job
(1)To pressure test the trim tank fuel transfer pipe shroud.

B. Equipment and Materials

ITEM	DESIGNATION
A.	Access Platform 2.5 m (8 ft)
B	Access Platform 6.5 m (21 ft)
C. 97A21102033000 or equivalent	Test Bench
D.	Refuel Tanker, with gage capable of reading fuel pressure 1 - 1.5 bar (15 - 25 psi)
E	Warning Notices

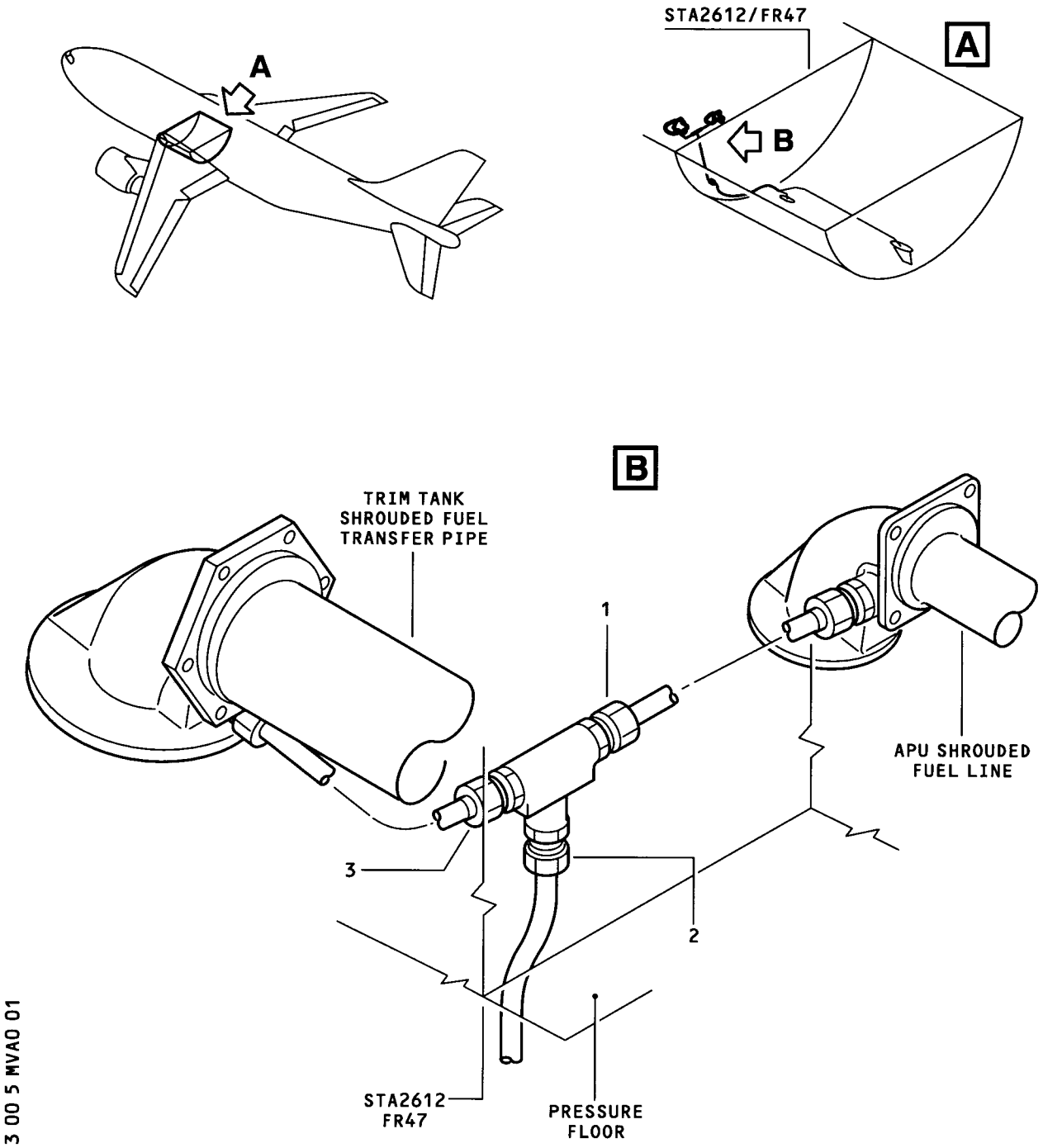
ITEM	DESIGNATION
F.	Container 1 liter (0.26 US Gal)
G.	Blanking Cap equipped with pressure gage 0 - 2 bar (0 - 30 psi)
H.	Blanking Cap
J.	Leak Detecting Soap Solution
Referenced Procedures	
- 06-41-53, P. Block 1	Fuselage
- 12-11-28, P. Block 301	Replenishing of Fuel Tanks
- 24-41-00, P. Block 301	AC External Power Control
- 25-21-00, P. Block 401	Passenger Compartment/Seats
- 25-28-11, P. Block 401	Carpet - Floor Covering
- 25-28-12, P. Block 401	Covering - Non Textile Floor
- 28-13-31, P. Block 601	Drain Shroud
- 28-25-00, P. Block 301	Refuel/Defuel System
- 32-12-11, P. Block 301	Main Gear Main Door
- 53-10-25, P. Block 401	Passenger Compartment Floor Panels
- 55-00-00, P. Block 301	Stabilizers General

C. Procedure
(Ref. Fig. 504)
(Ref. Fig. 511)
(Ref. Fig. 512)
(1)Job Set-Up
(a)Refuel the center tank to the high level sensor cut-off level (Ref. 12-11-28, P. Block 301).
(b)Make the trimmable horizontal stabilizer (THS) and the vertical stabilizer safe (Ref. 55-00-00, P. Block 301).
(c)Display a warning notice in the cockpit on the overhead panel, prohibiting any operation of the Auxiliary Power Unit (APU).
(d)Position the container below the APU/TTS drain monitor and push (in) the plunger (37). If trapped fuel is released, carry out the leak test (Ref. 28-13-31, P. Block 601).

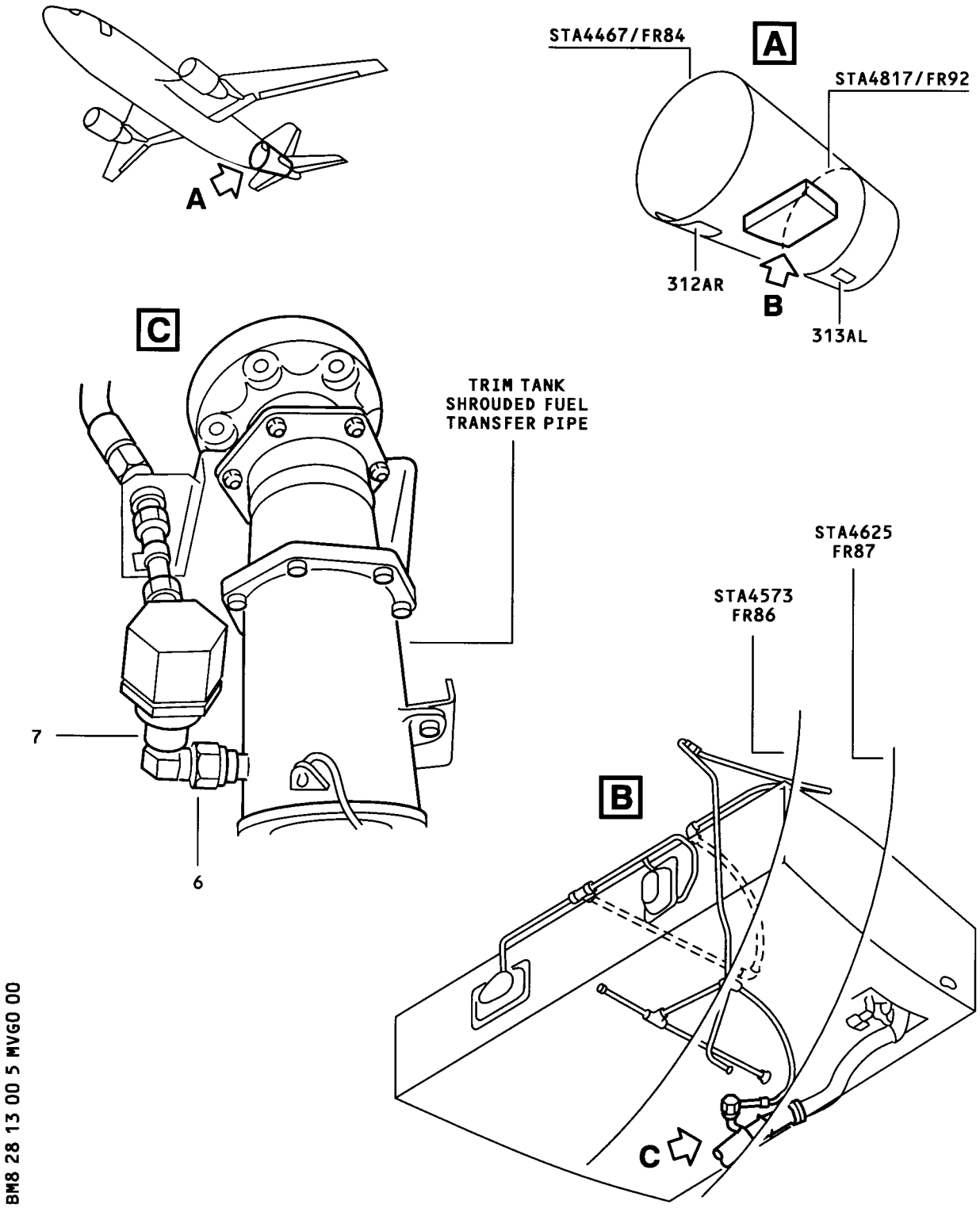
NOTE: The drain monitor must not leak fuel.

(e)Release (out) the plunger (37) and remove the container.
(f)On the left hand side of the passenger compartment at STA 2612/FR 47:
1 Remove the relevant passenger compartment seats (Ref. 25-21-00, P. Block 401).
2 Remove the floor covering (Ref. 25-28-11 and 25-28-12, P. Block 401).
3 Remove the applicable floor panel (Ref. 06-41-53, P. Block 1 and 53-10-25, P. Block 401) to get access to the APU/trim tank fuel vent ducts.

NOTE : The tee (that connects the APU fuel-feed drain line to the trim-tank fuel-feed drain line) can now be seen immediately aft of FR 47.



Trim Tank Fuel-Transfer and APU Fuel-Feed Pipe
Shrouded Drain Line Location
Figure 511



Trim Tank Vapor-Seal Drain Pipe - Location
Figure 512

4 Disconnect the APU fuel-feed-pipe drain pipe (3) from the tee connection.
5 Install a suitable pressure blank to the open end of the tee connection and cap the open end of the APU fuel-feed-pipe drain line (3).

(g)At STA2612/FR 47:
1 Open the left hand main-landing-gear-bay door (Ref. 32-12-11, P. Block 301) and position the 2.5 m (8 ft) access platform.
2 Position the container below the work area, to catch any trapped fuel that is released.
3 Disconnect the APU/Trim-Tank drain line below the connector (2), and cap the unused open end of the drain line.
4 Remove the container.

CAUTION: MAKE SURE THAT THE TEST EQUIPMENT INCLUDES A SAFETY SYSTEM TO PREVENT ANY OVERPRESSURE WHICH MAY DAMAGE THE AIRCRAFT.

5 Connect the test bench PN 97A21102033000 to the open connector (2), to supply air to the trim tank fuel-transfer pipe, shrouded drain line.

(h)At STA4625/FR 87:
1 Put the 6.5 m (21 ft) access platform below zone 311/312 and open the access door 312AR to get access to the area below the trim tank.
2 Disconnect the trim tank vapor-seal drain pipe (7) from the trim tank shrouded fuel-transfer pipe connection (6).
3 Install a suitable blank to the open end of drain pipe (7), for protection.
4 Install the blanking cap and the gage to the connection (6).

(j)Connect a fuel tanker to the aircraft (Ref. 12-11-28, P. Block 301).
(k)Energize the aircraft electrical network (Ref. 24-41-00, P. Block 301).
(l)On panel 430VU, in the flight compartment, make sure that the TRIM TK ISOL VALVE P/BSW is pressed (in) and that the flow bar is on (isolation valve selected open).

CAUTION: DO NOT CLOSE THE ACCESS DOOR 144DR OR OPERATE THE ACCESS DOOR MICROSWITCH UNTIL THE TEST IS COMPLETED.

(m)Open the access door 144DR to the refuel/defuel panel 110VU:

NOTE: The trim tank isolation valve will open automatically when the access door 144DR is opened.

1 Make sure that the PWR SUPPLY switch is in the NORM and guarded position.
2 Raise the guards and put all the REFUEL-DEFUEL-VALVES switches in the SHUT position.
3 Make sure that the TRANSF. VALVE switch is in the CLOSED and guarded position and that the OPEN indicator light is off (valve is shut).

**ON A/C 001-100,

4 Lift up the guard and put the MODE SELECTOR switch in the REFUEL position.
5 Put the FUEL QTY switch in the TT position.

**ON A/C 101-200,

4 Lift up the guard and put the MODE SELECTOR switch in the REFUEL position.
5 Put the FQI DISPLAY switch in the TT position.

**ON A/C 101-200,

Post SB 28-2108 For A/C 101-200,

4 Lift up the guard and put the MODE SELECT switch in the REFUEL position.
5 Put the FQI DISPLAY switch in the TT position.

**ON A/C ALL

NOTE: The CTR/TT contents display on the FQI will only display the trim tank fuel quantity.

6 Put the CTR TK and TRIM TK REFUEL-DEFUEL-VALVES switches in the OPEN position.

NOTE: The trim-tank refuel/defuel valve will only open if the center tank refuel/defuel valve is open.

(n)Start to refuel the trim tank:
1 When the CTR/TT contents display on the FQI, shows an increase in the fuel reading, release (out) the TRIM TK ISOL VALVE P/BSW on panel 430VU. Make sure that the flowbar goes off and the OFF legend comes on (isolation valve closed).

(p)At the tanker:
1 Stop refueling.
2 Set the fuel delivery pressure to 2.5 bar ± 0.2 bar (36.00 psi ± 3.00 psi) and make sure that the fuel flow is almost zero.

(q)Position persons at:
1 The fuel tanker.
2 The test bench at STA2612/FR47.
3 The gage, on the fuel-transfer pipe, connection (6) at STA4625/FR87.

(r)Establish a line of communication between all persons.

(2)Test.

CAUTION: THE TRIM TANK FUEL-TRANSFER PIPE MUST BE PRESSURIZED THROUGHOUT THE TEST. FAILURE TO PRESSURIZE MAY CAUSE THE FUEL PIPE TO COLLAPSE AND LEAK.
THE PERSON AT THE TANKER MUST MONITOR THE FUEL PRESSURE CLOSELY. IF THE PRESSURE FALLS BELOW 2.3 BAR (33.00 PSI), THE PERSON AT THE TEST BENCH MUST BE TOLD IMMEDIATELY TO RELEASE THE AIR PRESSURE IN THE SHROUD.

ACTION	RESULT
1. Start the refuel tanker and slowly pressurize the trim tank shrouded pipe to a pressure of 2.5 bar ± 0.2 bar (36.00 psi ± 3.00 psi).	The fuel space within the transfer pipe is pressurized.
2. Start the test bench and slowly pressurize the shrouded pipe until the pressure stabilizes at 1.38 bar (20 psi) maximum.	The airspace within the shrouded pipe is pressurized.
3. Close the air supply controls and stop the test bench.	At STA4625/FR87: - The air pressure gage shows no change for 15 minutes.

NOTE: If the pressure drop exceeds the limits, use the soap solution to locate the leaks. If a leak is found, repair as necessary. Repeat the test and make sure that the pressure drop is within the limits.

4. At the test bench: - Release the air pressure.	- The air pressure within the shrouded pipe is released.
5. Stop the tanker and Release the fuel pressure.	- The fuel pressure within the transfer pipe is reduced.
6. On panel 430VU, in the flight compartment: - Press (in) the TRIM TK ISOL VALVE P/BSW and make sure that the flowbar comes on.	- The trim tank isolation valve opens. - The fuel pressure within the transfer pipe is released.

**ON A/C 001-100,

(3)Close-Up
(a)On panel 110VU:
1 Put the FUEL QTY switch in the CTR & TT position.

2 Put the MODE SELECTOR switch in the OFF and guarded position.
3 Put all the REFUEL-DEFUEL-VALVES switches in the NORM and guarded position.

(b)Close the access door 144DR.

**ON A/C 101-200,

(3)Close-Up

(a)On panel 110VU:

1 Put the FQI DISPLAY switch in the CTR & AUX & TT position.
2 Put the MODE SELECTOR switch in the OFF and guarded position.
3 Put all the REFUEL-DEFUEL-VALVES switches in the NORM and guarded position.

(b)Close the access door 144DR.

**ON A/C 101-200,

Post SB 28-2108 For A/C 101-200,

(3)Close-Up

(a)On panel 110VU:

1 Put the FQI DISPLAY switch in the CTR-TT & ACT position.
2 Put the MODE SELECT switch in the OFF and guarded position.
3 Put all the REFUEL-DEFUEL-VALVES switches in the NORM and guarded position.

(b)Close the access door 144DR.

**ON A/C ALL

(c)De-energize the aircraft electrical network (Ref. 24-41-00, P. Block 301).

(d)Remove the fuel tanker from the aircraft (Ref. 12-11-28, P. Block 301).

(e)At STA2612/FR47:

1 Disconnect the test bench from the connector (2). Remove the cap and install the APU/Trim-Tank drain line onto the connector (2).

(f)At STA4625/FR87:

1 Remove the blanking cap and the gage, from the trim-tank shrouded fuel transfer-pipe connection (6).
2 Remove the blank and install the trim-tank, vapor-seal drain pipe (7) to the fuel-transfer-pipe connection (6).

(g)On the left hand side of the passenger compartment immediately aft of STA 2612/FR 47:

1 Remove the cap from the end of the APU fuel-feed-pipe drain line (3) and the pressure blank from the tee.
2 Connect the APU fuel-feed-pipe drain line (3) to the tee connection.
3 Make sure that the work area is clean and clear of tools and other items of equipment and install the applicable floor panel (Ref. 06-41-53, P. Block 1 and 53-10-25, P. Block 401).
4 Install the floor covering (Ref. 25-28-11 and/or 25-28-12,

P. Block 401).
5 Install the relevant passenger compartment seats (Ref. 25-21-00, P. Block 401).

**ON A/C 001-100,

(h)Do the Pressure Test of the Vent/Drain system (Ref. para. 2. D.).

**ON A/C 101-200,

(h)Do the Pressure Test of the Vent/Drain system (Ref. para. 2. G.).

**ON A/C ALL

(j)In the main-landing-gear-bay:
1 Make sure that the work area is clean and clear of tools and other items of equipment.
2 Remove the 2.5 m (8 ft) access platform and close the main-gear-main-door (Ref. 32-12-11, P. Block 301).
(k)In the area below the trim tank:
1 Make sure that the work area is clean and clear of tools and other items of equipment.
2 Close the access door 312AR and remove the 6.5 m (21 ft) access platform.
(l)Return the THS and the vertical stabilizer to the normal operating condition (Ref.55-00-00, P. Block 301).
(m)Remove the warning notice from the cockpit overhead panel prohibiting the operation of the APU.
(n)Defuel the trim tank and the center tank (Ref. 28-25-00, P. Block 301).

WARNING: PUT THE SAFETY DEVICES AND WARNING NOTICES IN POSITION BEFORE YOU START A TASK ON OR NEAR:
- THE FLIGHT CONTROL SURFACES
- THE LANDING GEAR AND THE RELATED DOORS.

OBEY THE SAFETY PRECAUTIONS IN 28-00-00, PAGE BLOCK 301

MAKE SURE THAT FIRE FIGHTING EQUIPMENT IS AVAILABLE AND ADEQUATE.

1. Reasons for the Job

A. To examine the condition of the fuel-barrier sealant coating.

B. To examine the trim-tank-vapor-seal moulded drains for cracks.

2. Equipment and Materials

ITEM	DESIGNATION
A.	Access Platform, 4.8m (16ft)
B.	Inspection Torch
C.97A27302009000	Locking Equipment - Pitch Trim Control Wheel
Referenced Procedures	
- 55-00-00, P. Block 301	Stabilizers - General
- 28-00-00, P. Block 301	Fuel - General

3. Procedure

A. Job Set-up

(1)Move the horizontal stabilizer to 3 deg A/C nose down and install the locking equipment PN97A27302009000 to the pitch-trim control wheel.

(2)Display a warning notice in the flight compartment to prohibit the operation of the pitch control.

(3)Put the access platform in position.

(4)Open the access doors 312AR and 313AL.

B. Inspection/Check

(1)Fuel-barrier sealant coating.

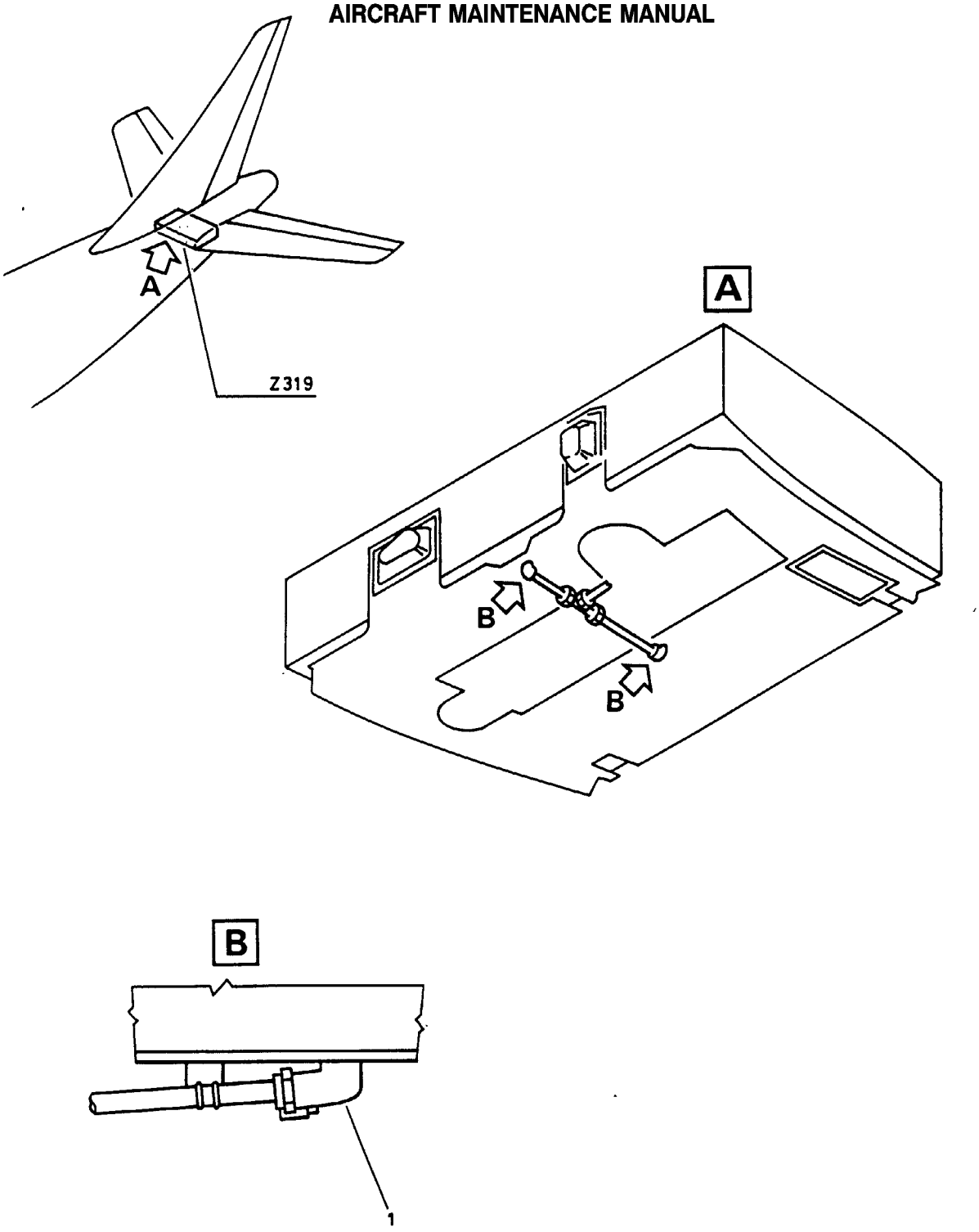
R (a)Examine the fuel-barrier sealant coating on the forward and upper
R surfaces of the trim tank (Ref. Fig. 602). Deterioration, cracks or
R separation are not permitted.

(2)Trim-tank-vapor-seal moulded drains (Ref. Fig. 601).

(a)Use light finger pressure to deflect the vapor-seal moulded drains (1) in all directions. Inspect the moulded drains (1) for cracks as they are deflected.

C. Close-up

(1)Make sure that the working area is clean and clear of tools and equipment.



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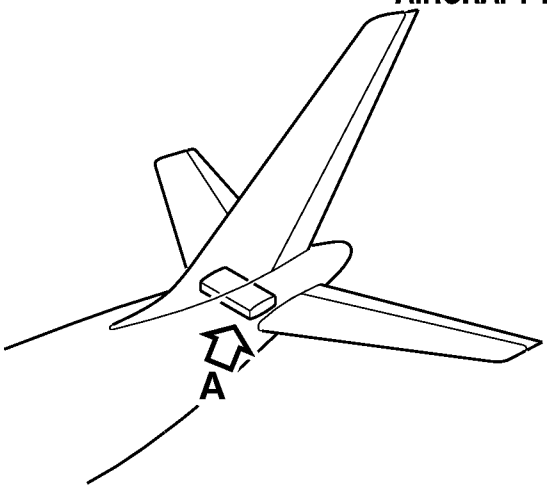
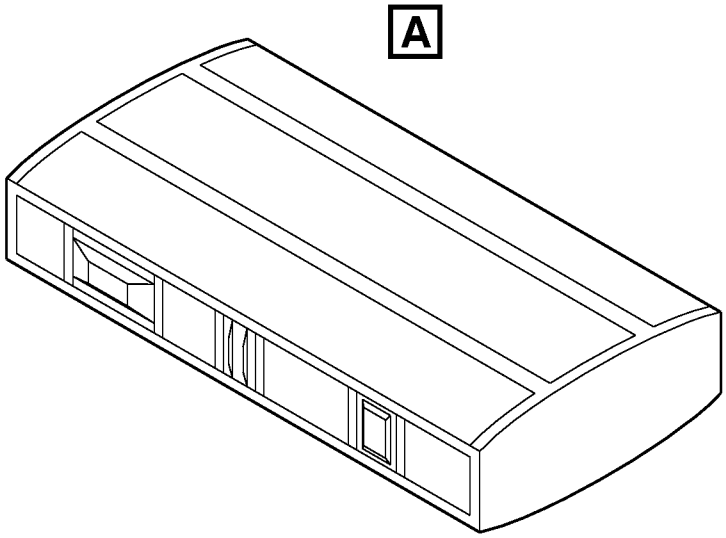
Trim-Tank-Vapor-Seal Moulded Drains
Figure 601

R





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Location of the Fuel-Barrier Sealant Coating
Figure 602

R

(2)Close the access doors 312AR and 313AL.
(3)Remove the warning notice.
(4)Remove the locking equipment PN97A27302009000 from the pitch-trim control wheel.
(5)Remove the access platform.

R

WARNING : MAKE CERTAIN THAT LANDING GEAR SAFETIES INCLUDING WHEEL CHOCKS ARE IN POSITION.

1. Reason for the Job

A. Check manually the air inlet check valve for freedom of movement over full travel.

2. Equipment and Materials

ITEM	DESIGNATION
A.	Access Platform 2,7 m (9 ft.)
Referenced Procedures	
- 52-33-00, P. Block 1	Cargo Compartment Door Hydraulic System
- 20-28-11, P. Block 1	Electrical Bonding

3. Procedure
(Ref. Fig. 601)

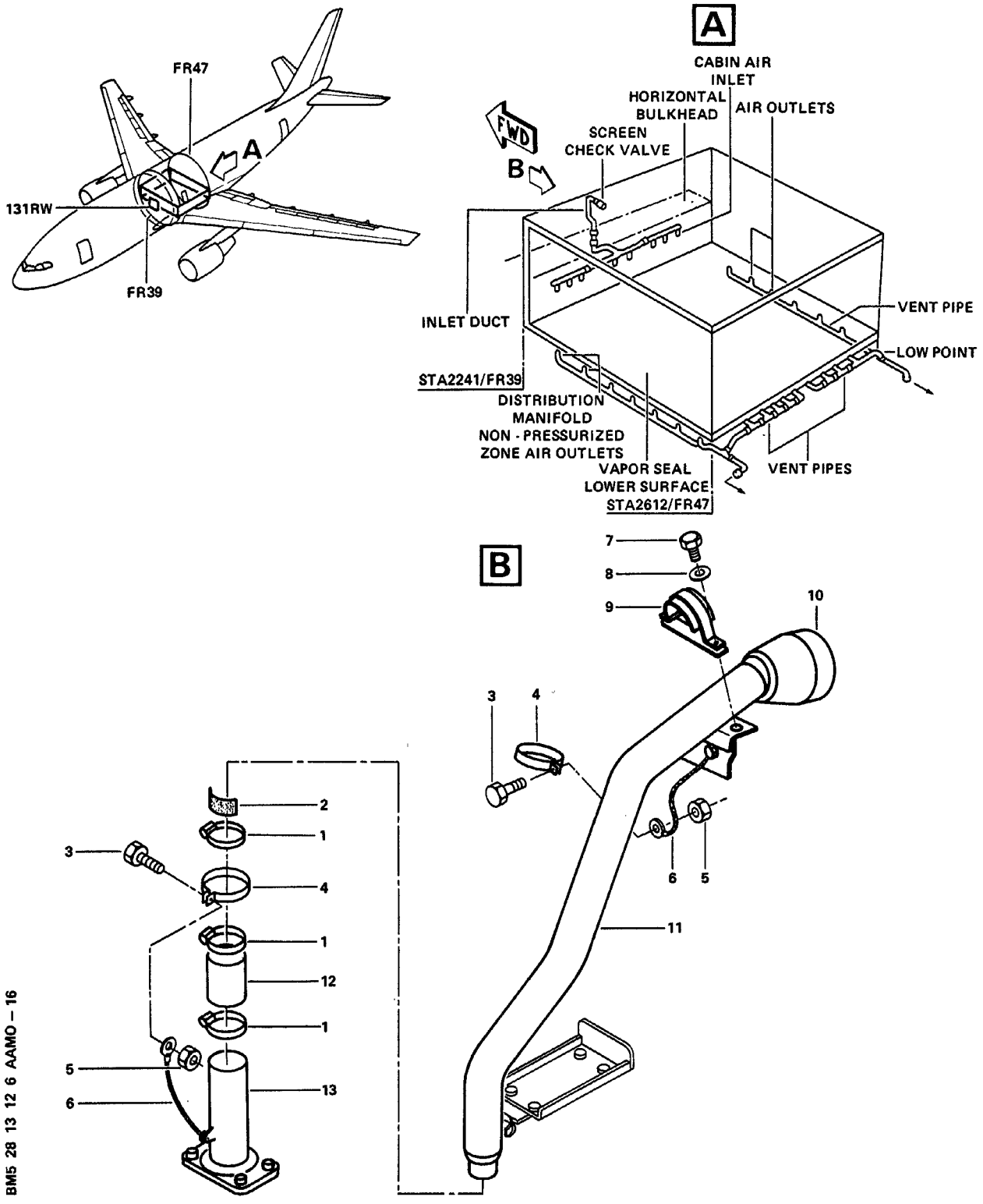
A. Job Set-Up
(1)Position access platform at forward cargo compartment door.
(2)Open forward cargo compartment door 811 (Ref. 52-33-00, P. Block 1).
(3)In fwd cargo compartment at STA 2210 FR47, remove side panel 131RW.

R

(4)Remove the three clamps (1).
(5)Remove padding (2).
(6)Remove bolts (3) from bonding clips (4) and remove nuts (5).
(7)Remove bonding strips (6).
(8)Remove bolt (7) and washer (8).
(9)Remove support clamp (9).
(10)Disconnect pipe (11) from pipe (13) and remove pipe (11) equipped with check valve (10).
(11)Remove sleeve (12).

B. Inspection
(1)Check for cleanliness and correct condition of air inlet duct/ check valve assembly.
(2)Check manually that check valve flapper moves freely over full travel.

C. Close-Up
(1)Install sleeve (12) on pipe (13).
(2)Insert pipe (11) equipped with check valve (10) into pipe (13). Correctly install pipe (11).
(3)Install support clamp (9), washer (8) and bolt (7).
(4)Install bonding clips (4), bonding strips (6), bolts (3) ; tighten nuts (5) (Ref. 20-28-11, P. Block 1).
(5)Correctly install sleeve (12) and padding (2) together with clamps (1).



Check Valve - Location
Figure 601

(6)Tighten clamps (1).
(7)In fwd cargo compartment, install side wall panel 131RW.
(8)Close forward cargo compartment door 811 (Ref. 52-33-00, P. Block 1).
(9)Remove access platform.

R 1. Horizontal Vapor Seal

R **WARNING : BEFORE PROCEEDING WITH REMOVAL/INSTALLATION NEAR SLAT CONTROL**
R **LINKAGE OR NEAR REFRIGERATION UNIT PACKS, MAKE CERTAIN THAT GROUND**
R **SAFETIES AND/OR WARNING NOTICES ARE IN CORRECT POSITION, TO PREVENT**
R **INADVERTENT OPERATION OF CONTROLS.**

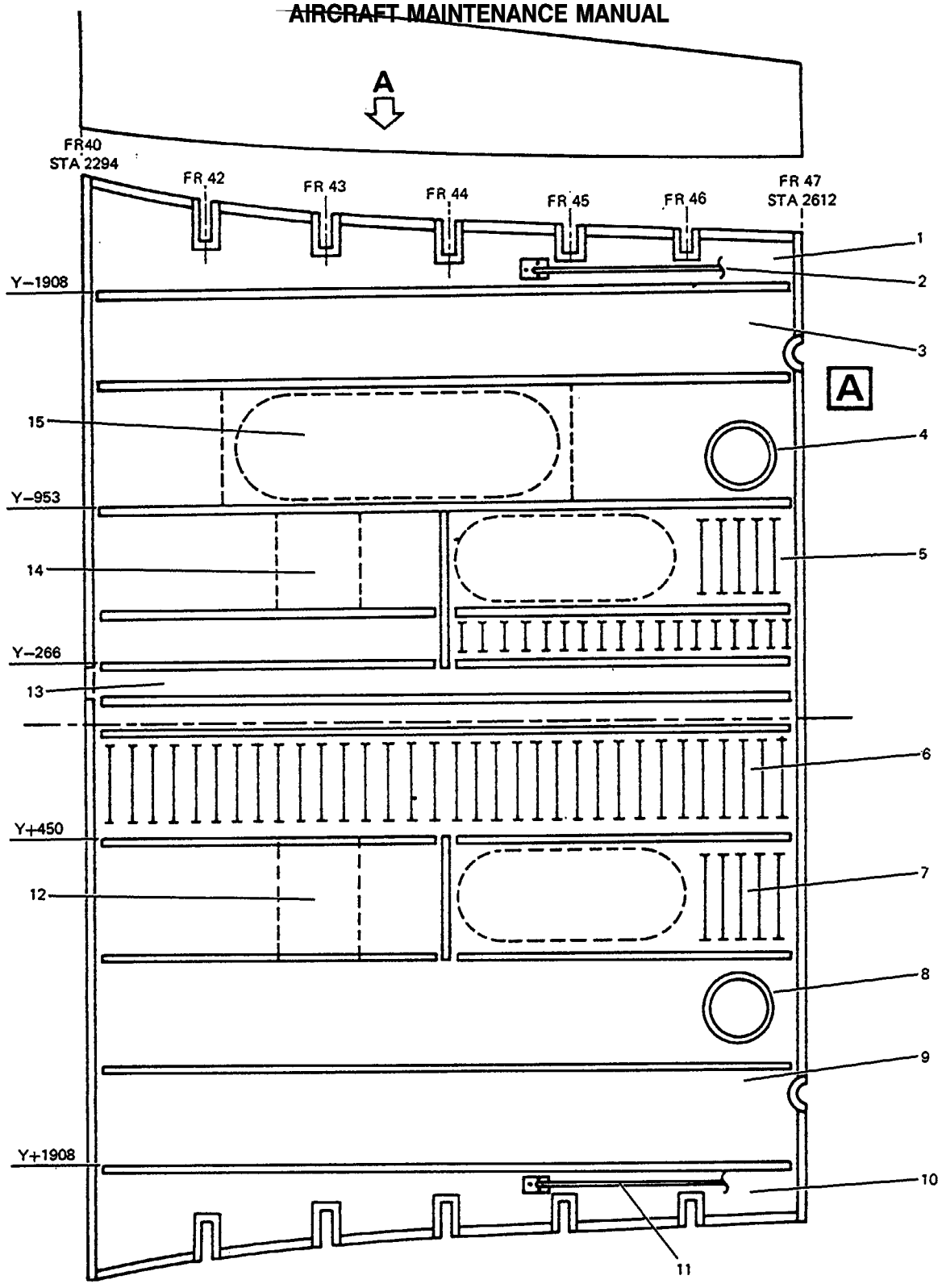
R A. Reason for the Job
R (1)Replacement of a center tank lower surface vapor seal element.
R (2)Removal of all or some vapor seals for inspection of wing center box lower surface panel.

R B. Equipment and Materials

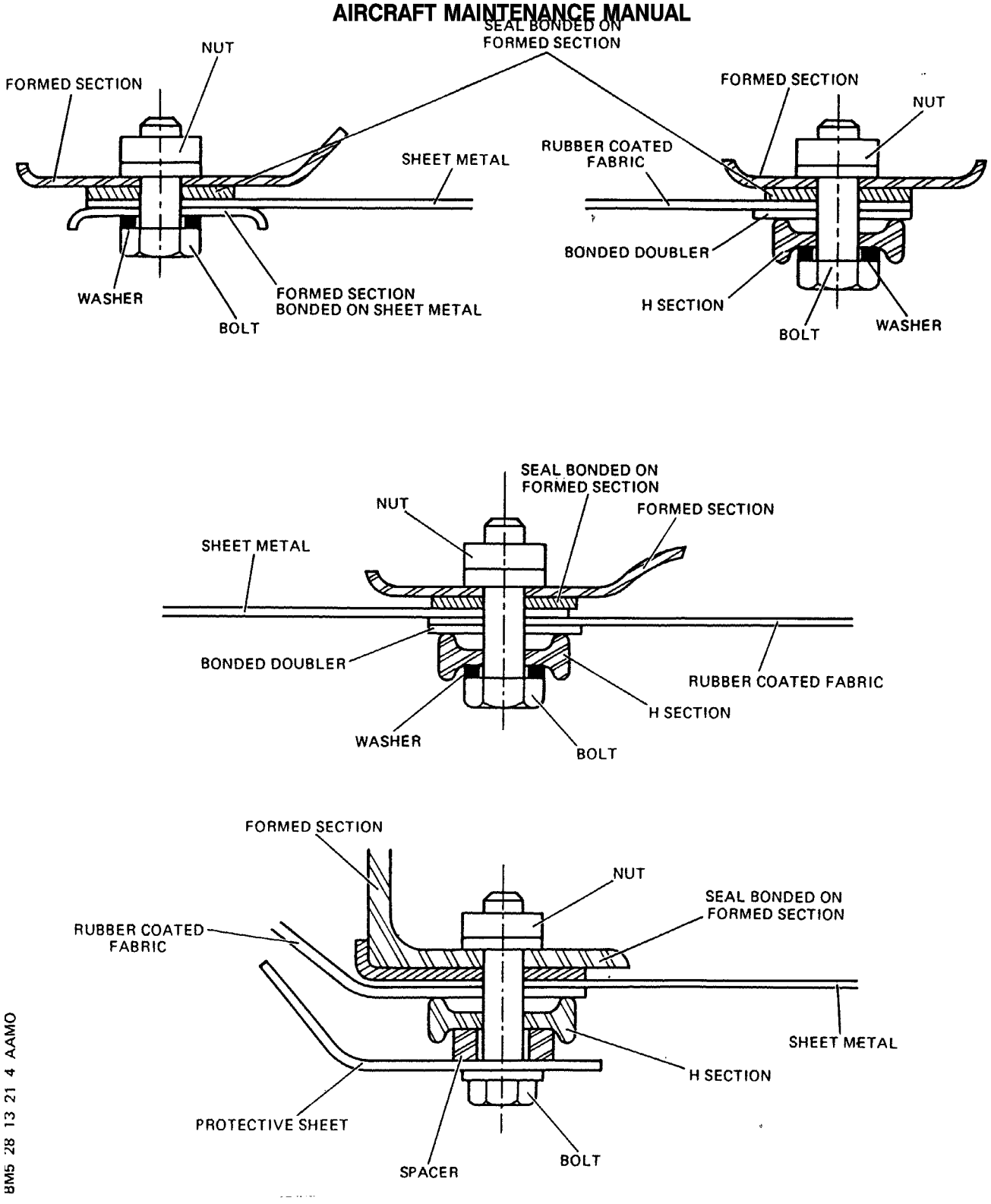
ITEM	DESIGNATION
R (1)	Access Platform 2.60 m (8 ft. 7 in.)
R (2)	Warning Notices
R (3)Material No. 09-001	Sealants (Ref. 20-31-00)
Referenced Procedures	
- 21-11-00, P. Block 1	Flow Control and Indicating
R - 25-72-41, P. Block 401	Access Panels
- 28-13-21, P. Block 801	Vapor Seals
- 28-21-00, P. Block 501	Fuel Pump System
- 32-12-11, P. Block 301	Main Gear Main Door - Ground Door(s) Opening

R C. Procedure
(Ref. Fig. 401)
(Ref. Fig. 402)
NOTE : Two types of vapor seals are attached to the center tank lower surface.
- Vapor seals 1, 5, 6, 7 and 10 are made of light alloy.
The periphery of the vapor seals is reinforced by a bonded formed edge section, except in areas where they come into contact with rubber vapor seals.
- Vapor seals 3 and 9 are made of rubber coated fabric reinforced by bonded elastomer seals along the attachments.
- Sealing for the two types of vapor seals is ensured by means of elastomer seals bonded to the aircraft structure.
- Extreme care must be taken when handling vapor seals.
  - avoid separation of doublers and edge sections from vapor seals
  - do not distort metallic vapor seals
  - do not tear or puncture flexible vapor seals.

R (1)Job set-up
R (a)Open left main gear door 734 (Ref. 32-12-11, P. Block 301).
R (b)Position access platform.
R (c)Disconnect electrical connectors from fuel booster pumps. Remove electrical conduits attachment clamps.
R (d)Remove access door 147BZ and access panels 147CZ and 148CZ



Lower Surface Vapor Seals
Figure 401



Vapor Seals - Installation Details
Figure 402

R (Ref. 25-72-41, P. Block 401).

R (e)On center pedestal

- display a warning notice prohibiting operation of flap and slat control lever.

R On COMPT TEMP panel 437VU

- display a warning notice prohibiting starting up of refrigeration unit packs.

Make certain that pneumatic system is depressurized (Ref. 21-11-00, P. Block 1).

R (f)Open, safety and tag the following circuit breakers :

R	PANEL	SERVICE	IDENT.	LOCATION
R	133VU	KRUGER	45CV	333/T61
R	133VU	SLATS/26VAC/SYS1	3CV	335/R65
R	133VU	SFCC/NORM SUPPLY/SLATS/SYS1	7CV	333/T63
R	133VU	SUPPLY/SLATS/SYS2	9CV	335/R66
R	133VU	SLATS/SYS2	8CV	333/T64
R	133VU	SLATS/26VAC/SYS2	4CV	335/R64
R	133VU	FLAPS & SLATS/POS/ECAM	2CN	334/S65
R	133VU	FLAPS & SLATS/POS/IND	1CN	334/S66
R	133VU	FLAPS/SYS1/26VAC	1CV	335/R61
R	133VU	SUPPLY/FLAPS/SYS1	10CV	335/R67
R	133VU	SFCC/NORM/SUPPLY/FLAPS/SYS1	5CV	332/U61
R	133VU	SFCC/NORM/SUPPLY/FLAPS/SYS2	6CV	331/V61
R	133VU	FLAPS/SYS2/26VAC	2CV	334/S62

R (2)Removal

NOTE : As lengths of vapor seal attachment bolts vary, record bolt position before removal. Also record positions of sections. Inspection of center tank lower surface does not require removing slat system component shield (13).

R (a)Removal of vapor seals (5, 6 and 7)

R 1 If flexible vapor seals are not removed :
Remove H sections at flexible vapor seal to metallic vapor seal junction.

R 2 Remove bolts and washers from transversal and longitudinal formed edge sections.

R 3 Carefully remove vapor seals. Take care not to tear the bonded formed edge sections.

R (b)Removal of flexible vapor seals (3, 9).

R 1 Remove protective sheets (12, 14 and 15) and retain bolts and spacers.

R 2 Remove formed sections (4 and 8) around fuel booster pumps.

R 3 Remove bolts and washers from H sections. Carefully remove vapor seals and H sections.

R (c)Removal of vapor seals (1 and 10)

NOTE : These vapor seals are in two parts. Separation is at FR44

R 1 If flexible vapor seals are not removed : remove the longitudinal H sections at flexible vapor seal to metallic vapor seal junction.

R 2 Remove coupling of ventilation ducts (2, 11) at FR45.

R 3 On ventilation duct flanges, scrape off sealing compound, remove the three bolts, and retain seals and flanges.
R 4 At FR40 to 46, remove pick-up plates.
R 5 Remove bolts and washers from longitudinal and transversal formed edge sections.
R 6 Carefully remove vapor seals.
R (3)Preparation of replacement component
R (a)Make certain that flexible vapor seals are neither cut nor punctured.
Check that there are no signs of separation at doublers.
Make certain that formed sections are not distorted.
Make certain that there are no signs of separation at seals on aircraft structure.
If a flexible vapor seal is damaged, repair vapor seal (Ref. 28-13-21, P. Block 801).
R (b)Make certain that metallic vapor seals are neither scratched nor distorted.
Check that there are no signs of separation at metallic edge sections.
Make certain that there are no signs of separation at seals on aircraft structure.
R (4)Installation
NOTE : To facilitate installation, it is necessary to position vapor seals and temporarily attach.
Install bolts equipped with washers but do not tighten until all bolts have been installed.
TORQUE to between 0.3 and 0.36 m.daN (26.5 and 32 lbf.in.).
Take care to position H sections right way up.
R (a)Installation of vapor seals (1 and 10)
R 1 Install each vapor seal by means of formed sections and pick up plates.
Install longitudinal H sections at flexible to metallic vapor seal junction only once flexible vapor seals have been installed.
R 2 Tighten bolts.
R 3 Install ventilation duct flanges (2,11) equipped with seal. Tighten ventilation duct couplings.
R 4 Apply a coat of PR-1422-A2 or PR-1422-A1/2 (Material No. 09-001) on the three flange bolt heads.
R (b)Installation of flexible vapor seals (3 and 9)
NOTE : These vapor seals are to be installed only after metallic vapor seal installation.
R 1 Install vapor seals by means of H sections.
Install sections (4 and 8) around fuel booster pumps.
R 2 Install spacers and protective sheets (12, 14 and 15).
R 3 Tighten bolts.
R (c)Installation of vapor seals (5, 6 and 7)
R 1 Install vapor seals and bolts equipped with washers.
R 2 Tighten bolts.
R (5)Close-up
R (a)Make certain that working area is clean and clear of tools and miscellaneous items of equipment.
R (b)Perform a leak test of external ventilation of center tank (Ref. 28-13-00, P. Block 501).

R CAUTION : MAKE SURE THAT ALL THE FASTENERS AND PIP PINS ARE CORRECTLY
R INSTALLED AND SECURED WHEN YOU INSTALL/CLOSE THE ACCESS
R DOORS/PANELS AT FR47.

(c)Install access door 147BZ and access panels 147CZ and 148CZ (Ref. 25-72-41, P. Block 401).
(d)Connect fuel booster pump electrical connectors.
Install electrical conduit attachment clamps.
(e)Perform fuel booster pump test (Ref. 28-21-00, P. Block 501).
(f)Remove access platform.
(g)Close left main gear door 734 (Ref. 32-12-11, P. Block 301).
(h)Remove safety clips and tags and close the circuit breakers.
(j)Remove warning notices in flight compartment.

R 2. Vertical Vapor Seal

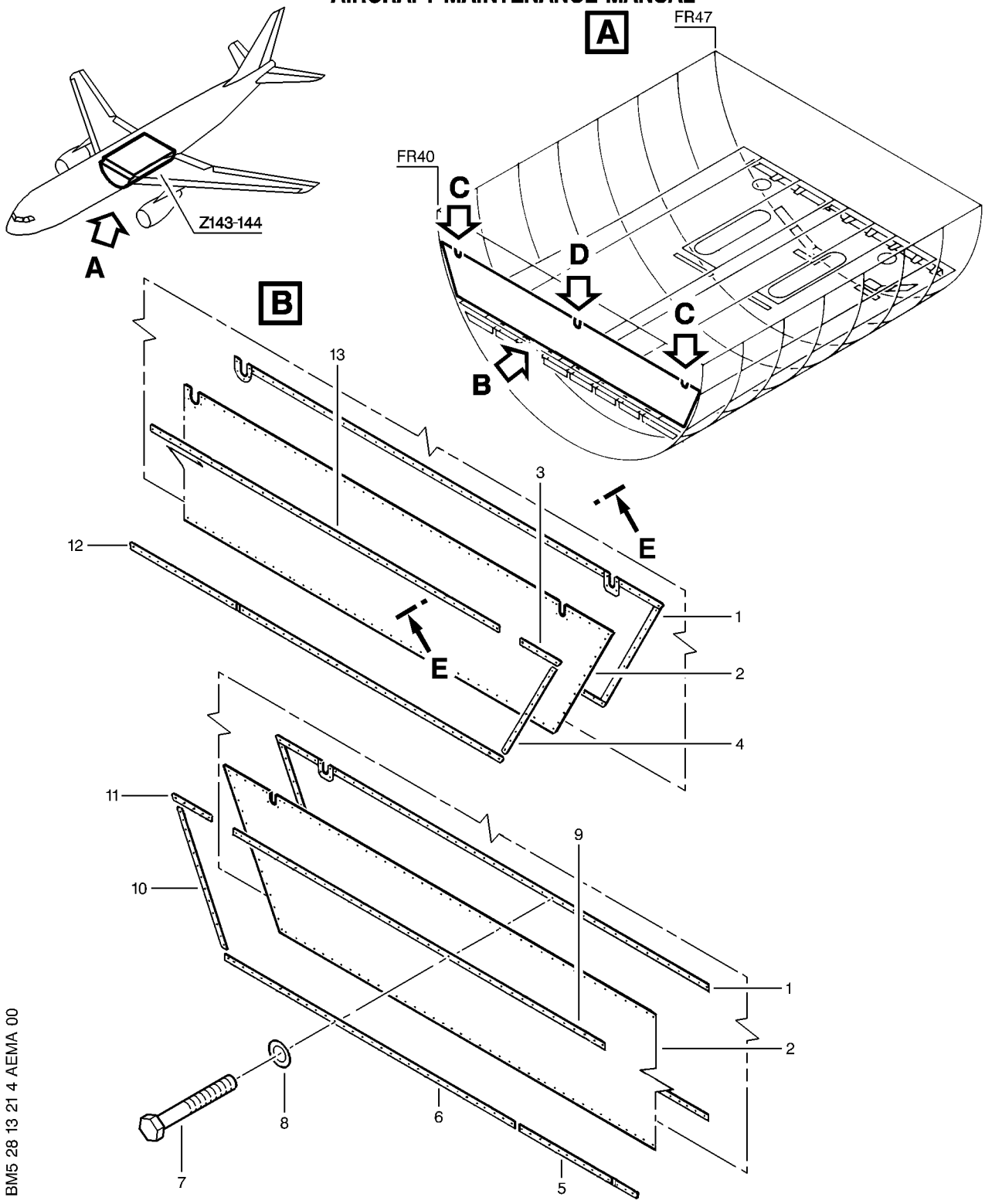
R WARNING : BEFORE PROCEEDING WITH REMOVAL/INSTALLATION NEAR SLAT CONTROL
R LINKAGE OR NEAR REFRIGERATION UNIT PACKS, MAKE CERTAIN THAT GROUND
R SAFETIES AND/OR WARNING NOTICES ARE IN CORRECT POSITION, TO PREVENT
R INADVERTENT OPERATION OF CONTROLS.

R A. Equipment and Materials

ITEM	DESIGNATION
(1)	Access Platform 2.60 m (8 ft. 7 in.)
(2)	Warning Notices
(3)Material No. 09-001	Sealants (Ref. 20-31-00)
Referenced Procedures	
- 21-11-00, P. Block 1	Flow Control and Indicating
- 28-13-00, P. Block 501	Wing Center Tank External Ventilating System
- 28-13-21, P. Block 801	Vapor Seals
- 32-12-11, P. Block 301	Main Gear Main Door - Ground Door(s) Opening

R B. Procedure
R (Ref. Fig. 403)
R (1)Job set-up
R (a)Open left main gear door 734 (Ref. 32-12-11, P. Block 301).
R (b)Position access platform.
R (c)Remove access door 147BZ.
R (d)On center pedestal
R - display a warning notice prohibiting operation of flap and slat control lever.
R On COMPT TEMP panel 437VU :
R - display a warning notice prohibiting starting up of refrigeration unit packs.
R Make certain that pneumatic system is depressurized (Ref. 21-11-00, P. Block 1).
R (e) Open, safety and tag the following circuit breakers :

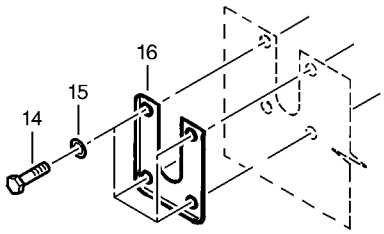
PANEL	SERVICE	IDENT.	LOCATION
133VU	KRUGER	45CV	333/T61
133VU	SLATS/26VAC/SYS1	3CV	335/R65
133VU	SFCC/NORM SUPPLY/SLATS/SYS1	7CV	333/T63
133VU	SUPPLY/SLATS/SYS2	9CV	335/R66
133VU	SLATS/SYS2	8CV	333/T64
133VU	SLATS/26VAC/SYS2	4CV	335/R64
133VU	FLAPS & SLATS/POS/ECAM	2CN	334/S65
133VU	FLAPS & SLATS/POS/IND	1CN	334/S66
133VU	FLAPS/SYS1/26VAC	1CV	335/R61
133VU	SUPPLY/FLAPS/SYS1	10CV	335/R67
133VU	SFCC/NORM/SUPPLY/FLAPS/SYS1	5CV	332/U61
133VU	SFCC/NORM/SUPPLY/FLAPS/SYS2	6CV	331/V61
133VU	FLAPS/SYS2/26VAC	2CV	334/S62



Vertical Vapor Seal (Sheet 1/2)
Figure 403

R

C



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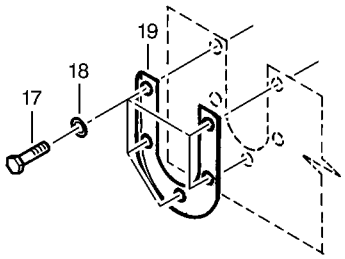

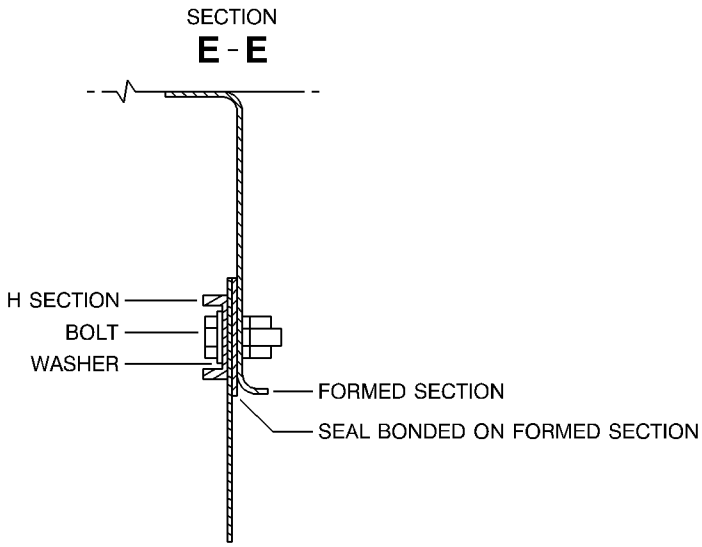

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Vertical Vapor Seal (Sheet 2/2)
Figure 403

R

(2)Removal

NOTE : As lengths of vapor seal attachment bolts vary, record bolt position before removal. Also record positions of sections.

(a)Remove bolts (14), washers (15) and protective sheet (16).
(b)Remove bolts (17), washers (18) and flange (19).
(c)Remove bolts (7) and washers (8).
(d)Carefully remove H sections (3), (4), (5), (6), (9), (10), (11), (12) and (13) and remove vapor seal (2).

(3)Preparation of replacement component

(a)Make certain that vapor seal (2) is neither cut nor punctured.
(b)Make certain that formed sections are not distorted.
(c)Make certain that there are no signs of separation at seal (1) on aircraft structure.

(4)Installation

NOTE : To facilitate installation, it is necessary to position vapor seal and temporarily attach.
Install bolts equipped with washers but do not tighten until all bolts have been installed.
TORQUE to between 0.3 and 0.36 m.daN (26.5 to 32 lbf.in.).
Take care to position H sections right way up.

(a)Install vapor seal (2) by means of H sections (3), (4), (5), (6), (9), (10), (11), (12) and (13) and install washers (8) and bolts (7).
(b)Tighten bolts (7).
(c)Install flange (19), washers (18) and bolts (17).
(d)Tighten bolts (17).
(e)Install protective sheet (16), washers (15) and bolts (14).
(f)Tighten bolts (14).
(g)Make sure that the gaps between the bonded sealing parts are filled with sealing compound.
If necessary, apply Sealant (Material No. 09-001) to the gaps between the sealing parts.

(5)Close-up

(a)Make certain that working area is clean and clear of tools and miscellaneous items of equipment.
(b)Perform a leak test of external ventilation of center tank (Ref. 28-13-00, P. Block 501).

R CAUTION : MAKE SURE THAT ALL THE FASTENERS AND PIP PINS ARE CORRECTLY
R INSTALLED AND SECURED WHEN YOU INSTALL/CLOSE THE ACCESS
R DOORS/PANELS AT FR47.

(c)Install access door 147BZ.
(d)Remove access platform.
(e)Close left main gear door 734 (Ref. 32-12-11, P. Block 301).
(f)Remove safety clips and tags and close the circuit breakers.
(g)Remove warning notices in flight compartment.

WARNING : BEFORE PROCEEDING WITH INSPECTION/CHECK NEAR SLAT CONTROL LINKAGE OR NEAR REFRIGERATION UNIT PACKS, MAKE CERTAIN THAT GROUND SAFETIES AND/OR WARNING NOTICES ARE IN CORRECT POSITION, TO PREVENT INADVERTENT OPERATION OF CONTROLS.

1. Vapor Seal General Inspection

A. Reason for the Job

R To check for correct condition of vapor seals located under wing center box lower surface.

B. Equipment and Materials

ITEM	DESIGNATION
Referenced Procedures	
- 21-11-00, P. Block 1	Flow Control and Indicating
- 28-13-21, P. Block 801	Vapor Seals
- 32-12-11, P. Block 301	Main Gear Main Door - (Ground Door(s) Opening)

C. Procedure

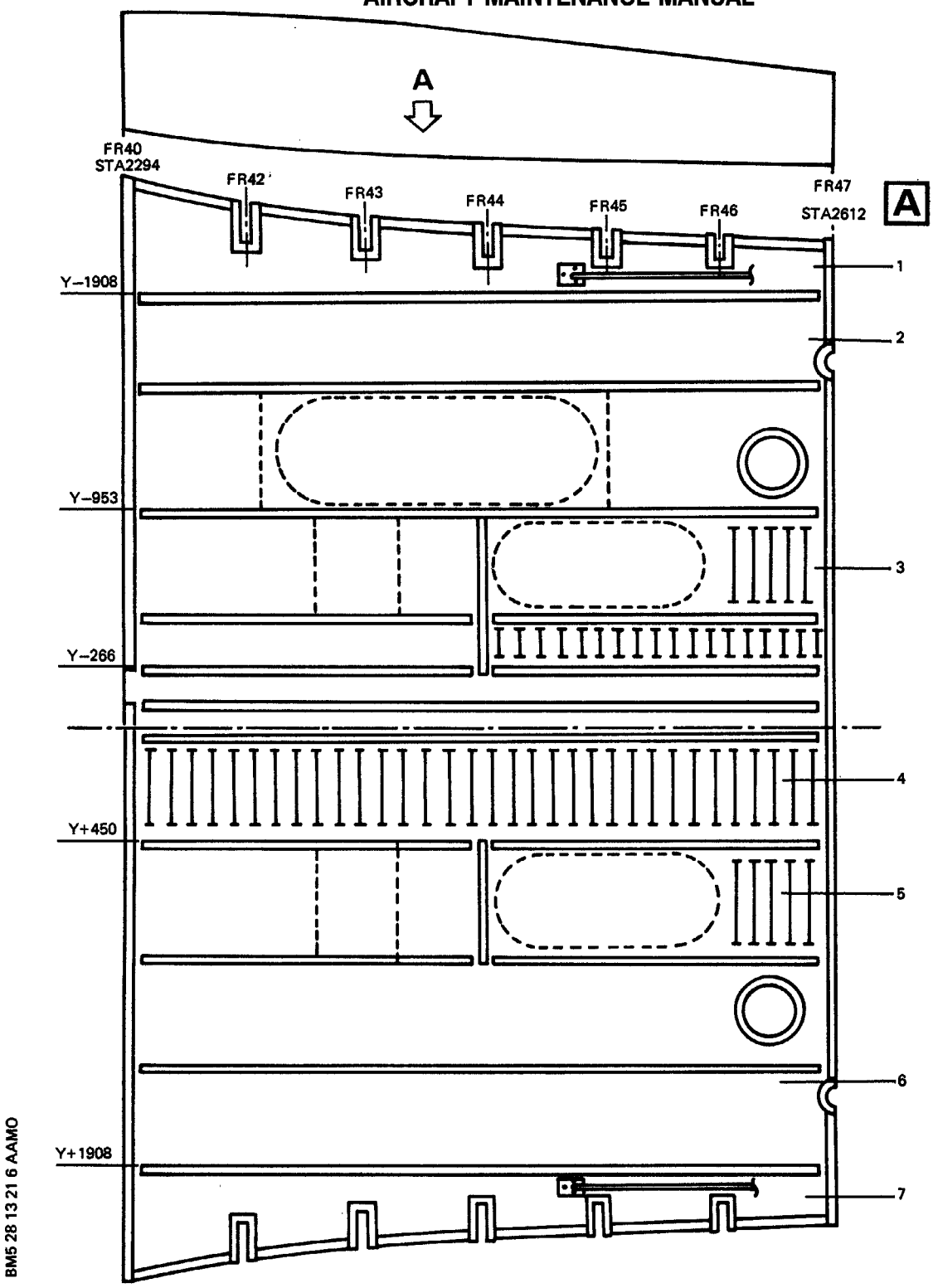
(Ref. Fig. 601)

NOTE : Two types of vapor seals are attached under center tank lower surface.
- Vapor seals 1, 3, 4, 5 and 7 are made of light alloy. The periphery of the vapor seals is reinforced by a bonded formed edge section except in areas where they come into contact with rubber vapor seals.
- Vapor seals 2 and 6 are made of rubber coated fabric reinforced by bonded elastomer seals along the attachments.
- Sealing of both types of vapor seals is ensured by elastomer seals bonded to aircraft structure.

(1)Job set-up

(a)Open, safety and tag the following circuit breakers :

PANEL	SERVICE	IDENT.	LOCATION
133VU	KRUGER	45CV	333/T61
133VU	SLATS/26VAC/SYS1	3CV	335/R65
133VU	SFCC/NORM SUPPLY/SLATS/SYS1	7CV	333/T63
133VU	SUPPLY/SLATS/SYS2	9CV	335/R66
133VU	SLATS/SYS2	8CV	333/T64
133VU	SLATS/26VAC/SYS2	4CV	335/R64
133VU	FLAPS & SLATS/POS/ECAM	2CN	334/S65
133VU	FLAPS & SLATS/POS/IND	1CN	334/S66
133VU	FLAPS/SYS1/26VAC	1CV	335/R61
133VU	SUPPLY/FLAPS/SYS1	10CV	335/R67
133VU	SFCC/NORM/SUPPLY/FLAPS/SYS1	5CV	332/U61
133VU	SFCC/NORM/SUPPLY/FLAPS/SYS2	6CV	331/V61
133VU	FLAPS/SYS2/26VAC	2CV	334/S62



Lower Surface Vapor Seals - Component Location
Figure 601

(b)On center pedestal, display a warning notice prohibiting operation of slats.
(c)On air conditioning panel, display a warning notice prohibiting refrigeration unit pack start-up.
(d)Make certain that pneumatic system is depressurized (Ref. 21-11-00, P. Block 1).
(e)Open left main gear door 734 (Ref. 32-12-11, P. Block 301).
(f)Remove air conditioning compartment access doors 147BZ, 147CZ and 148CZ.

(2)Vapor seal check
(a)Check that vapor seals have no apparent tears or scores.
In case a seal is damaged, perform repair (Ref. 28-13-21, P. Block 801).

(3)Close-up
(a)Make certain that working area is clean and clear of tools and miscellaneous items of equipment.
(b)Close circuit breakers

R CAUTION : MAKE SURE THAT ALL THE FASTENERS AND PIP PINS ARE CORRECTLY
R INSTALLED AND SECURED WHEN YOU INSTALL/CLOSE THE ACCESS
R DOORS/PANELS AT FR47.

(c)Install access doors 147BZ, 147CZ and 148CZ.
(d)Close left main gear door 734 (Ref. 32-12-11, P. Block 301).
(e)Remove warning notices from flight compartment.

VAPOR SEAL - APPROVED REPAIRS

1. Reason for the Job

IMPORTANT : The repairs described in this procedure are only valid for non-functional damage : that due to accidental causes which can be immediately identified and independent of the vapor seal operation.

A. Repair of torn or perforated rubber vapor seal (only for damage inferior or equal to 127 mm (5 in.)

R

B. Repair of torn or perforated metallic vapor seal

2. Equipment and Materials

A. Rubber Vapor Seal

ITEM	DESIGNATION
(1)SUPERFLEXIT 3V1-R20 JOINT FRANCAIS TX-0300Y	Fabric for Repairs
(2)Material No. 05-081	Special Materials (Ref. 20-31-00)
(3)Material No. 08-006	Bonding and Adhesive Compounds (Ref. 20-31-00)
(4)Material No. 08-011	Bonding and Adhesive Compounds (Ref. 20-31-00)
(5)Material No. 11-003	Cleaning Agents (Ref. 20-31-00)
(6)	Fine Emery Cloth
(7)	Access Platform 2.6 m (8 ft. 7 in.)
Referenced Procedures	
- 28-13-00, P. Block 501	Wing Center Tank External Ventilating System
- 28-13-21, P. Block 401	Vapor Seal
- 32-12-11, P. Block 301	Main Gear Main Door - (Ground Door(s) Opening)
- 21-11-00, P. Block 1	Flow Control and Indicating

B. Metallic Vapor Seal

ITEM	DESIGNATION
(1)Material No. 05-007	Special Materials (Ref. 20-31-00)
(2)Material No. 05-051	Special Materials (Ref. 20-31-00)
(3)Material No. 08-010	Bonding and Adhesive Compounds (Ref. 20-31-00)
(4)Material No. 08-052	Bonding and Adhesive Compounds (Ref. 20-31-00)
R (5)Material No. 09-002	Sealants (Ref. 20-31-00)
(6)Material No. 11-003	Cleaning Agents (Ref. 20-31-00)
(7)Material No. 16-005	Structure Paints (Ref. 20-31-00)
(8)	Access Platform 2.6 m (8 ft. 7 in.)
(9)	Scotchcal
10)	Gloves
11)	Goggles
Referenced Procedures	
- 32-12-11, P. Block 301	Main Gear Main Door - (Ground Door(s) Opening)
- 28-13-00, P. Block 501	Wing Center Tank External Ventilating System

ITEM	DESIGNATION
- 28-13-21, P. Block 401	Vapor Seal
- 21-11-00, P. Block 1	Flow Control and Indicating
R - SRM/51-75-10	

C. Vapor Seal Gutter Assy

ITEM	DESIGNATION
(1)Material No. 09-013	Sealants (Ref. 20-31-00)
(2)Material No. 16-001	Structure Paints (Ref. 20-31-00)
(3)Material No. 16-020	Structure Paints (Ref. 20-31-00)

3. Procedure

WARNING : DURING REPAIR PROCEDURE, MAKE CERTAIN THAT MATERIALS USED DO NOT COME INTO CONTACT WITH THE SKIN OR EYES, AND THAT WORKING AREA IS VENTILATED. SMOKING IS PROHIBITED. THE SAFETY PRECAUTIONS PRESCRIBED BY THE MATERIAL MANUFACTURER MUST BE RIGOROUSLY OBSERVED.

NOTE : (Ref. Fig. 801)

Two types of vapor seals are attached under center tank lower surface :

- vapor seals 1, 3, 4, 5 and 7 are made of light alloy. The periphery of the vapor seals is reinforced by a bonded formed edge section, except in areas where they come into contact with the rubber vapor seals
- vapor seals 2 and 6 are made of rubber coated fabric reinforced by bonded elastomer seals along the attachments
- sealing of both types of vapor seals is ensured by elastomer seals bonded to the aircraft structure.

The two types of vapor seal can be identified by either of the following methods :

- the manufacturer's name is marked on the outer edge of the vapor seal between frames 43 and 44.
- the Superflexit vapor seal membrane is made of glass cloth impregnated with epichlorhydrin mounted on tedlar PVF. It has a glazy aspect on the tedlar (lower) face, whilst the epichlorhydrin (upper) face has a woven appearance.

The Jehier vapor seal membrane is a nomex fabric with one face coated with viton.

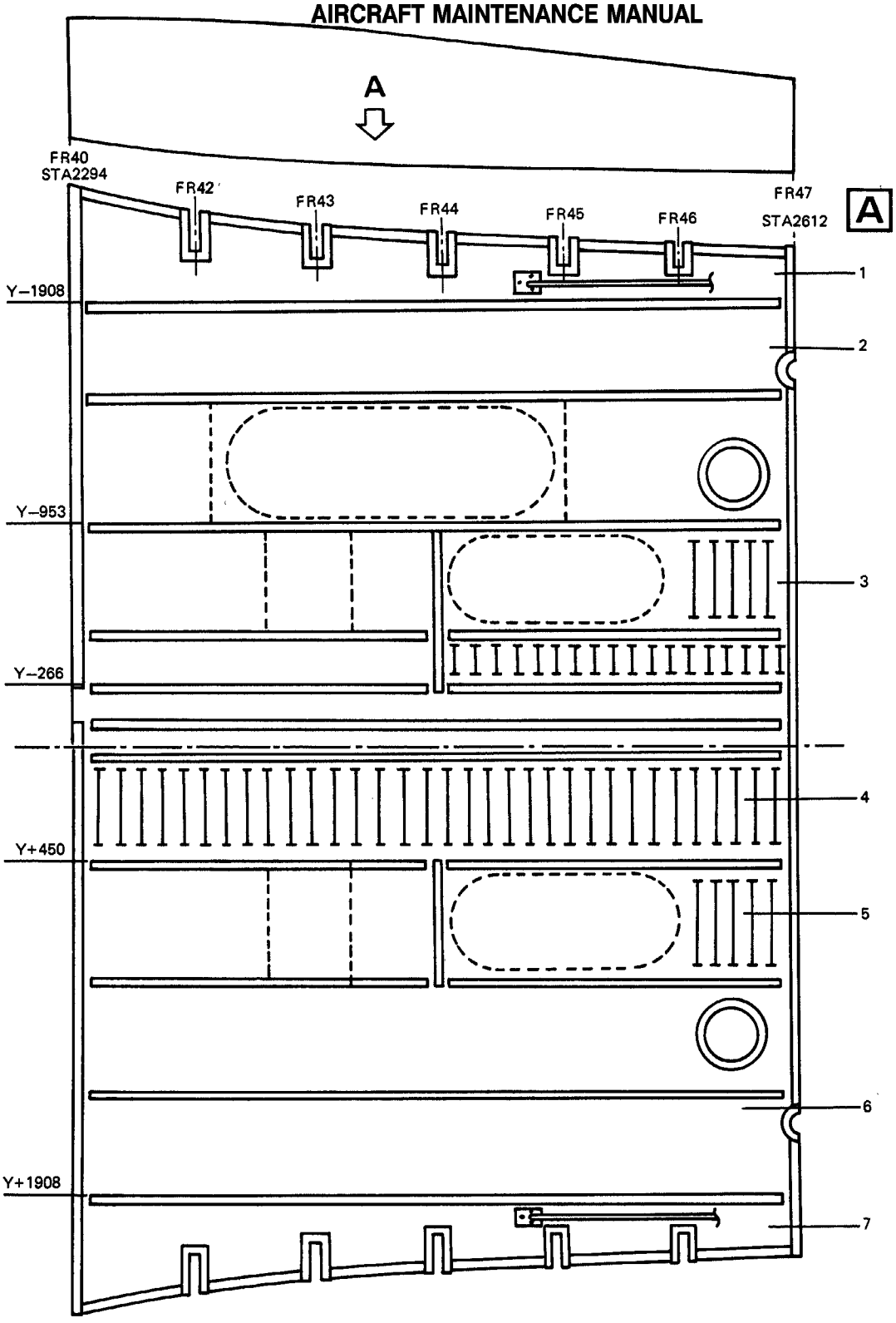
A. Job Set-Up

(1)Open left main landing gear door 734 (Ref. 32-12-11, P. Block 301).
(2)Position access platform.
(3)Remove access door 147BZ, in hydraulics compartment.
(4)On center pedestal :
- display a warning notice prohibiting use of flap and slat control lever.

On overhead air conditioning panel :

- display a warning notice prohibiting starting up of refrigeration unit packs.

(5)Make certain that pneumatic system is depressurized (Ref. 21-11-00, P. Block 1).



Lower Surface Vapor Seals - Component Location
Figure 801

B. Repair of Rubber Vapor Seals (2 and 6), (Vendor : SUPERFLEXIT or JOINT FRANCAIS)

NOTE : - If damage length is more than 51 mm (2 in.) and equal to or less than 127 mm (5 in.), remove the vapor seal to be repaired (Ref. 28-13-21, P. Block 401).

- If damage greater than 127 mm (5 in.) : replace the vapor seal.

(1)On damaged vapor seal :

(a)Cut around damaged part of vapor seal to form rectangle or circle.

(b)Mark out a border of 30 mm (1.2 in.) around cut-out in vapor seal.

(c)Cut out a patch of fabric to match the size of the marked out area.

(2)Repair

(Ref. Fig. 802)

(a)Carefully remove any grease from area of repair (on vapor seal and repair patch) using cleaning agent (Material No. 11-003).

(b)Lightly rub the 2 surfaces using fine emery cloth.

(c)Clean surfaces again using cleaning agent (Material No. 11-003).

NOTE : The epichlorohydrin face of the patch must mandatorily be affixed to the Tedlar face of the vapor seal.

(d)Preparation of cement

Thoroughly mix in the following proportions, by weight, bonding and adhesive compound (Material No. 08-011) :

cement R707 : 100

hardener R : 5

NOTE : The application life of the cement is 2 hours approximately

(e)Using a fine brush, coat the patch and the repair area of the vapor seal with bonding and adhesive compound (Material No. 08-011).

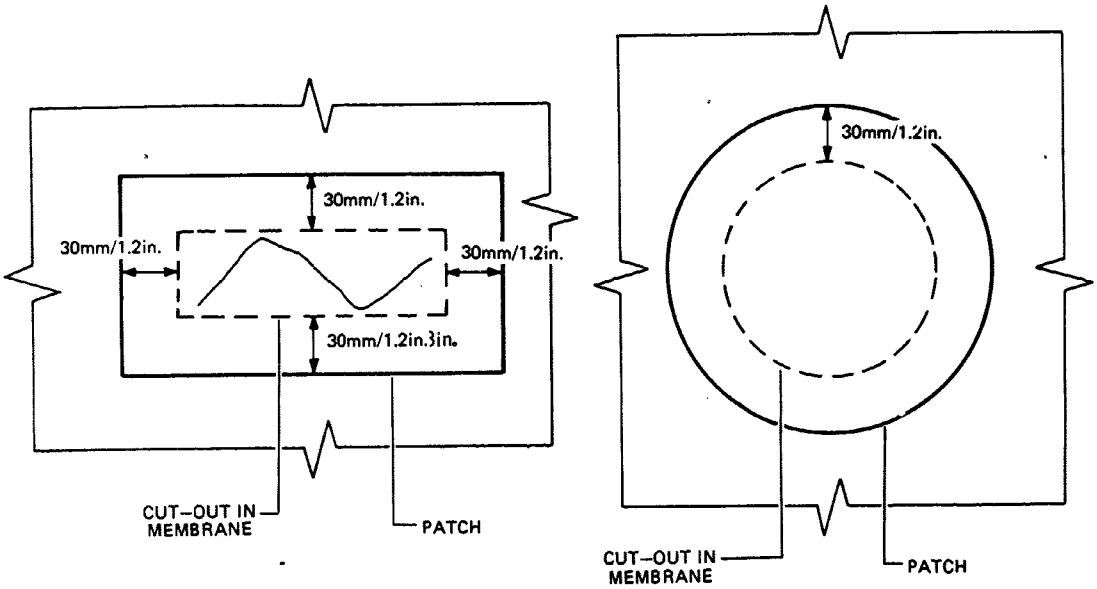
(f)Allow to dry for 10 minutes.

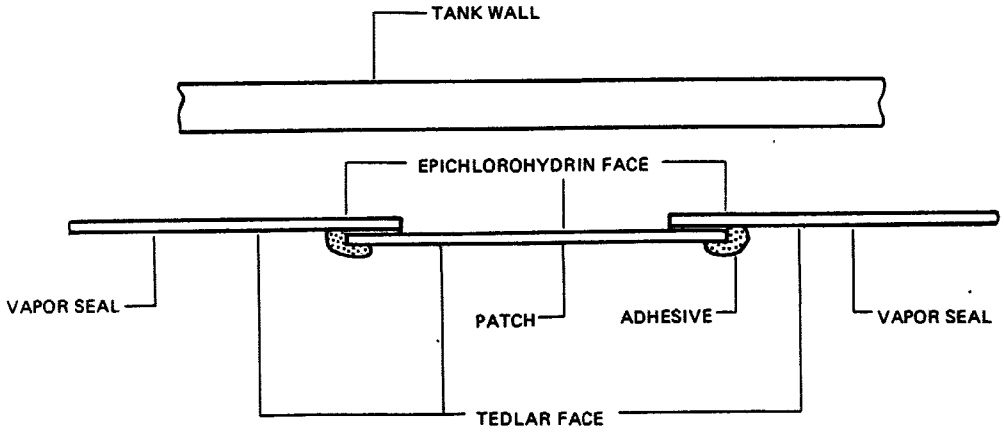
(g)Apply a second coat of bonding and adhesive compound (Material No. 08-011).

(h)Allow to dry until no longer tacky.

(j)Install patch on vapor seal wall. Avoid formation of air pockets by lightly pressing patch with finger tips.

(k)Apply bonding and adhesive compound (Material No. 08-011) on repair area contour.





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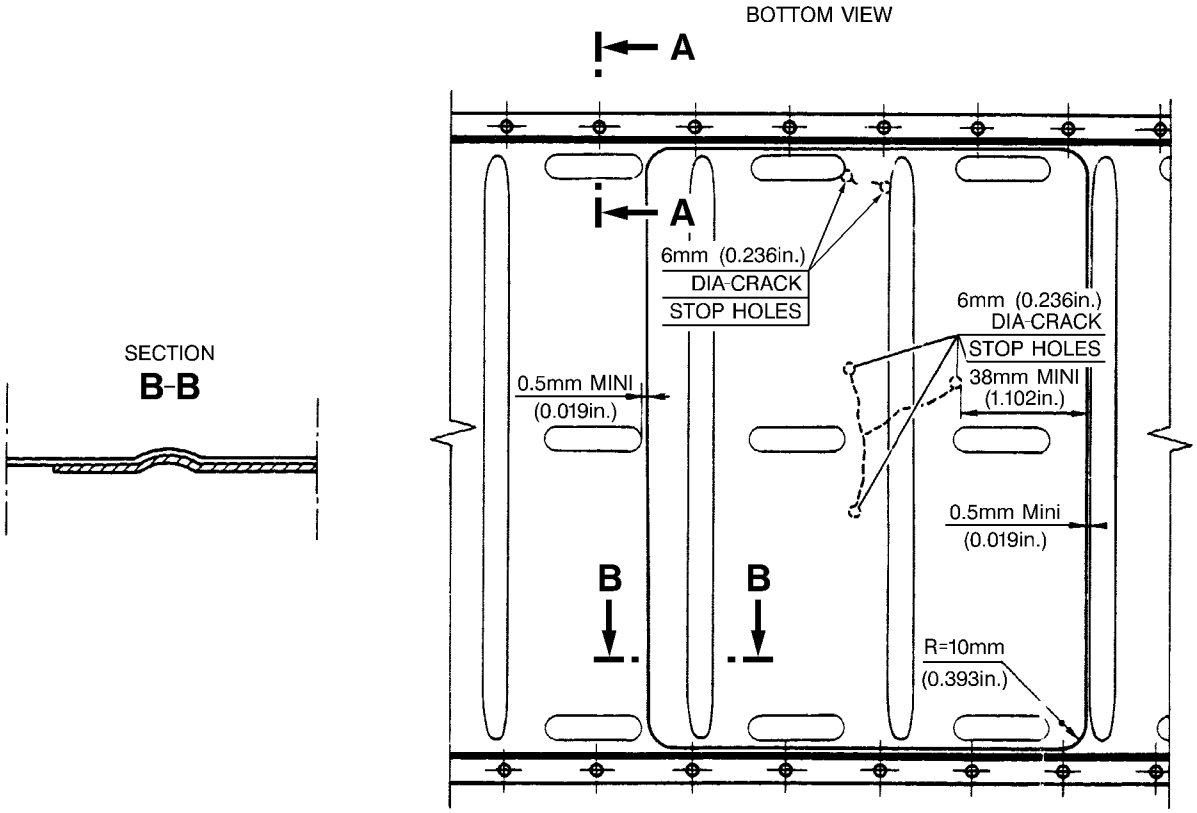
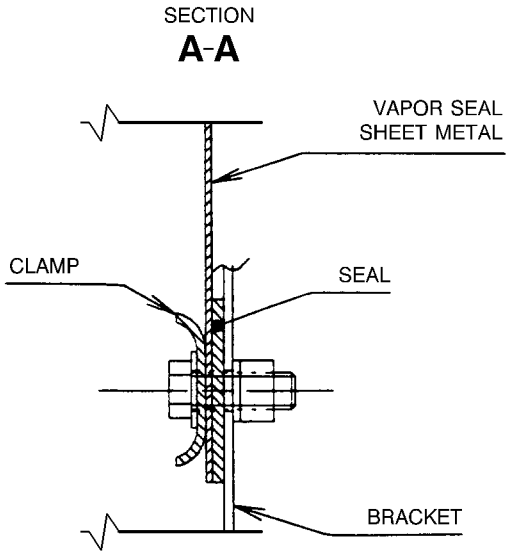
Rubber Vapor Seals 2 and 6 - Repair Scheme
Figure 802

C. Repair of Rubber Vapor Seals (2 and 6), (Vendor : JEHIER)
(1)Clean the surface of the vapor seal to be repaired to remove any fuel, grease or oil with cleaning agent (Material No. 11-003).
(2)Cut a patch in special material (Material No. 05-081). Make certain that any point of the tear is at 40 mm (1.6 in.) from the edge of the patch.
(3)Use a brush to apply the bonding and adhesive compound (Material No. 08-006) or equivalent to :
- The zone of the vapor seal on which you will bond the patch.
- The cloth face (rough) of the patch.
(4)Let the bonding and adhesive compound (Material No. 08-006) dry until the compound is tacky (must bond but must not stay on your finger when you touch it lightly).
(5)Put the strongest possible pressure on the related area of the vapor seal to bond the patch.

D. Repair of Metallic Vapor Seals (1, 3, 4, 5 and 7)
NOTE : Before any repair, remove concerned vapor seal (Ref. 28-13-21, P. Block 401).
(1)Temporary repair scheme
(Ref. Fig. 803)
NOTE : The repair vapor seal must be replaced at the next C. Check.
(a)On damaged vapor seal, drill 6 mm (0.236 in.) dia. crack stop holes at end of the crack and at each change of direction.
(b)Surface preparation prior to cementing
1 Deburr holes, clean and degrease area to be protected with cleaning agent (Material No. 11-003).
2 Treat holes with structure paint (Material No. 16-005).
(c)Repair
(Ref. Fig. 803)
Affix Scotchcal adhesive tape or bonding and adhesive compound (Material No. 08-052) to damaged area.
(d)Drill holes on Scotchcal adhesive tape.
(e)Install the vapor seal (Ref. 28-13-21, P. Block 401).

(2)Permanent repair scheme for vapor seals 1, 3, 4, 5 and 7.
R (Ref. Fig. 804)
R (a)Cut panel at 2.5 pitch (minimum dimension) from each end of the crack.
(b)Deburr and cut out the edges, clean and degrease area with cleaning agent (Material No. 11-003) and treat with structure paint (Material No. 16-005).
(c)Adjust the repair sheet (1) and the stiffeners (2) as per the panel cut-out (Ref. Fig. 804). Refer to table below :





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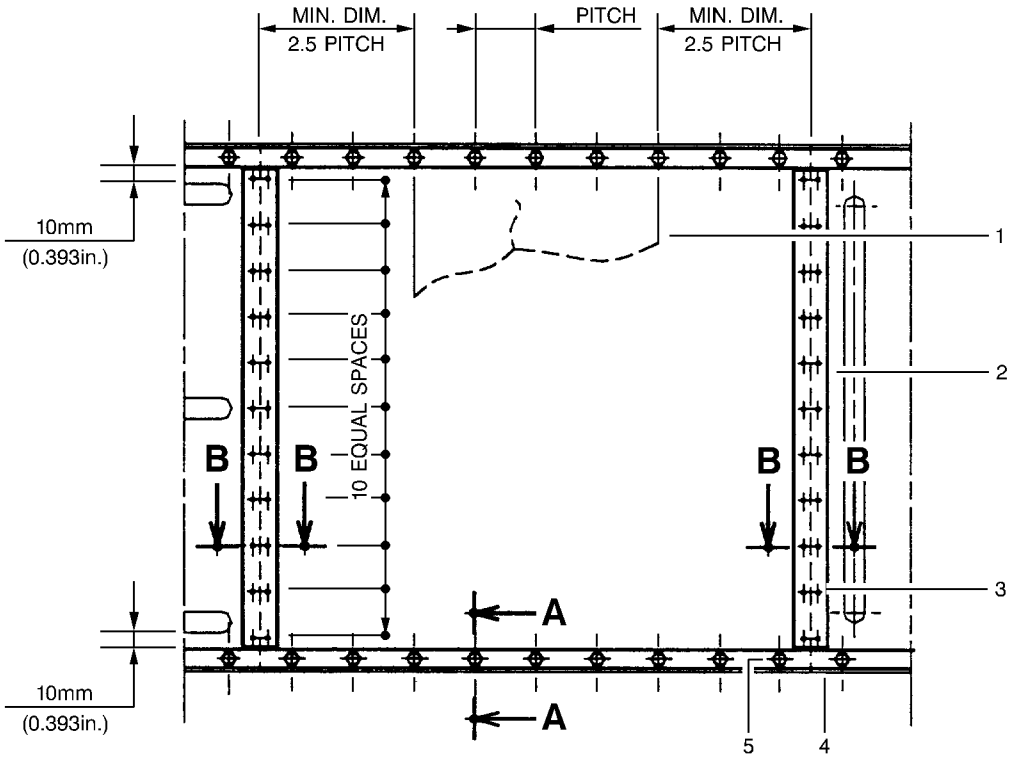
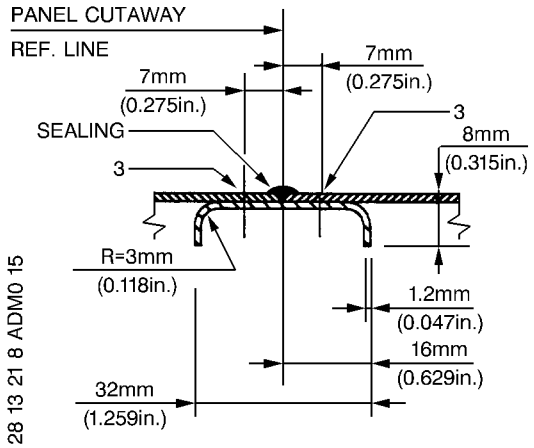
Metallic Vapor Seals (1, 3, 4, 5 and 7) - Temporary Repair Scheme
Figure 803

R

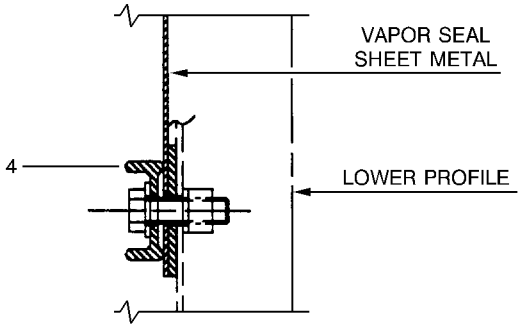
BOTTOM VIEW



SECTION
B-B



SECTION
A-A



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Metallic Vapor Seals (1, 3, 4, 5 and 7) -
Permanent Repair Scheme
Figure 804

R

	ITEM	DESCRIPTION	DIMENSION	MATERIAL
R	1	repair sheet	cut material as necessary	Aluminum 5086-H111 or Aluminum 2024-T3
	2	stiffeners	width 32 cut length as necessary	Aluminum 2024-T3
	3	rivets	2.4	DCJ

(d)Apply protective treatment to repair sheet (1) and stiffeners (2) (Ref. SRM 51-75-10).
(e)Position and temporarily attach new parts.
(f)Drill holes on stiffeners and repair sheet in relation to the pitch between the rivets.
(g)Deburr holes, clean and degrease repair parts and panel, in the vicinity of new holes with cleaning agent (Material No. 11-003).
(h)Treat holes with structure paint (Material No. 16-005).
(j)Attach metallic vapor seal, repair sheet (1) and stiffeners (2) with rivets (3).
(k)Apply sealant (Material No. 09-002) between the two parts.
(l)Transfer existing holes (5) from the brackets (4) to the repair sheet (1).
(m)Drill holes on repair sheet (1).
(n)Deburr holes, clean and degrease the repair sheet (1) with cleaning agent (Material No. 11.003).
(p)Treat holes with structure paint (Material No. 16-005).
(q)Apply protective finish to repair sheet (1) and stiffeners (2) (Ref. SRM 51-75-10).
(2)Install the vapor seal (Ref. 28-13-21, P. Block 401).

E. Repair of Vapor Seal Gutter Assy
(1)Perform 3.2 mm diameter crack stop holes at each end of cracks.
(2)Install an internal doubler (inside U channel), of the same thickness and material as gutter, fixed by two rows of 3.2 mm diameter aluminum rivets forward and rear the cracks (three fasteners on the horizontal part web, one fastener on each vertical part web).
(3)Apply sealant (Material No. 09-013) on all parts and fasteners.
(4)Apply structure paint (Material No. 16-020) and structure paint (Material No. 16-001) and PU finish paint on crack stop holes.
(5)Apply alodine, primer and finish on doubler.

4. Test

A. Perform vapor seal leakage test (Ref. 28-13-00, P. Block 501).

5. Close-Up

A. Make certain that working area is clean and clear of tools and miscellaneous items of equipment.

R CAUTION : MAKE SURE THAT ALL THE FASTENERS AND PIP PINS ARE CORRECTLY
R INSTALLED AND SECURED WHEN YOU INSTALL/CLOSE THE ACCESS DOORS/
R PANELS AT FR47.

B. Install access door 147BZ.

C. Remove access platform.

D. Close left main landing gear door 734 (Ref. 32-12-11, P. Block 301).

E. Remove warning notices in flight compartment.

F. Remove all ground handling and maintenance equipment, standard and special tools together with ground power equipment, all access equipment and miscellaneous items.

DRAIN MAST - REMOVAL/INSTALLATION

WARNING : BEFORE PROCEEDING WITH REMOVAL/INSTALLATION PROCEDURE NEAR MAIN GEAR MAIN DOOR, MAKE CERTAIN THAT GROUND SAFETIES AND WARNING NOTICES ARE IN CORRECT POSITION.
DURING REMOVAL/INSTALLATION PROCEDURE, DO NOT WALK ON LEFT GEAR MAIN DOOR 734.

1. Reason for the Job

A. Removal of Drain Mast

2. Equipment and Materials

ITEM	DESIGNATION
A. Material No. 09-001	Sealants (Ref. 20-31-00)
B. Material No. 08-007	Bonding and Adhesive Compounds (Ref. 20-31-00)
C.	Lockwire - Corrosion - Resistant Steel, 0.8 mm (0.032 in.)
D.	Access Platform 2.5 m (8.3 ft.)
E. Material No. 16-021	Structure Paints (Ref. 20-31-00)
Referenced Procedures	
- 32-12-11, P. Block 301	Main Gear Main Door - (Ground Door(s) Opening)
- 51-23-10, P. Block 1	Paint Coatings
- 20-28-11, P. Block 1	Electrical Bonding

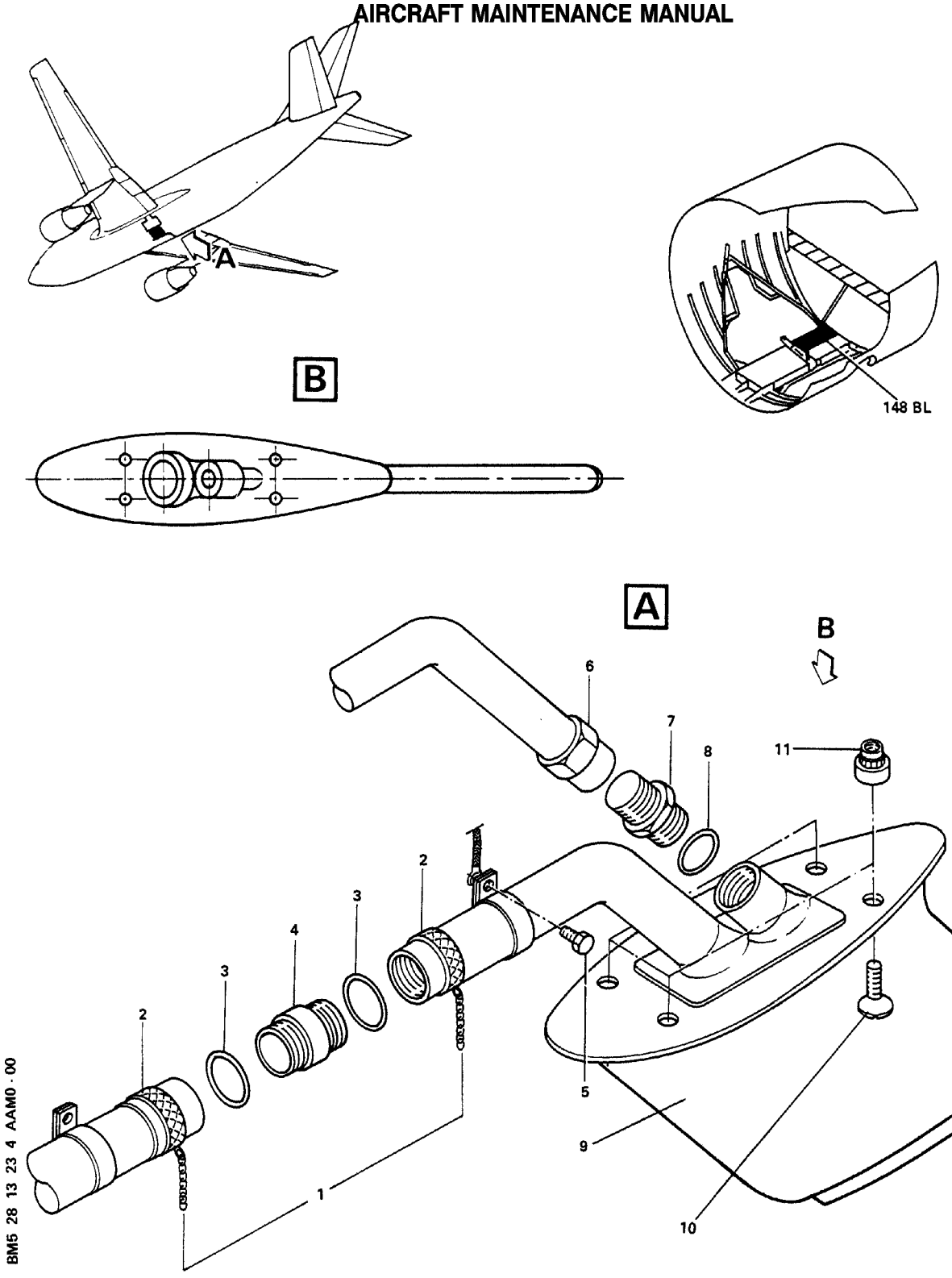
3. Procedure

(Ref. Fig. 401)

A. Job Set-Up
(1)Open right main gear main door 744 (Ref. 32-12-11, P. Block 301).
(2)Position access platform.

B. Removal
(1)Remove the six screws attaching access door 148BL.
(2)Remove drain mast access door 148BL.
(3)Cut and remove lockwire (1) between the two knurled nuts.
(4)Loosen knurled nuts (2) and remove straight union (4).
(5)Discard the two O-rings (3).
(6)Remove bonding strip attachment screw (5).
(7)Loosen nut (6) and remove pipe.
(8)Remove straight union (7) and discard O-ring (8).
(9)Remove the four drain mast attachment bolts (10) and discard nuts (11).
(10)Remove drain mast (9).

C. Installation
(1)Smear drain mast (9) mounting base with Material No.09-001 and install drain mast (9).
(2)Smear nuts (11) with Material No.08-007.
(3)Install the four bolts (10) using four new nuts (11). Do not fully



Drain Mast Component Location
Figure 401

tighten at this stage.
(4)Install new O-ring (8) on straight union (7) and install union on drain mast (9).
(5)Connect pipe to straight union (7) and tighten nut (6).
(6)Install two new O-rings (3) on union (4).
(7)Install straight union (4) and tighten the two knurled nuts (2).
(8)Wirelock nuts (2).
(9)Secure bonding strip with screw (5) (Ref. 20-28-11, P. Block 1).
(10)Tighten nuts (11).
(11)Install access door 148BL, install and tighten the four attachment screws.
(12)Apply Material No. 09-001 to drain mast mounting base and to bolts (10) (Ref. Fig. 401)
(13)Allow Material No.09-001 to dry. Apply a protective coating of Material No. 16-021 (Ref. 51-23-10, P. Block 1).

D. Close-Up
(1)Make certain that working area is clean and clear of tools and miscellaneous items of equipment.
(2)Remove access platform.
(3)Close right main gear main door 744 (Ref. 32-12-11, P. Block 301).

DRAIN MAST - INSPECTION/CHECK

WARNING : LANDING GEAR - MAKE CERTAIN THAT GROUND SAFETIES AND CHOCKS ARE IN POSITION.
FLIGHT CONTROLS - MAKE CERTAIN THAT GROUND SAFETIES AND NOTICES ARE IN POSITION.

1. Reason for the Job

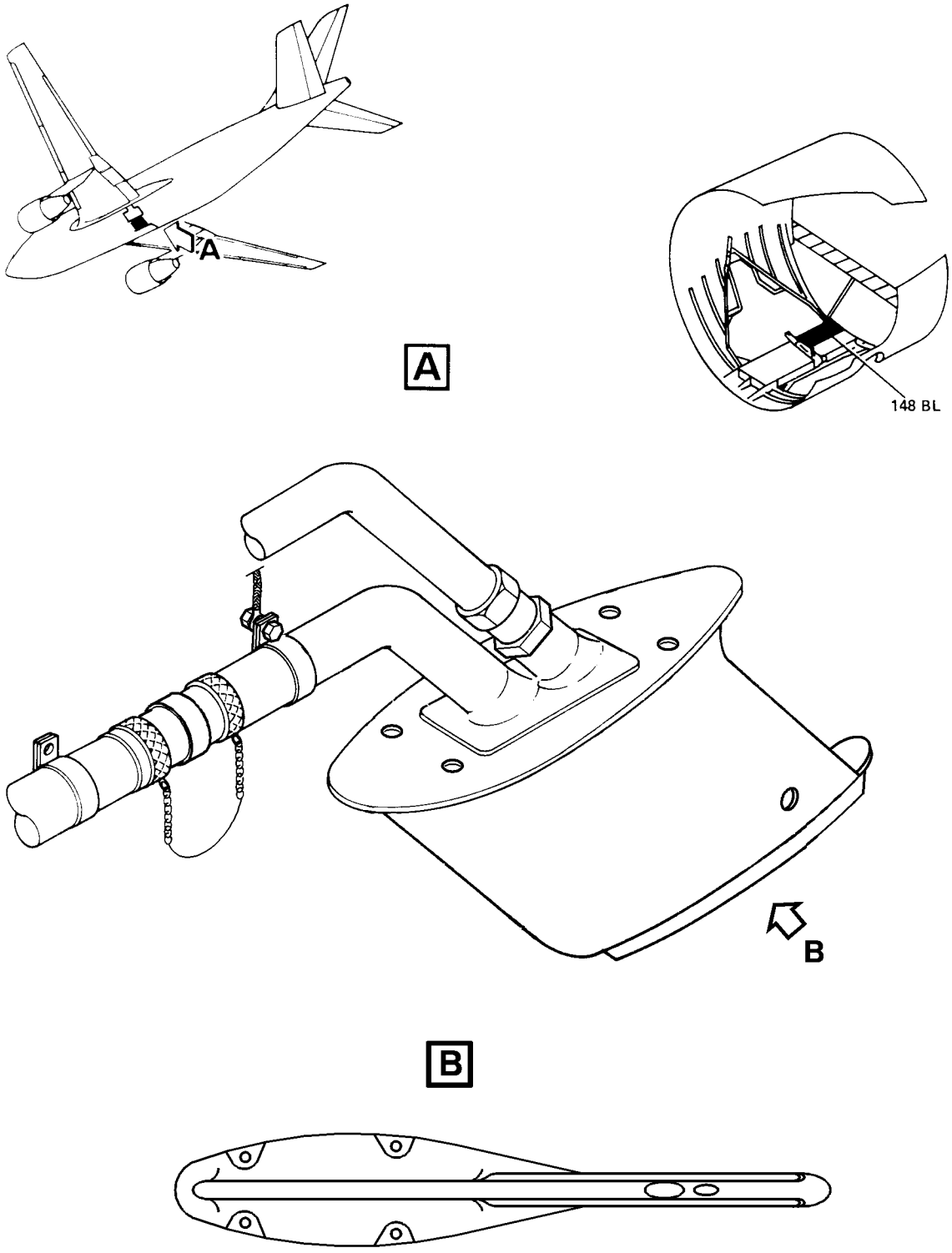
A. Check drain mast outlets for obstruction, damage, corrosion and leaks.

2. Equipment and Materials

ITEM	DESIGNATION
Reference Procedures	
- 28-25-00, P. Block 601	Refuel/Defuel System
- 49-31-00, P. Block 601	Fuel Distribution

3. Procedure

A. Inspection (Ref. Fig. 601)
(1)Visually check the drain mast for damage and corrosion.
(2)Check the drain mast outlets for obstruction.
R (3)Check the drain mast outlets for fuel leaks with the APU booster pump
R on. In case of fuel leaks :
(a)For trim tank fuel line (Ref. 28-25-00, P. Block 601).
(b)For APU fuel line (Ref. 49-31-00, P. Block 601).



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Drain Mast Component Location
Figure 601

R

DRAIN SHROUD

**ON A/C 001-100,

(280484) - REMOVAL/INSTALLATION

**ON A/C 101-200,

(280250 280484) - REMOVAL/INSTALLATION

**ON A/C ALL

WARNING : LANDING GEAR - MAKE CERTAIN THAT GROUND SAFETIES AND CHOCKS ARE IN POSITION.
FLIGHT CONTROLS - MAKE CERTAIN THAT GROUND SAFETIES AND NOTICES ARE IN POSITION.

1. Equipment and Materials

ITEM	DESIGNATION
A.	Access Platform, 2.5 m (8.3 ft.)
B.	Container 50 l (13 US gal.) Capacity
C.	O-rings

Referenced Procedure

- 32-12-11, P. Block 301	Main Gear Main Door

2. Procedure

**ON A/C 001-100,

(Ref. Fig. 401)

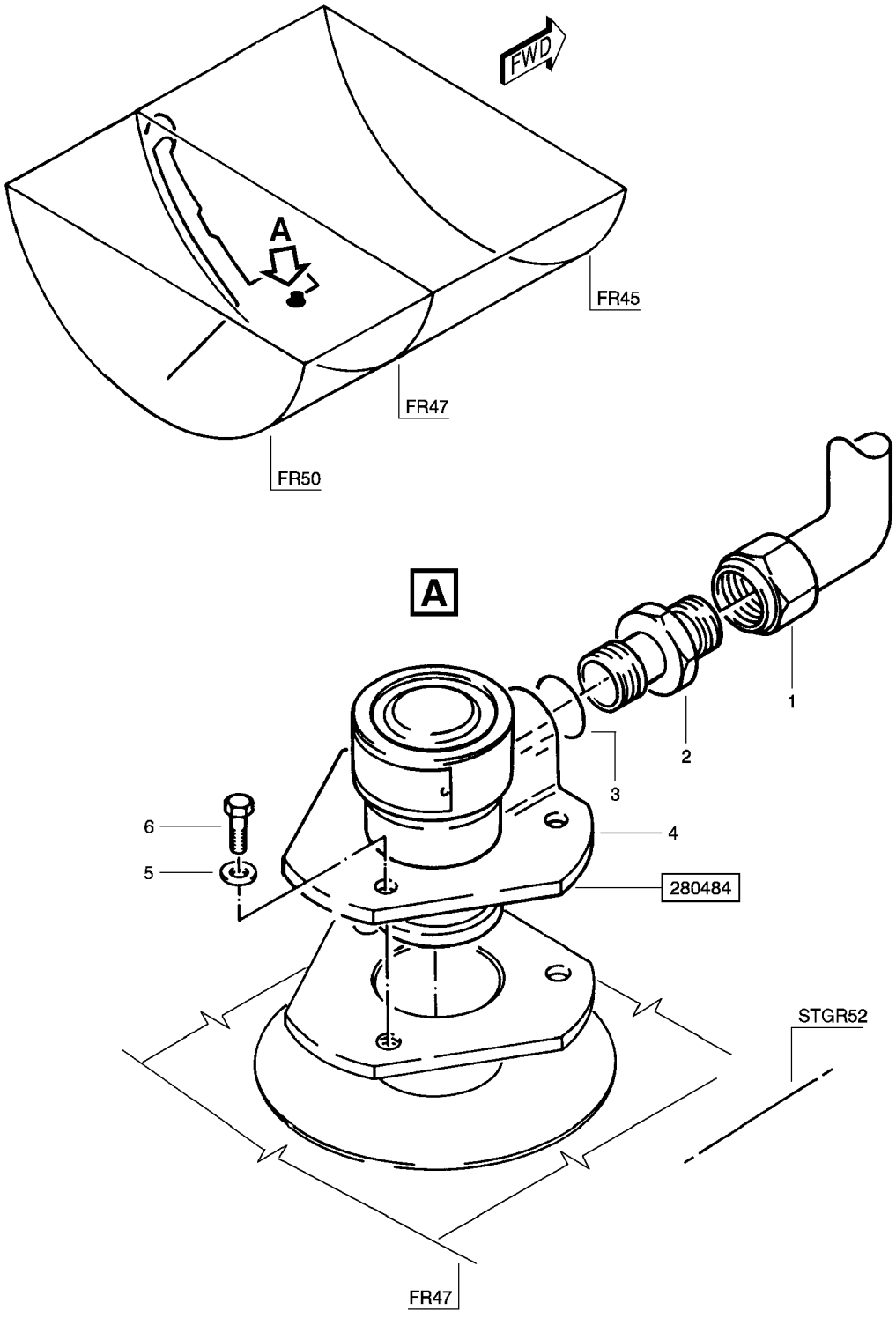
**ON A/C 101-200,

(Ref. Fig. 402)

R **ON A/C ALL

R A. Job Set-Up
R (1)Position access platform.
R (2)Open main gear main doors (Ref. 32-12-11, P. Block 301).
R (3)Position container under leak monitor and drain fuel.

R B. Removal
R (1)Disconnect pipe (1).
R (2)Remove bolts (6), washers (5) and leak monitor (4).



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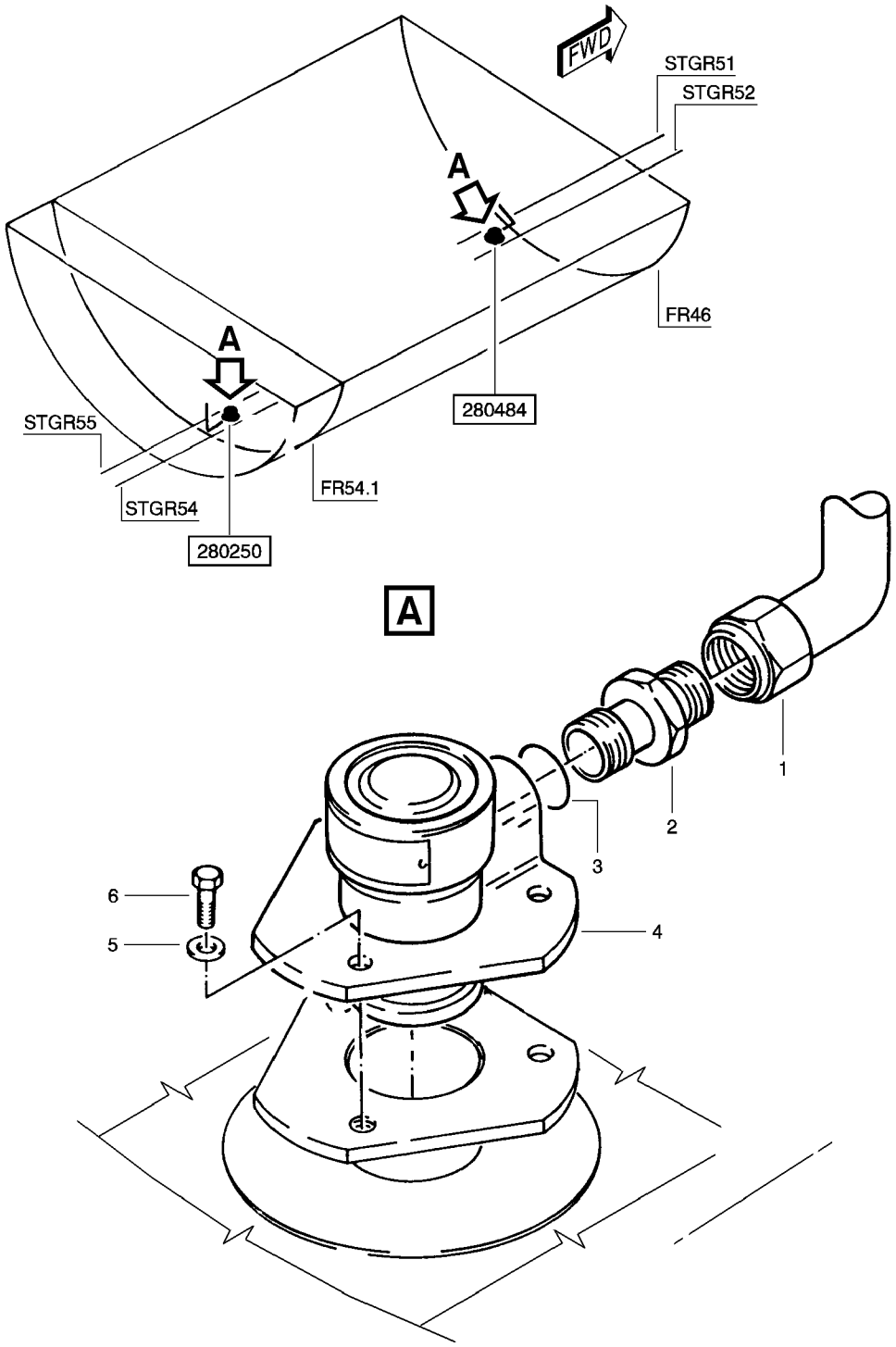
R

Leak Monitor
Figure 401



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R

Leak Monitor
Figure 402

R C. Preparation of Replacement Component
R (1)Remove union (2) and remove and discard O-ring (3).
R (2)Position O-ring (3) and install union (2).

R D. Installation
R (1)Position leak monitor (4).
R (2)Install washers (5) and bolts (6).
R (3)Position and connect pipe (1) to leak monitor (4).

R E. Close-Up
R (1)Make sure that working area is clean and clear of tools and miscellaneous items of equipment.
R (2)Remove container.
R (3)Close main gear main doors (Ref. 32-12-11, P. Block 301).
R (4)Remove access platform.

R **ON A/C 001-100,

(280484) - INSPECTION/CHECK

R **ON A/C 101-200,

R (280250 280484) - INSPECTION/CHECK

R **ON A/C ALL

WARNING : LANDING GEAR - MAKE CERTAIN THAT GROUND SAFETIES AND CHOCKS ARE IN POSITION.
FLIGHT CONTROLS - MAKE CERTAIN THAT GROUND SAFETIES AND NOTICES ARE IN POSITION.

1. Reason for the Job

A. Inspection of leak monitor for presence of fuel

2. Equipment and Materials

ITEM	DESIGNATION
A.	Container 50 l (13 US gal.) Capacity

Referenced Procedures
- 28-25-00, P. Block 501 Refuel/Defuel System
- 49-31-00, P. Block 501 Fuel Distribution

3. Procedure

A. Job Set-Up
(1)Position container under leak monitor.

B. Inspection

R **ON A/C 101-200,

(1)Check leak monitor at (FR46) between STGR51 and STGR52 LH for presence of fuel.
If fuel is present, check APU fuel transfer line, trim tank fuel transfer line and horizontal stabilizer center tank for leaks (Ref. 28-25-00, P. Block 501 and 49-31-00, P. Block 501).
R (2)Check leak monitor at (FR54.1) between STGR54 and STGR55 RH for
R presence of fuel.
R If fuel is present, check ACT fuel transfer line and ACT for leaks
R (Ref. 28-25-00, P. Block 501).

R **ON A/C 001-100,

(1)Check leak monitor at (FR46) between STGR51 and STGR52 LH for presence of fuel.
If fuel is present, check APU fuel transfer line, trim tank fuel transfer line and horizontal stabilizer center tank for leaks (Ref. 28-25-00, P. Block 501 and 49-31-00, P. Block 501).

R **ON A/C ALL

C. Close-Up
(1)Remove container.

WARNING : LANDING GEAR - MAKE SURE THAT THE GROUND SAFETIES AND CHOCKS ARE IN POSITION.

OBEY THE SAFETY PRECAUTIONS IN 28-00-00, P. BLOCK 301.

MAKE SURE THAT THE FIRE FIGHTING EQUIPMENT IS AVAILABLE AND ADEQUATE.

MAKE SURE THAT YOU ISOLATE THE ELECTRICAL CIRCUITS UPON WHICH WORK IS IN PROGRESS.

R 1. Functional Check of Center Tank Vapor Seal

A. Reason for the Job

R NOTE : Refer to the MPD TASK: 281800-04-1

(1)To make sure there are no leaks or obstructions in the external ventilating system of the center tank.

B. Equipment and Materials

ITEM	DESIGNATION
A.	Access Platform 2.5 m (8 ft)
B.	Ground Pressure Generator (GPG) to supply: clean air and regulate for pressures up to 20 mb (0.29 psi), or if available: - locally supplied clean air connected to a Fisher Type S301 Gas Regulator that can regulate for pressures upto 20 mb (0.29 psi).
R C.	Pressure Gage 0 - 10 mb (0 - 0.145 psi): - locally supplied pressure gage that can be connected between the air supply and the connection point on the aircraft
R D.	Blanking Caps/Plugs
R E.	Leak Detecting Soap Solution
Referenced Procedures	
R - 20-28-11, P. Block 001	Electrical Bonding
- 28-00-00, P. Block 301	Fuel - General
- 28-13-21, P. Block 801	Vapor Seals Approved Repairs
- 32-12-11, P. Block 301	Main Gear Main Door

C. Procedure

**ON A/C 001-100, 105-200,

Post SB 28-2063 For A/C 001-100,105-200,

B. Equipment and Materials

	ITEM	DESIGNATION
	A.	Access Platform 2.5 m (8 ft)
	B.	Ground Pressure Generator (GPG) to supply: clean air and regulate for pressures up to 20 mb (0.29 psi) or if available: - locally supplied clean air connected to a Fisher Type S301 Gas Regulator that can regulate for pressures upto 20 mb (0.29 psi)
R	C.	Pressure Gage 0 - 10 mb (0 - 0.145 psi): - locally supplied pressure gage that can be connected between the air supply and the connection point on the aircraft
R	D.	Blanking Caps/Plugs
R	E.	Leak Detecting Soap Solution
R	F.	Rubber Plug (Quantity 16)
	Referenced Procedures	
R	- 20-28-11, P. Block 001	Electrical Bonding
	- 28-00-00, P. Block 301	Fuel - General
	- 28-13-21, P. Block 801	Vapor Seals Approved Repairs
	- 32-12-11, P. Block 301	Main Gear Main Door

C. Procedure

**ON A/C 001-100,

(Ref. Fig. 501) (Sheet 1/2)

**ON A/C 101-200,

(Ref. Fig. 502) (Sheet 1/2)

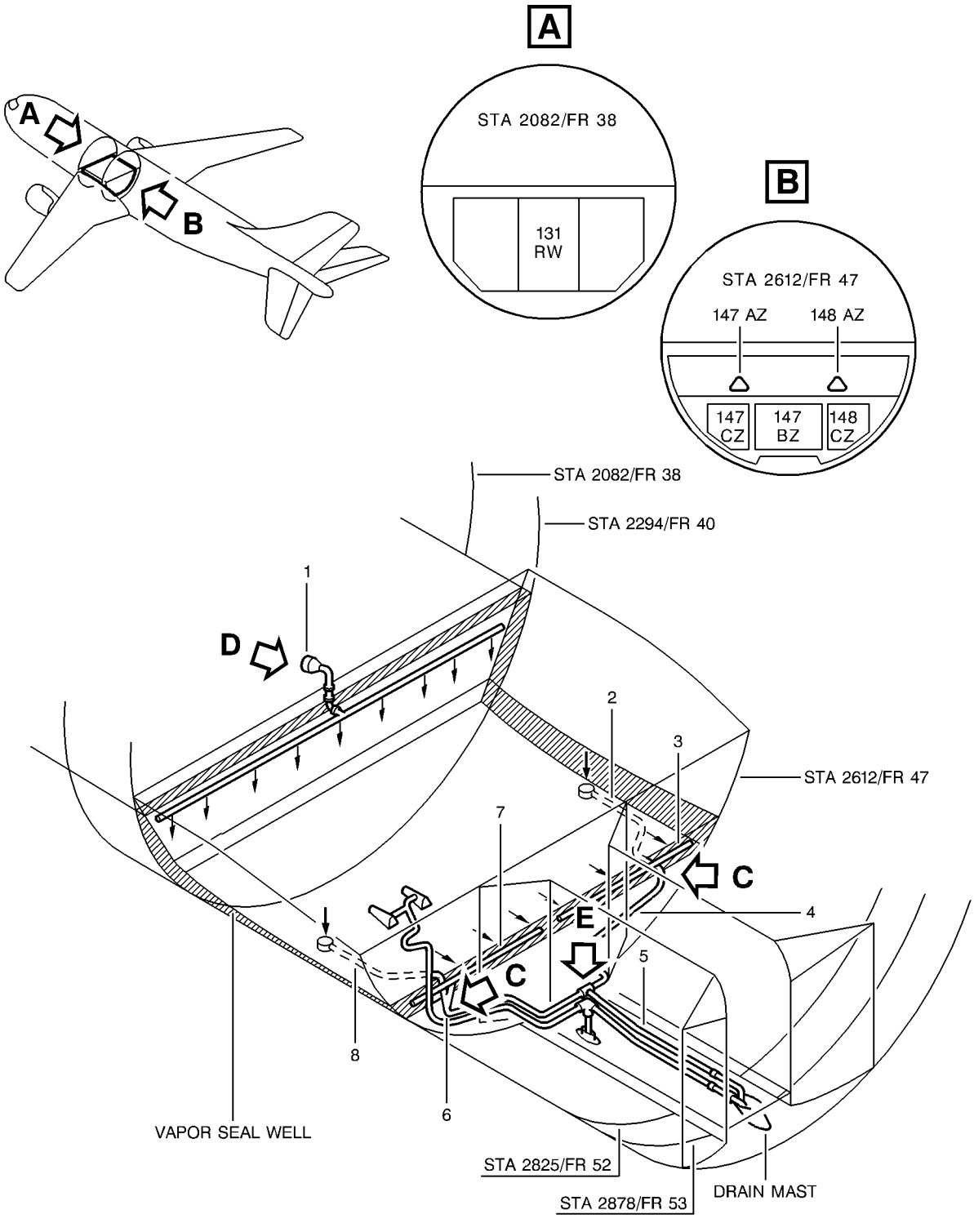
**ON A/C 001-100,

(Ref. Fig. 501) (Sheet 2/2)

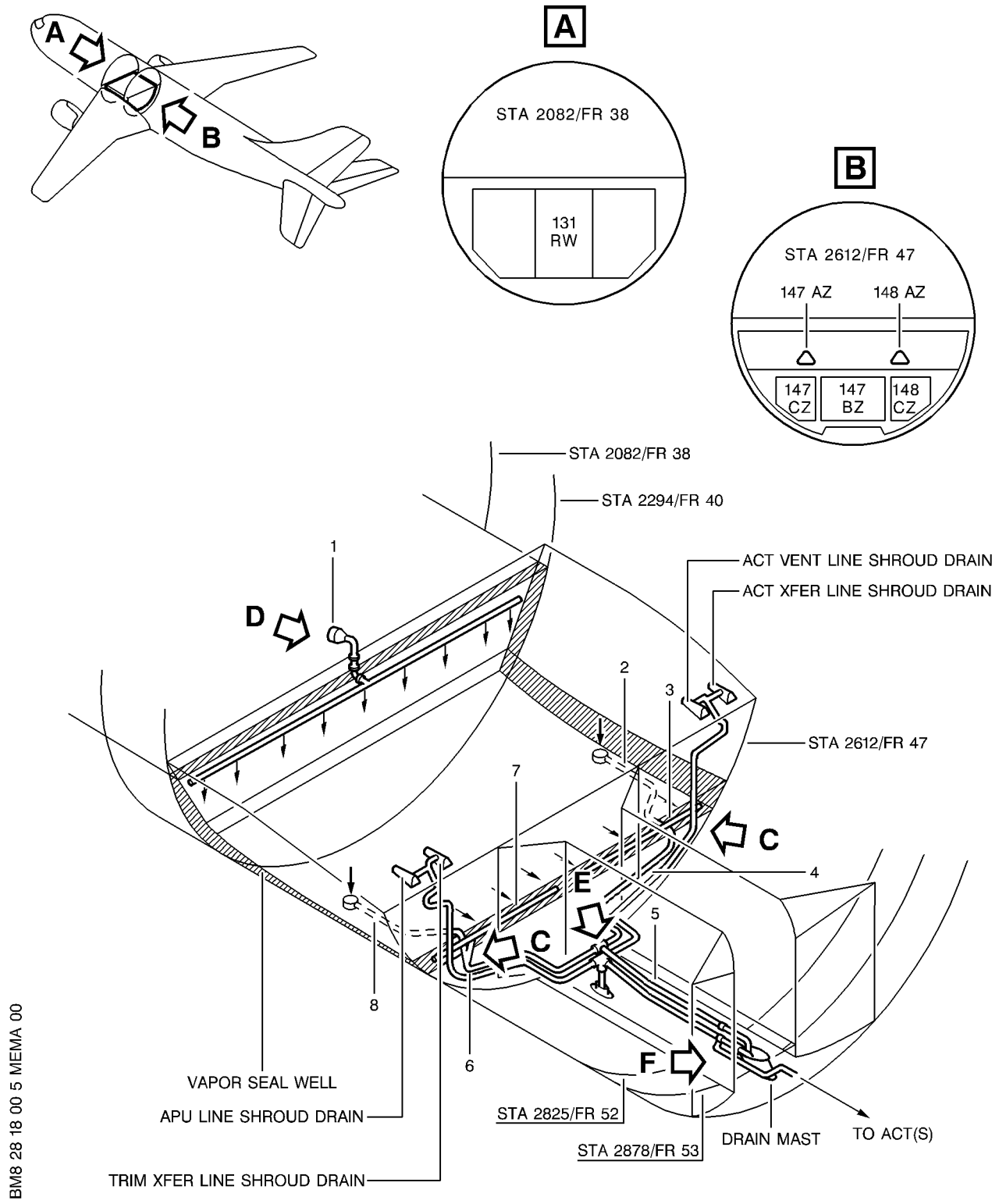
**ON A/C 101-200,

(Ref. Fig. 502) (Sheet 2/2)

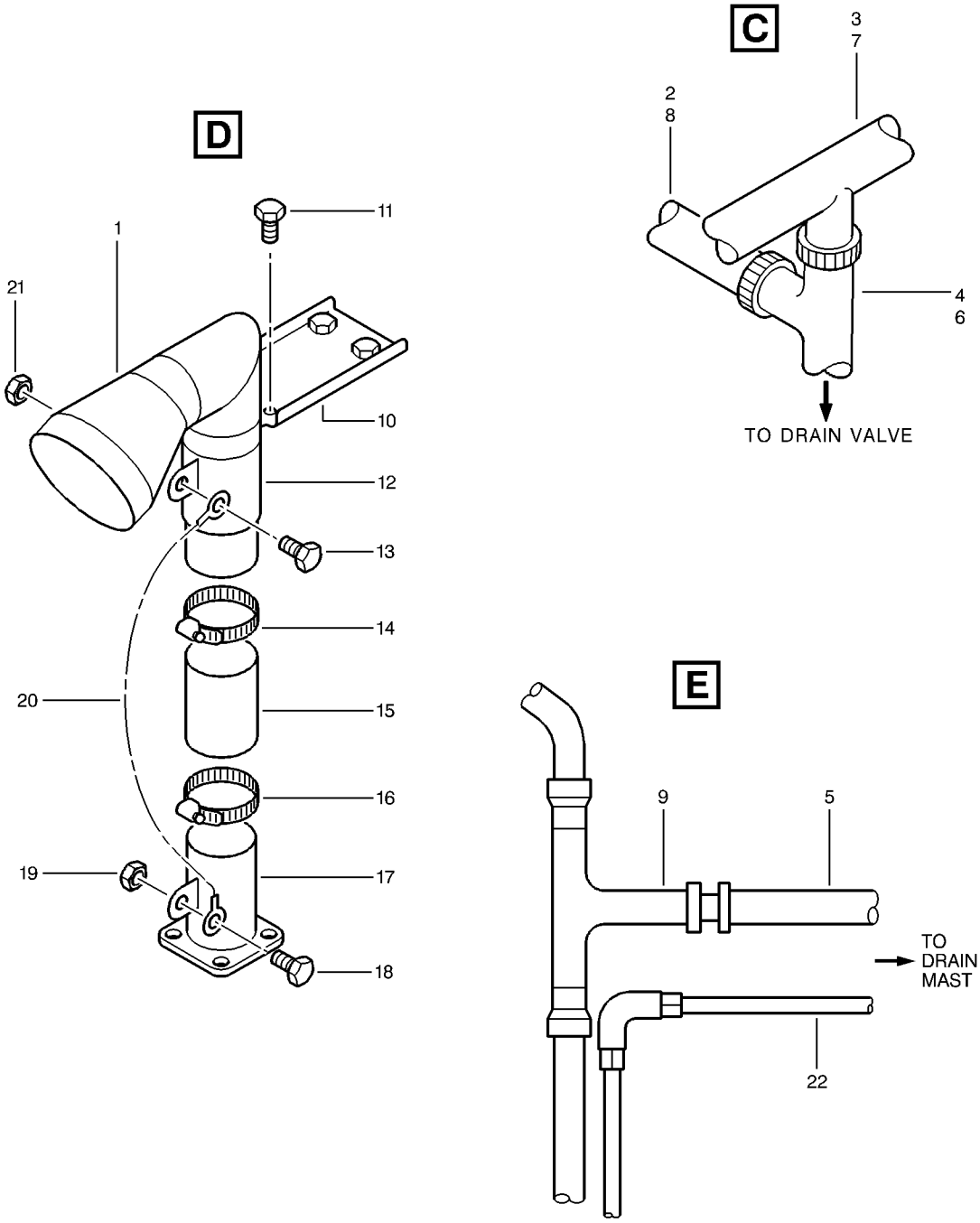
**ON A/C 001-100, 105-200,



Flow/Leak Test - Center Tank
External Ventilating System (Sheet 1/2)
Figure 501



Flow/Leak Test - Center Tank
External Ventilating System (Sheet 1/2)
Figure 502



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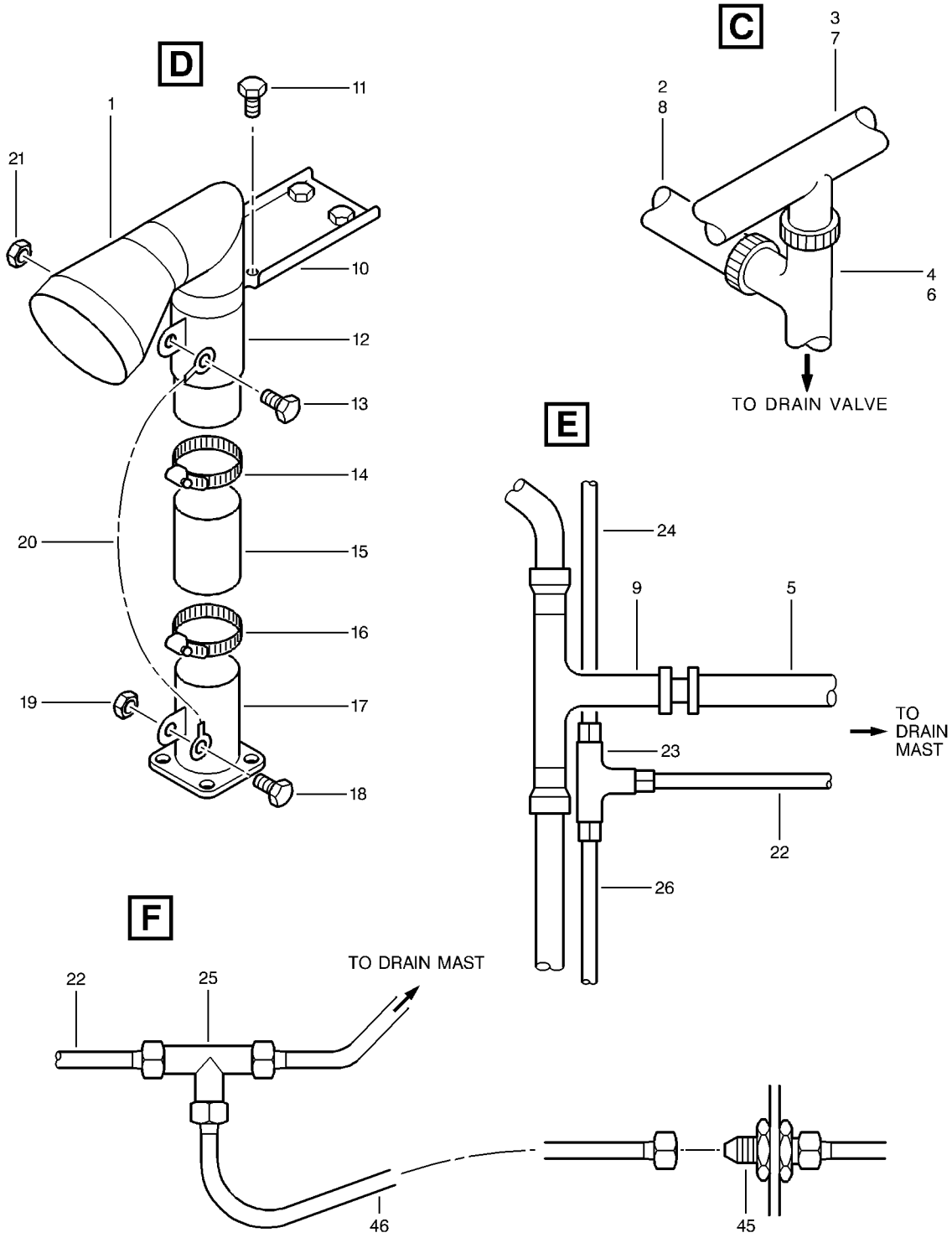
Flow/Leak Test - Center Tank
External Ventilating System (Sheet 2/2)
Figure 501



Flow/Leak Test - Center Tank
External Ventilating System (Sheet 2/2)
Figure 502

Post SB 28-2063 For A/C 001-100,105-200,

(Ref. Fig. 503)

**ON A/C ALL

(1)Job Set-up
(a)Open the main-gear main-doors (Ref. 32-12-11, P. Block 301).
(b)Position the access platform.
(c)Remove the access doors 147CZ, 147BZ and 148CZ.
(d)Disconnect the vent lines (3) and (7) and the drainage lines (2) and (8) from the junctions on lines (4) and (6).
(e)Remove the access door 131RW.
(f)Remove the nuts (19) and (21) and the bolts (13) and (18).
(g)Remove the bonding strap (20) from the pipe (12) and the preseal assembly (17).
(h)Remove the fasteners (11) securing the pipe (12) to the bracket (10).
(j)Loosen the hose clips (14) and (16).
(k)Remove the pipe (12), the sleeve (15) and the hose clips (14) and (16).

(2)Test

CAUTION : BEFORE YOU START THE TEST, MAKE SURE THAT THE TEST EQUIPMENT INCLUDES A SAFETY SYSTEM TO PREVENT ANY OVERPRESSURE WHICH COULD DAMAGE THE AIRCRAFT. THE PRESSURE MUST NOT RISE ABOVE 10 MB (0.145 PSI) DURING THE LEAK TEST.

ACTION	RESULT
Test of system lines: 1. Pipe (12): - make sure that the pipe (12) is clear and free from obstruction and manually make sure that the valve (1) operates freely.	
2. Preseal assembly (17), the vent lines (3) and (7), the drainage lines (2) and (8): - connect the air supply to the preseal assembly (17) then set the maximum pressure to 20 mb (0.29 psi).	
- start the air supply.	- air flows from the vent lines (3) and (7) and the drainage lines (2) and (8).
- stop the air supply.	- the air flow stops.

ACTION	RESULT
3. Lines (4), (5) and (6) and the drainmast: - connect the air supply to the vent port on the junction, on line (4).	
- start the air supply.	- air flows from the drainage line junction, on line (4), the vent and drainage line junctions on line (6) and from the drainmast.
- stop the air supply.	- the air flow stops.
NOTE : If no air flows from the lines tested, remove the applicable line and clear the obstruction.	
4. Disconnect the pipe (5) from the T-piece (9) and install a blanking cap on the open end of the T-piece.	
5. Connect the vent lines (3) and (7) and the drainage lines (2) and (8) to the junctions on lines (4) and (6).	
Leak test:	
CAUTION : BEFORE YOU CONNECT THE GPG AIR SUPPLY TO THE AIRCRAFT, MAKE SURE THAT THE GPG PRESSURE GAGE IS ACCURATE IN THE RANGE 0 TO 10 MB (0 TO 0.145 PSI). IF NECESSARY, INSTALL A SEPARATE PRESSURE GAGE ACCURATE IN THE RANGE 0 TO 10 MB (0 TO 0.145 PSI) BETWEEN THE AIR SUPPLY AND THE CONNECTION POINT ON THE AIRCRAFT.	
6. Connect the air supply to the preseal assembly (17) then set the maximum pressure to 10 mb (0.145 psi).	
- start the air supply and slowly pressurize the system at 10 mb (0.145 psi) for 30 minutes minimum (to stabilize the pressure).	
- stop the air supply and monitor the pressure.	- the pressure must not decrease more than 7mb (0.10 psi) in 30 seconds.
- release the pressure.	

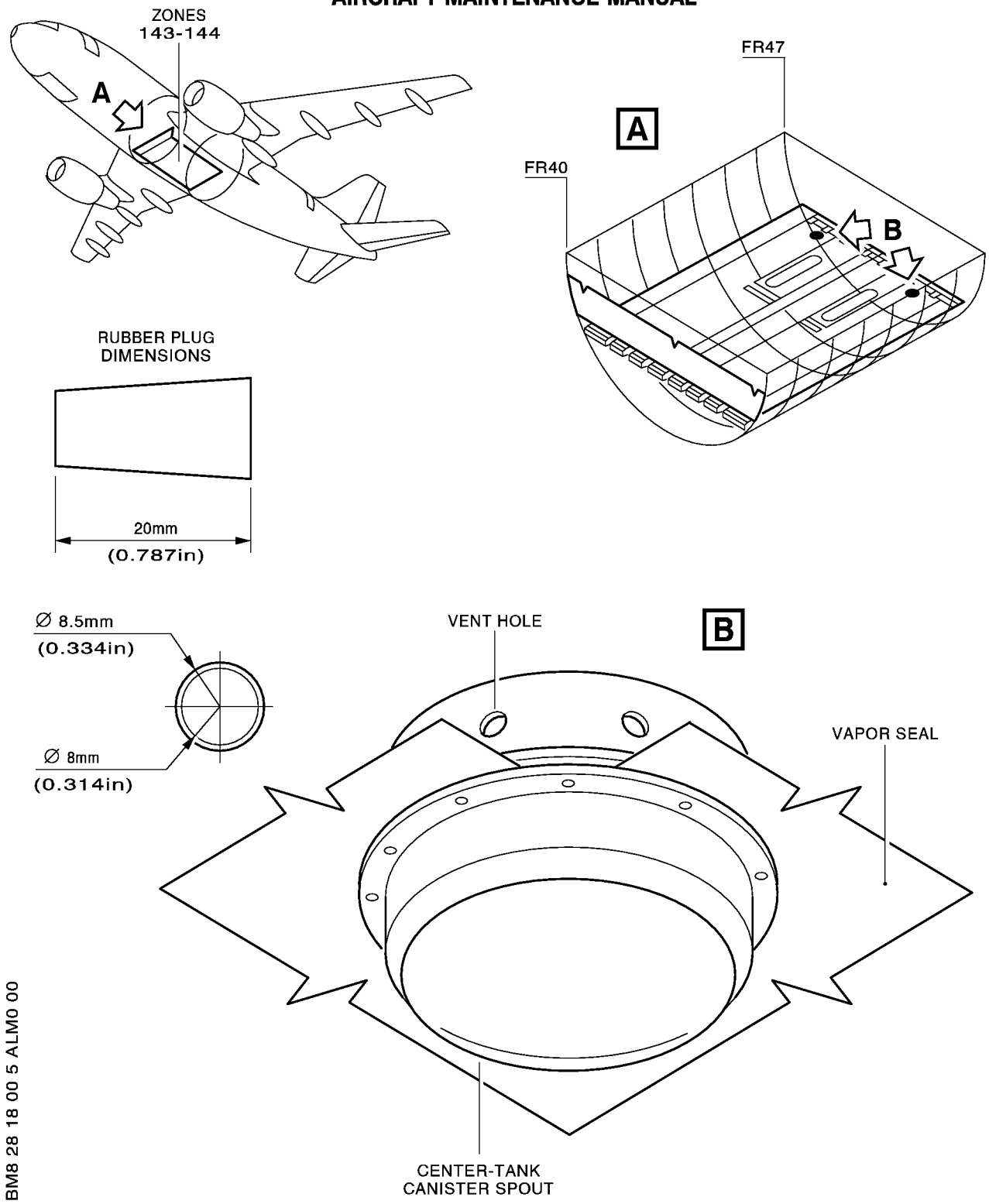
ACTION	RESULT

NOTE : If the pressure drop exceeds the limit use a soap solution to locate the leak(s) in the lines and/or the vapor seal. If a leak is found in the lines, repair as necessary. If a leak is found in the vapor seal, repair the vapor seal (Ref. 28-13-21, P. Block 801). After a repair, do the leak test again and make sure the pressure drop is within the limit.

(3)Close-up
(a)Disconnect the air supply from the preseal assembly (17).
(b)Install the pipe (12) and the sleeve (15) to the preseal assembly (17) and install the hose clips (14) and (16).
(c)Install the fasteners (11) to attach the pipe (12) to the bracket (10).
(d)Install the bonding strap (20) to the pipe (12) and the preseal assembly (17) with the nuts (19) and (21) and the bolts (13) and (18)
R (Ref. 20-28-11, P. Block 001).
(e)Remove the blanking cap from the T-piece (9) and connect the pipe (5).
(f)Make sure that the work area is clean and clear of tools and all other items of equipment.

CAUTION : MAKE SURE THAT ALL THE FASTENERS AND PIP PINS ARE CORRECTLY INSTALLED AND SECURED WHEN YOU INSTALL THE ACCESS DOORS AT FR47.

(g)Install the access doors 131RW, 147CZ, 147BZ and 148CZ.
(h)Remove the access platform.
(j)Close the main gear main doors (Ref. 32-12-11, P. Block 301).



Vent Holes in Center-Tank Canister Spouts
Figure 503

**ON A/C 001-100, 105-200,

Post SB 28-2063 For A/C 001-100,105-200,

(2)Test

CAUTION : BEFORE YOU START THE TEST, MAKE SURE THAT THE TEST EQUIPMENT INCLUDES A SAFETY SYSTEM TO PREVENT ANY OVERPRESSURE WHICH COULD DAMAGE THE AIRCRAFT. THE PRESSURE MUST NOT RISE ABOVE 10 MB (0.145 PSI) DURING THE LEAK TEST.

ACTION	RESULT
Test of system lines: 1. Pipe (12): - make sure that the pipe (12) is clear and free from obstruction and manually make sure that the valve (1) operates freely.	
2. Preseal assembly (17), the vent lines (3) and (7), the drainage lines (2) and (8) and the center-tank canister spouts: - connect the air supply to the preseal assembly (17) then set the maximum pressure to 20 mb (0.29 psi).	
- start the air supply.	- air flows from the vent lines (3) and (7), the drainage lines (2) and (8) and the vent holes in the two center-tank canister spouts.
- stop the air supply.	- the air flow stops.
3. Lines (4), (5) and (6) and the drainmast: - Connect the air supply to the vent port on the line (4) junction.	
- start the air supply.	- air flows from the drainage line junction on line (4), the vent and drainage line junctions on line (6) and from the drainmast.
- stop the air supply.	- the air flow stops.

ACTION	RESULT

NOTE : If air does not flow from the lines tested, remove the applicable line and clear the obstruction.

4. Connect the vent lines (3) and (7) and the drainage lines (2) and (8) to the junctions on the lines (4) and (6).

Leak test:

5. Disconnect pipe (5) from the T-piece (9) and install a blanking cap on the open end of the T-piece.

6. Install the rubber plugs in the vent holes of the two center-tank canister spouts.

CAUTION : BEFORE YOU CONNECT THE GPG AIR SUPPLY TO THE AIRCRAFT, MAKE SURE THAT THE GPG PRESSURE GAGE IS ACCURATE IN THE RANGE 0 TO 10 MB (0 TO 0.145 PSI). IF NECESSARY, INSTALL A SEPARATE PRESSURE GAGE ACCURATE IN THE RANGE 0 TO 10 MB (0 TO 0.145 PSI) BETWEEN THE AIR SUPPLY AND THE CONNECTION POINT ON THE AIRCRAFT.

7. Connect the air supply to the preseal assembly (17) and set the maximum pressure to 10 mb (0.145 psi).

- start the air supply and slowly pressurize the system at 10 mb (0.145 psi) for 30 minutes minimum (to stabilize the pressure).

- stop the air supply and monitor the pressure.
  - the pressure must not decrease more than 7 mb (0.10 psi) in 30 seconds.

- release the pressure.

NOTE : If the pressure drop exceeds the limit use a soap solution to locate the leak(s) in the lines and/or the vapor seal. If a leak is found in the lines, repair as necessary. If a leak is found in the vapor seal, repair the vapor seal (Ref. 28-13-21, P. Block 801). After a repair, do the leak test again and make sure the pressure drop is within the limit.

(3)Close-up

(a)Disconnect the air supply from the preseal assembly (17).
(b)Install the pipe (12) and the sleeve (15) on the preseal assembly (17) and attach with the hose clips (14) and (16).
(c)Install the fasteners (11) to attach the pipe (12) to the bracket (10).
(d)Install the bonding strap (20) to the pipe (12) and the preseal assembly (17) with the nuts (19) and (21) and the bolts (13) and (18)
R (Ref. 20-28-11, P. Block 001).
(e)Remove the blanking cap from the T-piece (9) and connect the pipe (5).
(f)Remove the rubber plugs from the two center-tank canister spouts.
(g)Make sure that the work area is clean and clear of tools and all other items of equipment.

CAUTION : MAKE SURE THAT ALL THE FASTENERS AND PIP PINS ARE CORRECTLY INSTALLED AND SECURED WHEN YOU INSTALL THE ACCESS DOORS AT FR47.

(h)Install the access doors 131RW, 147CZ, 147BZ and 148CZ.
(j)Remove the access platform.
(k)Close the main gear main doors (Ref. 32-12-11, P. Block 301).

**ON A/C 001-100,

2. Operational Check of Fuel Quantity Indicating and Level Sensing for Electrical Continuity (With Test Set PN 722131)

A. Reason for the Job

R NOTE : Refer to the MPD TASK: 281800-03-1

(1)To make sure there are no open or short circuits in the quantity indicating and tank level warning systems.

B. Equipment and Materials

ITEM	DESIGNATION
A.	Access Platform 2.6 m (8 ft)
B. 722131	Test Set
C. 722328	Cable - Test Level Sensors
D. 790065	Cable - Power Supply
Referenced Procedures	
- 12-11-28, P. Block 301	Replenishing of Fuel Tanks
- 24-41-00, P. Block 301	AC External Power Control
- 28-25-00, P. Block 301	Refuel/Defuel System
- 28-46-23, P. Block 401	Fuel Level Amplifier

C. Procedure

**ON A/C 101-200,

2. Operational Check of Fuel Quantity Indicating and Level Sensing for Electrical Continuity (With Test Set PN 722370)

A. Reason for the Job

R NOTE : Refer to the MPD TASK: 281800-03-1

(1)To make sure there are no open or short circuits in the quantity indicating and tank level warning systems.

B. Equipment and Materials

ITEM	DESIGNATION
A.	Access Platform 2.6 m (8 ft)
B. 722370	Test Set
C. 722371	Cable - Test Level Sensors
D. 790065	Cable - Power Supply
Referenced Procedures	
- 12-11-28, P. Block 301	Replenishing of Fuel Tanks

ITEM	DESIGNATION
- 24-41-00, P. Block 301	AC External Power Control
- 28-25-00, P. Block 301	Refuel/Defuel System
- 28-46-23, P. Block 401	Fuel Level Amplifier

C. Procedure

**ON A/C 101-200,

Post SB 28-2105 For A/C 101-200,

2. Operational Check of Fuel Quantity Indicating and Level Sensing for Electrical Continuity (With Test Set PN 722427)

A. Reason for the Job

R NOTE : Refer to the MPD TASK: 281800-03-1

(1)To make sure there are no open or short circuits in the quantity indicating and tank level warning systems.

B. Equipment and Materials

ITEM	DESIGNATION
A.	Access Platform 2.6 m (8 ft)
B. 722427	Test Set
C. 722371	Cable - Test Level Sensors
D. 790065	Cable - Power Supply
Referenced Procedures	
- 12-11-28, P. Block 301	Replenishing of Fuel Tanks
- 24-41-00, P. Block 301	AC External Power Control
- 28-25-00, P. Block 301	Refuel/Defuel System
- 28-46-23, P. Block 401	Fuel Level Amplifier

C. Procedure

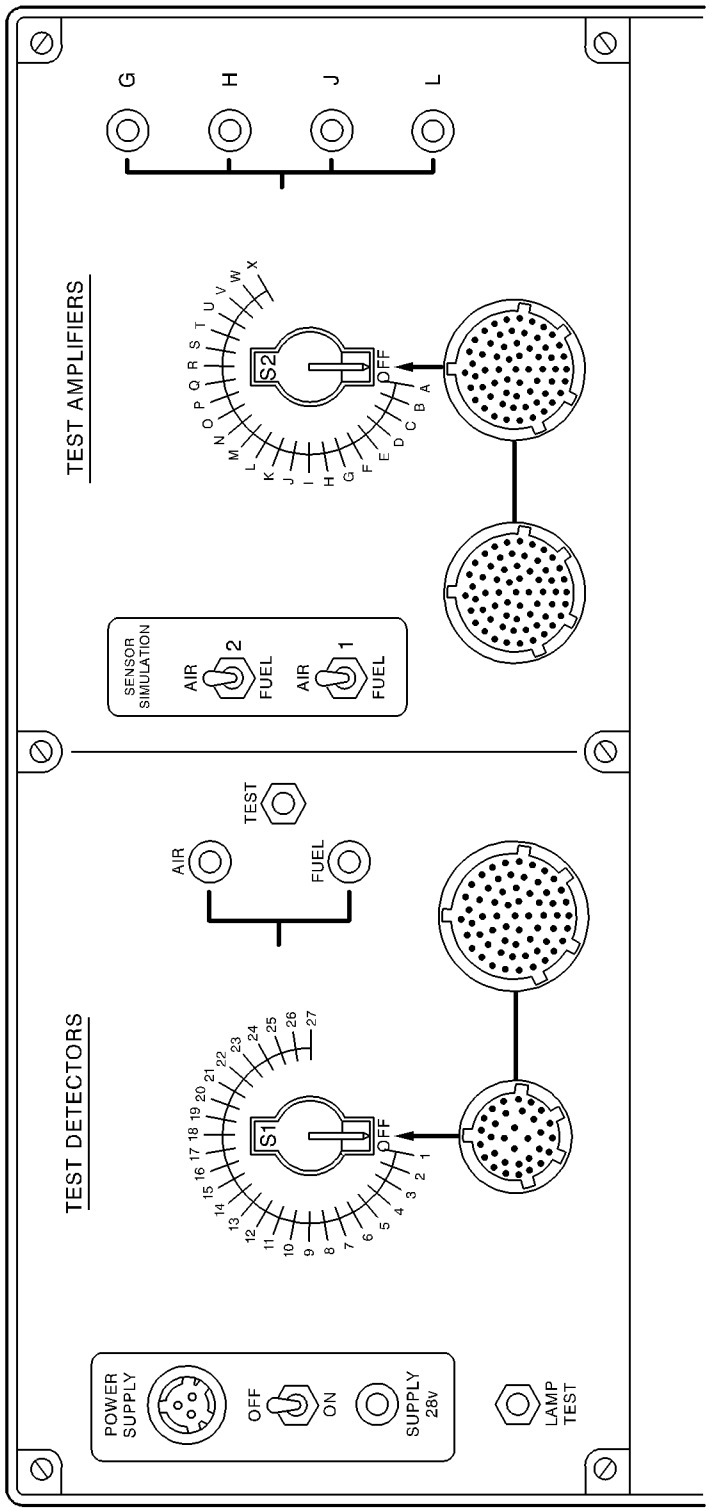
**ON A/C 001-100,

(Ref. Fig. 504)

**ON A/C 101-200,

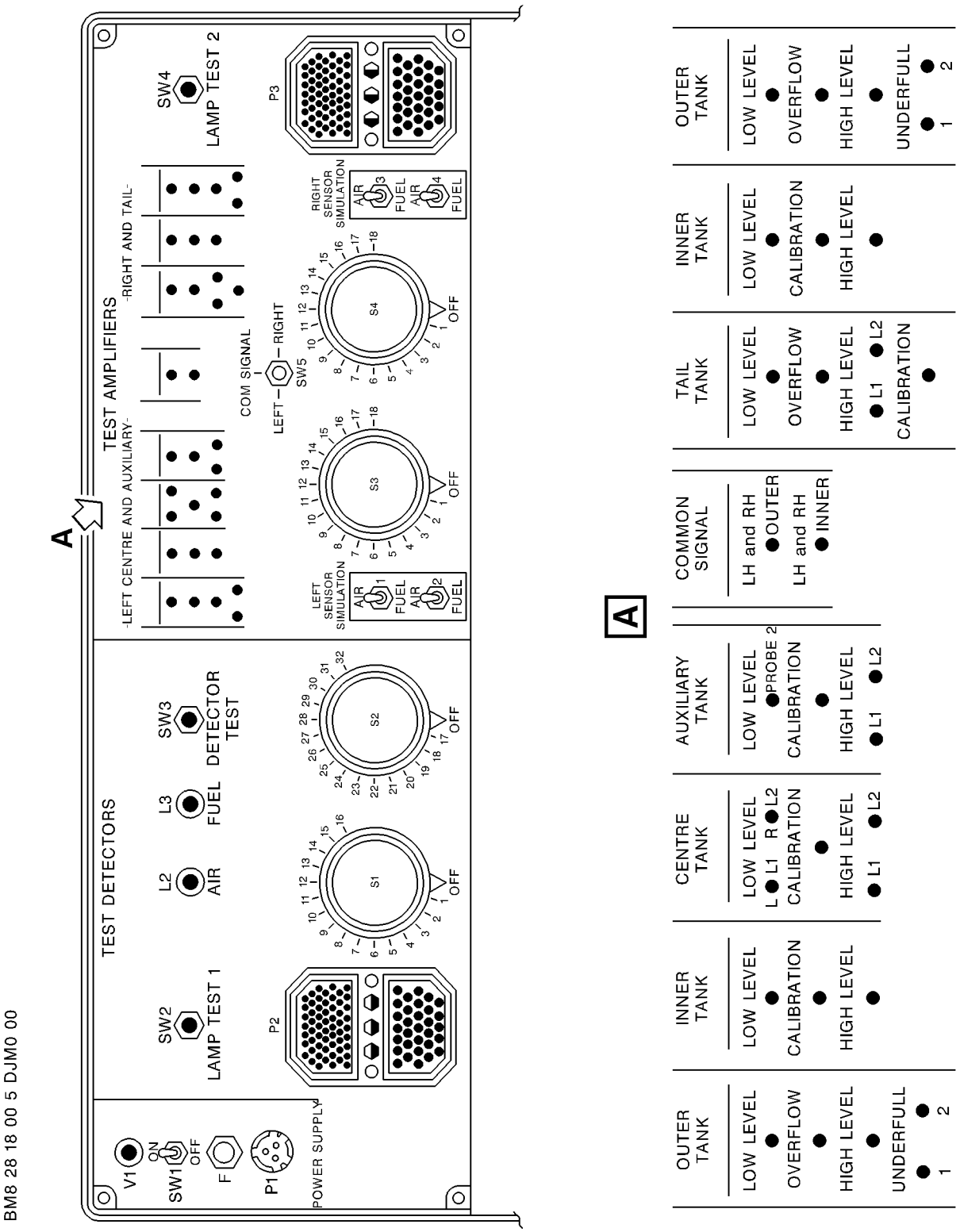
(Ref. Fig. 505)

**ON A/C 101-200,



Test Set PN 722131
Figure 504

BM8 28 18 00 5 DEM0 00



BM8 28 18 00 5 DJM0 00

Test Set PN 722370
Figure 505

Post SB 28-2105 For A/C 101-200,

(Ref. Fig. 506)

**ON A/C ALL

(1)Job Set-up
(a)Energize the aircraft electrical network (Ref. 24-41-00, P. Block 301).

(2)Test the Fuel Quantity Probes and Compensator

(a)Refuel all of the fuel tanks to the high level cut-off point (Ref. 12-11-28 or 28-25-00, P. Block 301).
(b)On the refuel panel, make sure that:
- the FQI DISPLAY shows the full value of fuel for every fuel tank, with no dashes in the display
- the two LO level warning lights on the FQI DISPLAY are off
- all of the HIGH LEVEL lights are on.

(c)Defuel all of the fuel tanks to empty (Ref. 12-11-28 or 28-25-00, P. Block 301).
(d)On the refuel panel, make sure that:
- the FQI DISPLAY shows zero quantity for every fuel tank, with no dashes in the display
- the two LO level warning lights on the FQI DISPLAY are on.

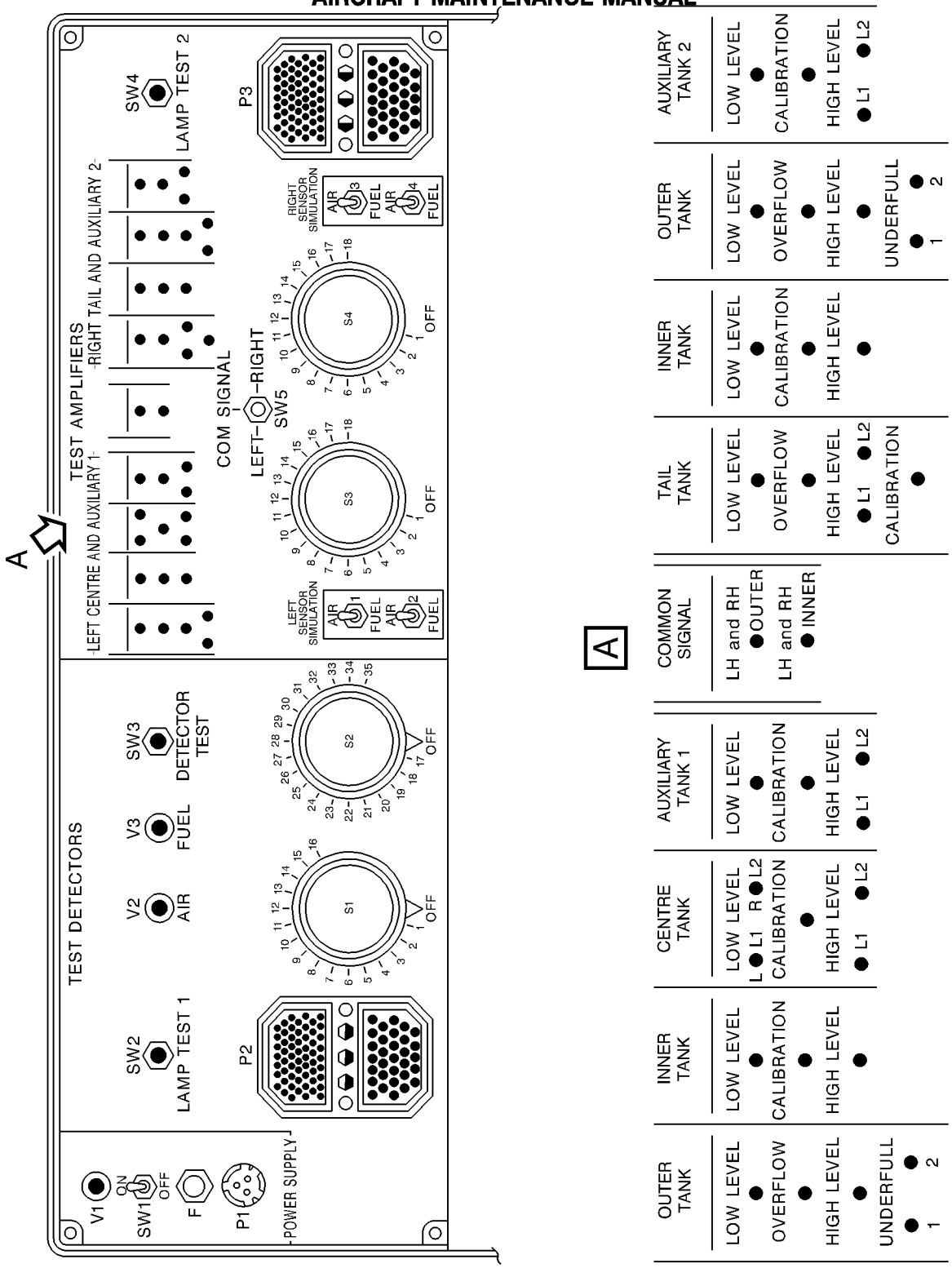
(e)De-energize the aircraft electrical network (Ref. 24-41-00, P. Block 301.

**ON A/C 001-100,

(3)Test the Level Sensors (With Test Set PN 722131)

NOTE : The test connects each level sensing unit in the fuel tanks to an amplifier in the test set.

(a)Put the access platform in position.
(b)Open the access door 121BL.
(c)Remove the fuel level amplifier 8QJ from the electronics rack 96VU (Ref. 28-46-23, P. Block 401).
(d)Connect the test set to the rack connector 8QJ-AB with the cable PN 722328.
(e)Connect a 28V electrical supply to the test set POWER SUPPLY 3-pin socket with the cable PN 790065.
(f)Energize the aircraft electrical network (Ref. 24-41-00, P. Block 301).
(g)On the test set:
1 Make sure that the selector switch S1 is in the OFF position.
2 Put the test set POWER SUPPLY switch in the ON position. Make sure that the SUPPLY 28V indicator light comes on.
3 Push (in) the LAMP TEST P/BSW and make sure that the indicator lights come on.



BM8 28 18 00 5 DLM0 00

Test Set PN 722427
Figure 506

4 Release (out) the LAMP TEST P/BSW, the indicator lights go off.

**ON A/C 101-200,

(3)Test the Level Sensors (With Test Set PN 722370)

NOTE : The test connects each level sensing unit in the fuel tanks to an amplifier in the test set.

(a)Put the access platform in position.
(b)Open the access door 121BL.
(c)Remove the fuel level amplifier 8QJ from the electronics rack 96VU (Ref. 28-46-23, P. Block 401).
(d)Connect the test set to the rack connector 8QJ-AB with the cable PN 722371.
(e)Connect a 28V electrical supply to the test set POWER SUPPLY 3-pin socket P1 with the cable PN 790065.
(f)Energize the aircraft electrical network (Ref. 24-41-00, P. Block 301).
(g)On the test set:
1 Make sure that the selector switches S1 and S2 are in the OFF position.
2 Put the test set POWER SUPPLY switch SW1 in the ON position. Make sure that the POWER SUPPLY indicator light V1 comes on.
3 Push (in) the LAMP TEST 1 P/BSW SW2 and make sure that the indicator lights come on.
4 Release (out) the LAMP TEST 1 P/BSW SW2, the indicator lights go off.

**ON A/C 101-200,

Post SB 28-2105 For A/C 101-200,

(3)Test the Level Sensors (With Test Set PN 722427)

NOTE : The test connects each level sensing unit in the fuel tanks to an amplifier in the test set.

(a)Put the access platform in position.
(b)Open the access door 121BL.
(c)Remove the fuel level amplifier 8QJ from the electronics rack 96VU (Ref. 28-46-23, P. Block 401).
(d)Connect the test set to the rack connector 8QJ-AB with the cable PN 722371.
(e)Connect a 28V electrical supply to the test set POWER SUPPLY 3-pin socket P1 with the cable PN 790065.
(f)Energize the aircraft electrical network (Ref. 24-41-00, P. Block 301).
(g)On the test set:
1 Make sure that the selector switches S1 and S2 are in the OFF position.
2 Put the test set POWER SUPPLY switch SW1 in the ON position. Make

sure that the POWER SUPPLY indicator light V1 comes on.
3 Push (in) the LAMP TEST 1 P/BSW SW2 and make sure that the indicator lights come on.
4 Release (out) the LAMP TEST 1 P/BSW SW2, the indicator lights go off.

**ON A/C 001-100,

(h)Do the test that follows:

ACTION	RESULT
1. On the test set under TEST DETECTORS: - put the selector switch S1 in position 1.	On the test set under TEST DETECTORS: - the AIR light comes on.
2. Put the POWER SUPPLY switch in the OFF position.	- the AIR light goes off.
3. Put the POWER SUPPLY switch in the ON position.	- the FUEL light comes on, then goes off - the AIR light comes on.
4. Do steps 1. thru 3. again for the selector switch S1 positions 2 thru 27.	
5. Put the selector switch S1 in the OFF position.	- the AIR light goes off.

**ON A/C 101-200,

(h)Do the test that follows:

ACTION	RESULT
1. On the test set under TEST DETECTORS: - put the selector switch S1 in position 1.	On the test set under TEST DETECTORS: - the AIR light L2 comes on.
2. Put the POWER SUPPLY switch SW1 in the OFF position.	- the AIR light L2 goes off.
3. Put the POWER SUPPLY switch SW1 in the ON position.	- the FUEL light L3 comes on, then goes off - the AIR light L2 comes on.

ACTION	RESULT
4. Do steps 1. thru 3. again for the selector switch positions that follow: - 2, 3, 6, 7, 9 thru 12, 14 and 16 on selector switch S1 with the selector switch S2 in the OFF position - 17 and 20 thru 22 on selector switch S2 with selector switch S1 in the OFF position.	
5. Put the selector switches S1 and S2 in the OFF position.	- the AIR light L2 goes off.

**ON A/C 101-200,

Post SB 28-2105 For A/C 101-200,

(h)Do the test that follows:

ACTION	RESULT
1. On the test set under TEST DETECTORS: - put the selector switch S1 in position 1.	On the test set under TEST DETECTORS: - the AIR light L2 comes on.
2. Put the POWER SUPPLY switch SW1 in the OFF position.	- the AIR light L2 goes off.
3. Put the POWER SUPPLY switch SW1 in the ON position.	- the FUEL light L3 comes on, then goes off - the AIR light L2 comes on.
4. Do steps 1. thru 3. again for the selector switch positions that follow: - 2 thru 16 on selector switch S1 with selector switch S2 in the OFF position - 17 thru 27, 28 thru 31 (if ACT 1 installed) and 32 thru 35 (if ACT 2 installed) on selector switch S2 with selector switch S1 in the OFF position.	

ACTION	RESULT
5. Put the selector switches S1 and S2 in the OFF position.	- the AIR light L2 goes off.

**ON A/C 001-100,

(j)Put the test set POWER SUPPLY switch in the OFF position.
(k)De-energize the aircraft electrical network (Ref. 24-41-00, P. Block 301).
(m)Disconnect the cable PN 722328 from the test set and the rack connector.
(n)Disconnect the cable PN 790065 from the test set and the 28V electrical supply.
R (p)Install the fuel level amplifier 8QJ into the electronics rack 96VU
R (Ref. 28-46-23, P. Block 401).

**ON A/C 101-200,

(j)Put the test set POWER SUPPLY switch SW1 in the OFF position.
(k)De-energize the aircraft electrical network (Ref. 24-41-00, P. Block 301).
(m)Disconnect the cable PN 722371 from the test set and the rack connector.
(n)Disconnect the cable PN 790065 from the test set and the 28V electrical supply.
R (p)Install the fuel level amplifier 8QJ into the electronics rack 96VU
R (Ref. 28-46-23, P. Block 401).

**ON A/C 101-200,

Post SB 28-2105 For A/C 101-200,

(j)Put the test set POWER SUPPLY switch SW1 in the OFF position.
(k)De-energize the aircraft electrical network (Ref. 24-41-00, P. Block 301).
(m)Disconnect the cable PN 722371 from the test set and the rack connector.
(n)Disconnect the cable PN 790065 from the test set and the 28V electrical supply.
R (p)Install the fuel level amplifier 8QJ into the electronics rack 96VU
R (Ref. 28-46-23, P. Block 401).

WARNING : LANDING GEAR - MAKE SURE THAT THE GROUND SAFETIES AND CHOCKS ARE IN POSITION.

FLIGHT CONTROLS - MAKE SURE THAT THE GROUND SAFETIES AND NOTICES ARE IN POSITION.

FLIGHT CONTROLS - MAKE SURE THAT THE TRAVEL RANGES OF THE CONTROL SURFACES ARE CLEAR.

OBEY THE SAFETY PRECAUTIONS IN 28-00-00, P. BLOCK 301 AND 28-10-00, P. BLOCK 301 WHEN YOU ENTER AND LEAVE THE FUEL TANK(S).

MAKE SURE THAT THE FIRE FIGHTING EQUIPMENT IS AVAILABLE AND ADEQUATE.

MAKE SURE THAT YOU ISOLATE THE ELECTRICAL CIRCUITS UPON WHICH WORK IS IN PROGRESS.

1. General Visual Inspection of the Center Tank Vapor Seal

A. Reason for the Job

R NOTE : Refer to the MPD TASK: 281800-05-3

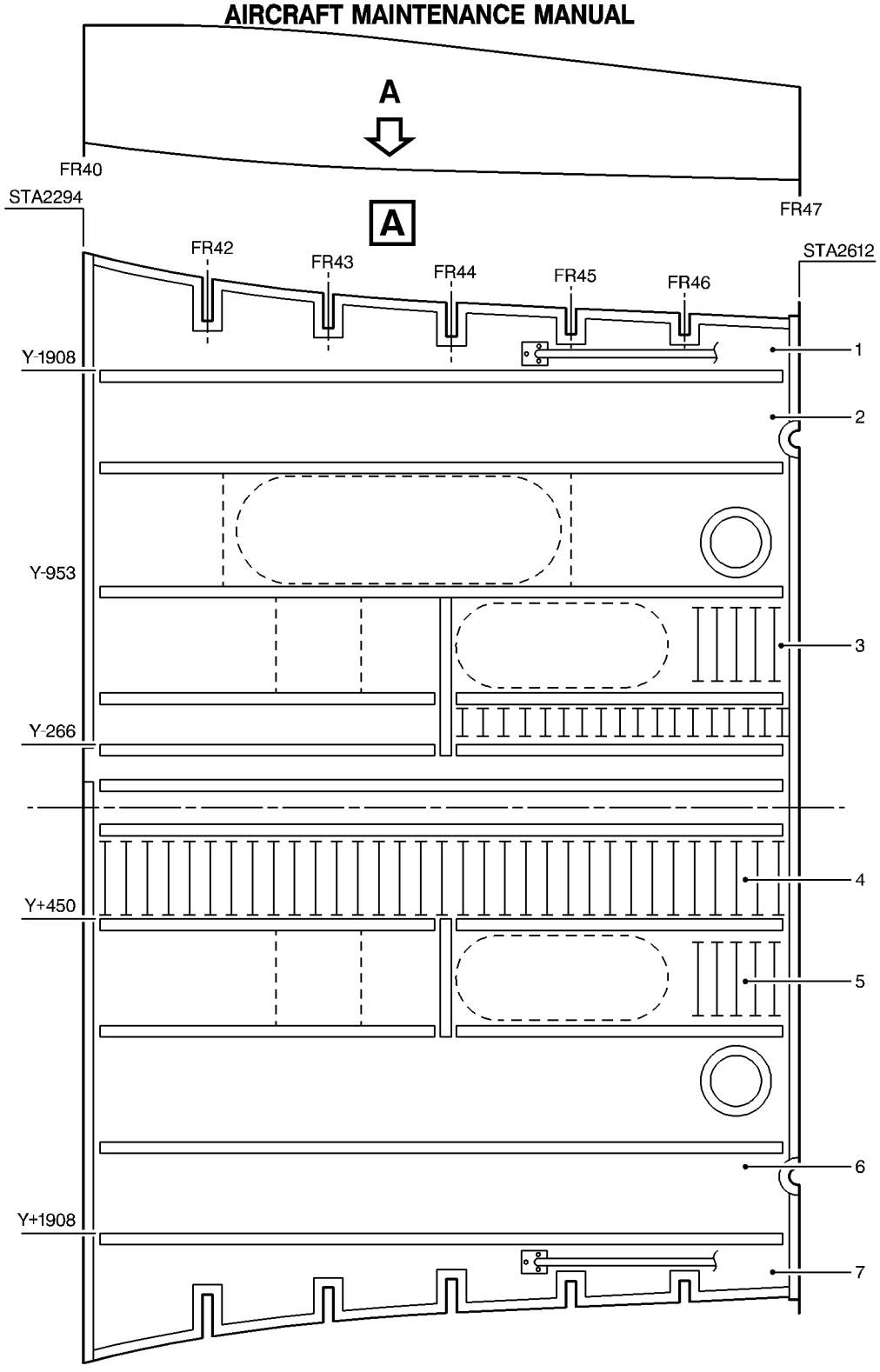
B. Equipment and Materials

ITEM	DESIGNATION
A.	Access Platform, 5.5 m (18 ft.)
B.	Warning Notice
Referenced Procedures	
- 21-11-00, P. Block 1	Flow Control and Indicating
- 28-13-21, P. Block 801	Vapor Seals
- 32-12-11, P. Block 301	Main Gear Main Door

C. Procedure
(Ref. Fig. 601)

NOTE : There are two types of vapor seal attached under the center tank lower surface:
- vapor seals 1, 3, 4, 5 and 7 are made of light alloy. The periphery of the vapor seals is reinforced by a bonded formed edge-section except in areas where they come into contact with rubber vapor seals
- vapor seals 2 and 6 are made of rubber coated fabric, reinforced by bonded elastomer seals along the attachments
- the sealing of both types of vapor seals is made by elastomer seals bonded to the aircraft structure.

(1)Job Set-up



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Lower Surface Vapour Seals - Center Tank
Figure 601

(a)Open, safety and tag the circuit breakers that follow:

	PANEL	SERVICE	IDENT.	LOCATION
R	133VU	KRUGER	45CV	333/T61
R	133VU	SLATS/26VAC/SYS1	3CV	335/R65
R	133VU	SFCC/NORM SUPPLY/SLATS/SYS1	7CV	333/T63
R	133VU	SUPPLY/SLATS/SYS2	9CV	335/R66
R	133VU	SLATS/SYS2	8CV	333/T64
R	133VU	SLATS/26VAC/SYS2	4CV	335/R64
R	133VU	FLAPS & SLATS/POS/ECAM	2CN	334/S65
R	133VU	FLAPS & SLATS/POS/IND	1CN	334/S66
R	133VU	FLAPS/SYS1/26VAC	1CV	335/R61
R	133VU	SUPPLY/FLAPS/SYS1	10CV	335/R67
R	133VU	SFCC/NORM/SUPPLY/FLAPS/SYS1	5CV	332/U61
R	133VU	SFCC/NORM/SUPPLY/FLAPS/SYS2	6CV	331/V61
R	133VU	FLAPS/SYS2/26VAC	2CV	334/S62

(b)Put a warning notice on the center pedestal to tell persons not to operate the slats.
(c)Put a warning notice on the air conditioning panel to tell persons not to operate the refrigeration unit pack.
(d)Make sure that the pneumatic system is depressurized (Ref. 21-11-00, P. Block 1).
(e)Open the left main-gear-door 734 (Ref. 32-12-11, P. Block 301).
(f)Remove the air conditioning compartment access doors 147BZ, 147CZ and and 148CZ.

(2)Inspection
(a)Check that the vapor seals have no apparent tears or scores. If a seal is damaged do a repair (Ref. 28-13-21, P. Block 801).

(3)Close-up
(a)Make sure that the working area is clean and clear of tools and all other items of equipment.
(b)Close the circuit breakers 1CN, 2CN, 1CV, 2CV, 3CV, 4CV, 5CV, 6CV, 7CV, 8CV, 9CV, 10CV and 45CV.

CAUTION : MAKE SURE THAT ALL THE FASTENERS AND PIP PINS ARE CORRECTLY INSTALLED AND SECURED WHEN YOU INSTALL THE ACCESS DOORS AT FR47.

(c)Install the access doors 147BZ, 147CZ and 148CZ.
(d)Close the left main-gear-door 734 (Ref. 32-12-11, P. Block 301).
(e)Remove the warning notices from the flight compartment.

2. Detailed Inspection of the Wing Tank Bonding Leads

A. Reason for the Job

R NOTE : Refer to the MPD TASK: 281800-05-1

B. Equipment and Materials

ITEM	DESIGNATION
A.	Access Platform, 2 to 6 m (6 to 20 ft.)
B.	Inspection Lamp - Spark Proof
Referenced Procedures	
R - 12-11-28, P. Block 301	Replenishing of Fuel Tanks
- 20-28-11, P. Block 1	Electrical Bonding
- 28-00-00, P. Block 301	Fuel General
- 28-00-00, P. Block 801	Fuel General - Approved Repairs
- 28-10-00, P. Block 301	Storage
- 28-11-22, P. Block 401	Manhole Covers (Wings)
- 28-25-00, P. Block 301	Refuel/Defuel System

C. Procedure

(1)Job Set-up
(a)Defuel the aircraft (Ref. 28-25-00, P. Block 301).
(b)Remove all the wing-tank manhole covers (Ref. 28-11-22, P. Block 401).
(c)Put the access platform in position.
(d)Prepare the tank(s) for access (Ref. 28-10-00, P. Block 301).

(2)Inspection

NOTE : For the location of all the bonding leads for the fuel pipes in the wing tanks and for the general arrangement of the manhole covers refer to 28-00-00, P. Block 601 (Para 3.B.).

(a)Use an inspection lamp to make sure that all the bonding leads are installed.
(b)Visually examine the bonding leads and make sure that:
- they are not broken
- there are no broken strands
- the outer braid sheaths are not loose in the end crimps
- there is no corrosion.

NOTE : Bonding leads which only show signs of tarnish should be kept in position until the next scheduled in-tank inspection.

(c)Carefully pull each bonding lead to make sure that the end crimps are correctly attached.
(d)Make sure that the bonding lead connections are in good condition.
(e)Replace all defective or missing bonding leads (Ref. 20-28-11, P. Block 1).

(f)Repair all defective bonding lead attachments (Ref. 28-00-00, P. Block 801).

(3)Close-up

(a)Make sure that the work area is clean and clear of tools and all other items of equipment.

(b)Do the procedure for when you come out of a fuel tank Ref. 28-10-00, P. Block 301).

(c)Remove all the ground handling and maintenance equipment, standard and special tools, ground power and all access equipment.

(d)Install the wing-tank manhole covers (Ref. 28-11-22, P. Block 401).

(e)Refuel the fuel tank(s) as necessary (Ref. 12-11-28, P. Block 301).

3. Detailed Inspection of the Center Tank Bonding Leads

A. Reason for the Job

R NOTE : Refer to the MPD TASK: 281800-05-1

B. Equipment and Materials

ITEM	DESIGNATION
A.	Access Platform, 2 to 6 m (6 to 20 ft.)
B.	Inspection Lamp - Spark Proof
Referenced Procedures	
R - 12-11-28, P. Block 301	Replenishing of Fuel Tanks
- 20-28-11, P. Block 1	Electrical Bonding
- 28-00-00, P. Block 301	Fuel General
- 28-00-00, P. Block 801	Fuel General - Approved Repairs
- 28-10-00, P. Block 301	Storage
- 28-11-29, P. Block 401	Manhole Covers (Center Tank)
- 28-25-00, P. Block 301	Refuel/Defuel System

C. Procedure

(1)Job Set-up
(a)Defuel the center tank (Ref. 28-25-00, P. Block 301).
(b)Remove the LH center tank manhole cover 147AZ (Ref. 28-11-29, P. Block 401).
(c)Prepare the tank for access (Ref. 28-10-00, P. Block 301).

(2)Inspection

NOTE : For the location of all the bonding leads for the fuel pipes in the center tank and for the general arrangement of the manhole covers refer to 28-00-00, P. Block 601 (Para 4.B.).

(a)Use an inspection lamp to make sure that all the bonding leads are installed.
(b)Visually examine the bonding leads and make sure that:
- they are not broken
- there are no broken strands
- the outer braid sheaths are not loose in the end crimps
- there is no corrosion.

NOTE : Bonding leads which only show signs of tarnish should be kept in position until the next scheduled in-tank inspection.

(c)Carefully pull each bonding lead to make sure that the end crimps are correctly attached.
(d)Make sure that the bonding lead connections are in good condition.
(e)Replace all defective or missing bonding leads (Ref. 20-28-11, P. Block 1).

(f)Repair all defective bonding lead attachments (Ref. 28-00-00, P. Block 801).

(3)Close-up

(a)Make sure that the work area is clean and clear of tools and all other items of equipment.

(b)Do the procedure for when you come out of a fuel tank Ref. 28-10-00, P. Block 301).

(c)Remove all the ground handling and maintenance equipment, standard and special tools, ground power and all access equipment.

(d)Install the LH center tank manhole cover 147AZ (Ref. 28-11-29, P. Block 401).

(e)Refuel the fuel tank(s) as necessary (Ref. 12-11-28, P. Block 301).

R 4. General Visual Inspection of Fuel Pump Canisters - Inner Tank

R A. Reason for the Job

R NOTE : Refer to the MPD TASK: 281800-06-2

R B. Equipment and Materials

ITEM	DESIGNATION
A.	Access Platform, 4.0 m (13 ft.)
B.	Light Source - Spark-Proof
C.	Mirror, Inspection
Referenced Procedures	
- 24-00-00, P. Block 301	Electrical Power - General
- 24-41-00, P. Block 301	AC External Power Control
- 28-00-00, P. Block 301	Fuel - General
- 28-11-22, P. Block 401	Manhole Cover - Wings
- 28-21-13, P. Block 401	Canister - Inboard Tanks
- 28-25-00, P. Block 301	Refuel/Defuel System

R C. Procedure

R (1)Job Set-up
R (a)Make sure that the aircraft is electrically grounded (Ref. 24-00-00, P. Block 301).
R (b)Defuel the inner fuel tanks and the center fuel tank (Ref. 28-25-00, P. Block 301).
R (c)Put the access platform in position and remove manhole cover 540AB (640AB) (Ref. 28-11-22, P. Block 401).

R NOTE : It will be necessary to enter the tank to gain access to the canister (Ref 28-00-00, P. Block 301).

R (d)De-energize the aircraft electrical circuits (Ref. 24-41-00, P. Block 301).

R (2)Inspection
R (a)Use a spark-proof light source and a flexible inspection mirror to do a visual inspection of the fuel pump canisters. Make sure that:
R - there is no sign of damage to the canister housing
R - the fuel pipe joints are in good condition
R - all fuel pipe joint fasteners are correctly installed.
R (b)Replace pump canisters that are not in the correct condition (Ref. 28-21-13, P. Block 401).

R (3)Close-up
R (a)Make sure that the working area is clean and clear of tools and all other items of equipment.
R (b)Install the wing manhole-cover 540AB (640AB).
R (c)Remove the access platform.

5. General Visual Inspection of Fuel Pump Canisters - Outer Tank

A. Reason for the Job

R NOTE : Refer to MPD TASK: 281800-06-2

B. Equipment and Materials

ITEM	DESIGNATION
A.	Access Platform, 4.0 m (13 ft.)
B.	Light source - spark-proof
C.	Mirror, inspection
Referenced Procedures	
- 24-00-00, P. Block 301	Electrical Power - General
- 24-41-00, P. Block 301	AC External Power Control
- 28-00-00, P. Block 301	Fuel - General
- 28-11-22, P. Block 401	Manhole Cover - Wings
- 28-21-21, P. Block 401	Canister - Outer Tank
- 28-25-00, P. Block 301	Refuel/Defuel System

C. Procedure

(1)Job Set-up
(a)Make sure that the aircraft is electrically grounded (Ref. 24-00-00, P. Block 301).
(b)Defuel the outer fuel tanks (Ref. 28-25-00, P. Block 301).
(c)Put the access platform in position and remove manhole cover 550BB (650BB) (Ref. 28-11-22, P. Block 401).

NOTE : It will be necessary to enter the tank to gain access to the canister (Ref 28-00-00, P. Block 301).

(d)De-energize the aircraft electrical circuits (Ref. 24-41-00, P. Block 301).

(2)Inspection
(a)Use a spark-proof light source and a flexible inspection mirror to do a visual inspection of the fuel pump canisters. Make sure that:
- there is no sign of damage to the canister housing
- the fuel pipe joints are in good condition
- all fuel pipe joint fasteners are correctly installed.
(b)Replace pump canisters that are not in the correct condition (Ref. 28-21-21, P. Block 401).

(3)Close-up
(a)Make sure that the working area is clean and clear of tools and all other items of equipment.
(b)Install the wing manhole-cover 550BB (650BB).
(c)Remove the access platform.

6. General Visual Inspection of Fuel Pump Canisters - Center Tank

A. Reason for the Job

R NOTE : Refer to the MPD TASK: 281800-06-2

B. Equipment and Materials

ITEM	DESIGNATION
A.	Access Platform, 2.5 m (8.4 ft.)
B.	Light source - spark-proof
C.	Mirror, inspection
Referenced Procedures	
- 24-00-00, P. Block 301	Electrical Power - General
- 24-41-00, P. Block 301	AC External Power Control
- 28-00-00, P. Block 301	Fuel General
- 28-11-29, P. Block 401	Manhole Cover - Center Tank
- 28-21-37, P. Block 401	Canister - Center Tank
- 28-25-00, P. Block 301	Refuel/Defuel System
- 32-12-11, P. Block 301	Main Gear Main - Door

C. Procedure

(1)Job Set-up
(a)Make sure that the aircraft is electrically grounded (Ref. 24-00-00, P. Block 301).
(b)Defuel the inner fuel tanks and the center fuel tank (Ref. 28-25-00, P. Block 301).
(c)Open the main landing gear doors (Ref. 32-12-11, P. Block 301).
(d)Put the access platform in position and open the access doors 147CZ and 148CZ.
(e)De-energize the aircraft electrical circuits (Ref. 24-41-00, P. Block 301).
(f)Remove the center tank manhole-covers 147AZ and 148AZ (Ref. 28-11-29, P. Block 401).
(g)Vent the center tank with clean dry air.

(2)Inspection
(a)Use a spark-proof light source and a flexible inspection mirror to do a visual inspection of the fuel pump canisters. Make sure that:
- there is no sign of damage to the canister housing
- the fuel pipe joints are in good condition
- all fuel pipe joint fasteners are correctly installed.
(b)Replace pump canisters that are not in the correct condition (Ref. 28-21-37, P. Block 401).

(3)Close-up
(a)Make sure that the working area is clean and clear of tools and all other items of equipment.
(b)Install the center tank manhole-covers 147AZ and 148AZ.

(c)Remove the access platforms.
(d)Close the main-landing-gear doors (Ref. 32-12-11, P. Block 301).

R 7. General Visual Inspection of Internal Wing Tank Wiring and Probe
R Attachments - Inner Tanks
(Ref. Fig. 602)

A. Reason for the Job

R NOTE : Refer to the MPD TASK: 281800-05-2

B. Equipment and Materials

ITEM	DESIGNATION
A.	Access Platform 8 m (26 ft)
B.	Circuit Breaker Safety Clips and Tags
C.	Safety Barriers
D.	Spark-proof Light Source
Referenced Procedures	
- 28-11-22, P. Block 401	Manhole Cover (Wing)
- 28-25-00, P. Block 301	Fuel - General
- 28-42-32, P. Block 401	Fuel Quantity Probes - Inner Tank

C. Procedure

(1)Job Set-up
(a)Defuel the inner tank(s) (Ref. 28-25-00, P. Block 301).
R (b)Open, safety and tag the circuit breakers that follow:

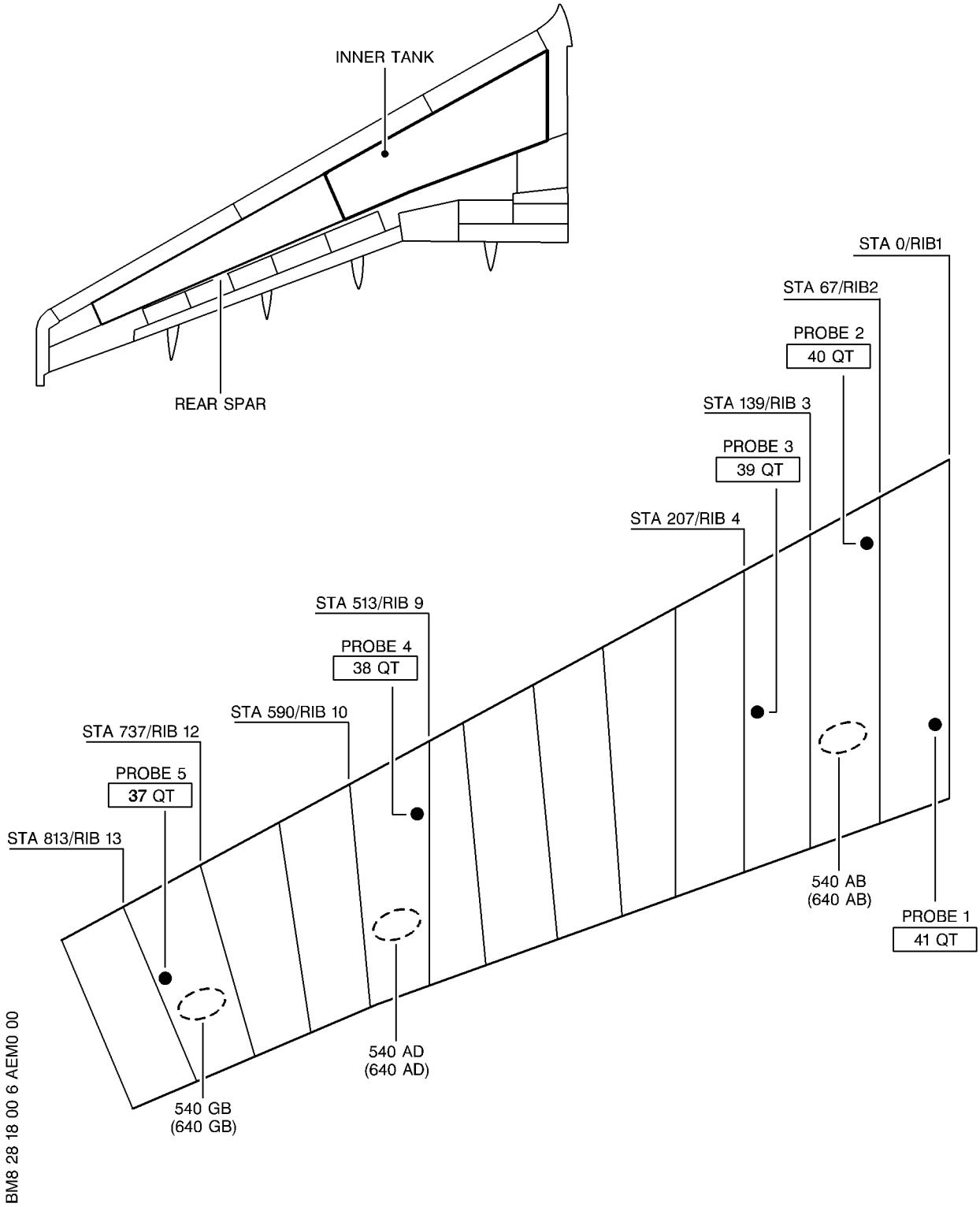
R PANEL	SERVICE	IDENT.	LOCATION
R 132VU	FQI/SUPPLY & IND	1QT	321/P59
R 132VU	FQI/CHAN SUPPLY/1	3QT	321/P60
R 132VU	FQI/CHAN SUPPLY/2	4QT	321/P61

(c)Position the access platform.
(d)Put the safety barriers in position,
(e)Remove the appropriate manhole cover(s) (Ref. 28-11-22, P. Block 401).

(2)Inspection of Internal Wiring
(a)Use a spark-proof light source to examine all of the tank wiring harnesses. Make sure that:
- there is no sign of wear or damage to the harness or harness connections
- there is no sign of corrosion on the harness connections
- the harness insulation is in good condition
- the harness clamps and brackets are all correctly installed.

NOTE : If wear or damage is found, refer to the Electrical Standard Practices Manual.

(3)Inspection of Fuel Quantity Probes
(a)Use a spark-proof light source to examine all the fuel quantity probes.



Probe Location - Inner Tank
Figure 602

Make sure that:
- there is no sign of damage to the probes
- there is no sign of corrosion on the probe connections
- the probe clamps and brackets are all correctly installed.

(b)Replace all probes that are not in the correct condition (Ref 28-42-32, P. Block 401).

(4)Close-up

(a)Make sure that the work area is clean and clear of tools and all other items of equipment.

(b)Install the manhole cover(s) (Ref. 28-11-22, P. Block 401).

(c)Remove the safety barriers.

(d)Remove the access platform.

R (e)Close the circuit breakers 1QT, 3QT and 4QT.

R 8. General Visual Inspection of Internal Wing Tank Wiring and Probe
R Attachments - Outer Tanks
(Ref. Fig. 603)

A. Reason for the Job

R NOTE : Refer to the MPD TASK: 281800-05-2

B. Equipment and Materials

ITEM	DESIGNATION
A.	Access Platform 8 m (26 ft)
B.	Circuit Breaker Safety Clips and Tags
C.	Safety Barriers
D.	Spark-proof Light Source
Referenced Procedures	
- 28-11-22, P. Block 401	Manhole Cover (Wing)
- 28-25-00, P. Block 301	Fuel - General
- 28-42-33, P. Block 401	Fuel Quantity Probes - Outer Tank

C. Procedure

(1)Job Set-up
(a)Defuel the outer tanks (Ref. 28-25-00, P. Block 301).
R (b)Open, safety and tag the circuit breakers that follow:

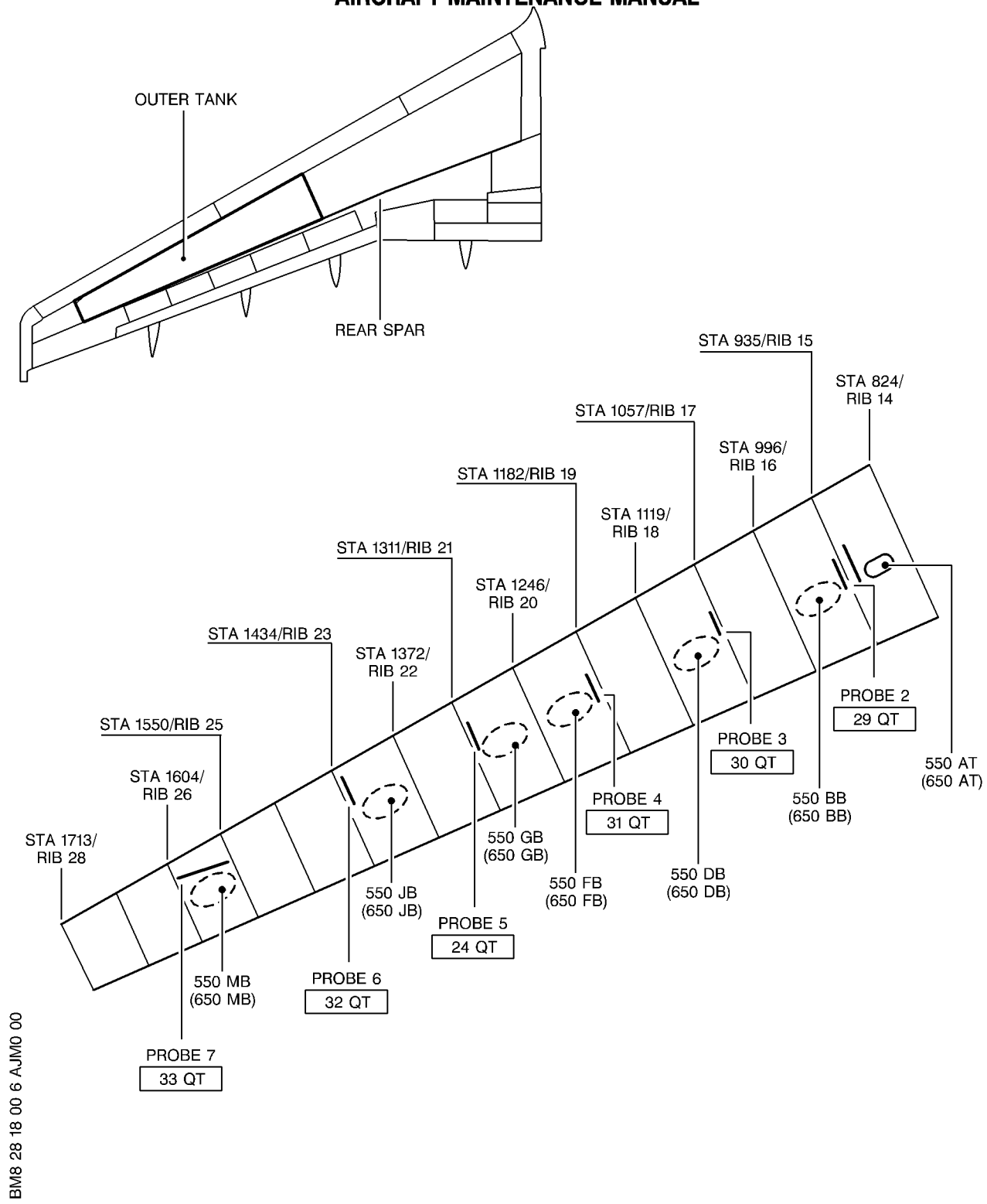
R PANEL	SERVICE	IDENT.	LOCATION
R 132VU	FQI/SUPPLY & IND	1QT	321/P59
R 132VU	FQI/CHAN SUPPLY/1	3QT	321/P60
R 132VU	FQI/CHAN SUPPLY/2	4QT	321/P61

(c)Position the access platform.
(d)Put the safety barriers in position.
(e)Remove the appropriate manhole cover(s) (Ref. 28-11-22, P. Block 401).

(2)Inspection of Internal Wiring
(a)Use a spark-proof light source to examine all of the tank wiring harnesses. Make sure that:
- there is no sign of wear or damage to the harness or harness connections
- there is no sign of corrosion on the harness connections
- the harness insulation is in good condition
- the harness clamps and brackets are all correctly installed.

NOTE : If wear or damage is found, refer to the Electrical Standard Practices Manual.

(3)Inspection of Fuel Quantity Probes



Probe Location - Outer Tank
Figure 603

(a)Use a spark-proof light source to examine all the fuel quantity probes. Make sure that:
- there is no sign of damage to the probes
- there is no sign of corrosion on the probe connections
- the probe clamps and brackets are all correctly installed.

(b)Replace all probes that are not in the correct condition (Ref 28-42-33, P. Block 401).

(4)Close-up

(a)Make sure that the work area is clean and clear of tools and all other items of equipment.

(b)Install the manhole cover(s) (Ref. 28-11-22, P. Block 401).

(c)Remove the safety barriers.

(d)Remove the access platform.

R (e)Close the circuit breakers 1QT, 3QT and 4QT.

R 9. General Visual Inspection of Internal Wiring and Probe
R Attachments - Center Tank
(Ref. Fig. 604)

A. Reason for the Job

R NOTE : Refer to the MPD TASK: 281800-05-2

B. Equipment and Materials

ITEM	DESIGNATION
A.	Access Platform 8 m (26 ft)
B.	Circuit Breaker Safety Clips and Tags
C.	Safety Barriers
D.	Spark-proof Light Source
Referenced Procedures	
- 28-11-29, P. Block 401	Manhole Cover Center Tank
- 28-25-00, P. Block 301	Fuel - General
- 32-12-11, P. Block 301	Main-Gear Main Door
- 28-42-31, P. Block 401	Fuel Quantity Probes - Center Tank

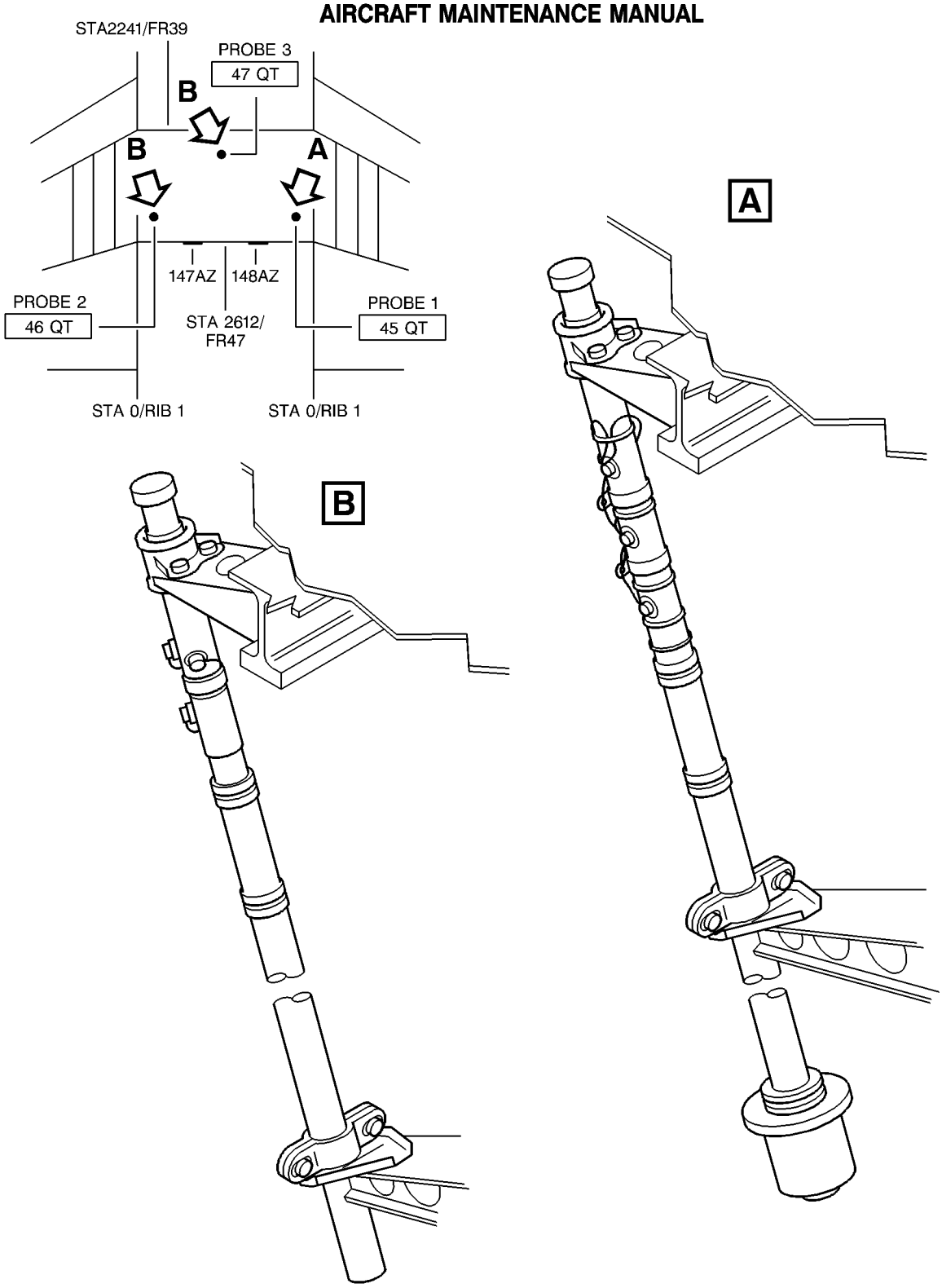
C. Procedure

(1)Job Set-up
(a)Defuel the center tank (Ref. 28-25-00, P. Block 301).
(b)On panel 132VU, open, safety and tag the FUEL/FQI circuit breakers on line 321.
(c)Open the main-gear door (Ref. 32-12-11, P. Block 301).
(d)Position the access platform.
(e)Put the safety barriers in position.
(f)Remove the manhole covers (Ref. 28-11-29, P. Block 401).

(2)Inspection of Internal Wiring
(a)Use a spark-proof light source to examine all of the tank wiring harnesses. Make sure that:
- there is no sign of wear or damage to the harness or harness connections
- there is no sign of corrosion on the harness connections
- the harness insulation is in good condition
- the harness clamps and brackets are all correctly installed.

NOTE : If wear or damage is found, refer to the Electrical Standard Practices Manual.

(3)Inspection of Fuel Quantity Probes
(a)Use a spark-proof light source to examine all the fuel quantity probes. Make sure that:
- there is no sign of damage to the probes
- there is no sign of corrosion on the probe connections
- the probe clamps and brackets are all correctly installed.



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Probe Location - Center Tank
Figure 604

(b)Replace all probes that are not in the correct condition (Ref 28-42-31, P. Block 401).

(4)Close-up
(a)Make sure that the work area is clean and clear of tools and all other items of equipment.
(b)Install the manhole cover(s) (Ref. 28-11-29, P. Block 401).
(c)Remove the safety barriers.
(d)Remove the access platform.
(e)Close the main-gear door (Ref. 32-12-11, P. Block 301).
(f)On panel 132VU, remove the safety clips and tags and close the FUEL/FQI circuit breakers on line 321.

10. General Visual Inspection of Wiring Harnesses above the Center Tank

A. Reason for the Job

R NOTE : Refer to the MPD TASK: 281800-05-7

B. Equipment and Materials

ITEM	DESIGNATION
A.	Inspection Lamp - Spark Proof
Referenced Procedures	
- 25-21-00, P. Block 401	Passenger Compartment/Seats
- 25-28-11, P. Block 401	Carpet - Floor Covering
- 53-10-25, P. Block 401	MID and AFT Passenger Compartment Floor Panels

C. Procedure

(1)Job Set-up
(a)Remove the passenger seats between FR40 and FR47 (Ref. 25-21-00, P. Block 401).
(b)Remove the floor covering in the area of the removed passenger seats (Ref. 25-28-11, P. Block 401).
(c)Remove the floor panels in the cabin from FR40 to FR47 (Ref. 53-10-25, P. Block 401).

(2)Inspection
(a)Use a spark-proof light source and make sure that:
- the wiring harnesses and harness connections have no damage
- the harnesses are securely attached
- there is no corrosion on the harness connections
- the harness insulation is in good condition.

NOTE : If corrosion or damage is found, refer to the Electrical Standard Practice Manual.

(3)Close-up
(a)Make sure that the working area is clean and clear of tools and all other items of equipment.
(b)Install the floor panels in the cabin from FR40 to FR47 (Ref. 53-10-25, P. Block 401).
(c)Install the floor covering in the area of the removed passenger seats (Ref. 25-28-11, P. Block 401).
(d)Install the passenger seats between FR40 and FR47 (Ref. 25-21-00, P. Block 401).

R 11. General Visual Inspection of Wing Leading Edge and Trailing Edge
R - Electrical Wiring and Connections

R A. Reason for the Job

R NOTE : Refer to the MPD TASK: 281800-05-8

R B. Equipment and Materials

ITEM	DESIGNATION
A.	Access Platform 3 to 6 m (10 to 20 ft)
B.	Flexible Inspection Mirror
C.	Safety Barriers
D.	Spark-proof Light Source
E.	Warning Notices - Prohibiting Operation Of Flaps and Slats
F. 98A27503003000	Flap/Slat Control Lever Safety Guard
Referenced Procedures - 27-50-00, P. Block 301	Flaps - Servicing

R C. Procedure

R (1)Job Set-up
R (a)Fully extend the flaps and slats (Ref. 27-50-00, P. Block 301).
R (b)Install the safety guard 98A27503003000 on the flap/slat control lever.
R (c)Display the warning notices in the flight compartment.
R (d)Put the access platform in position.
R (e)Put the safety barriers in position.
R (f)Remove the leading edge access doors:
R - on the LH wing, remove the access doors 512AB, 512BB, 512CB, 512DB, 512EB, 512FB, 512GB, 512HB, 512JB, 512KB, 523AB, 523BB, 523CB, 523DB, 523EB, 523FB, 523GB, 523HB, 523JB, 523KB, 523LB, 523MB, 524AB, 524BB, 524CB, 524DB, 524EB, 524FB, 524GB, 524HB, 524JB, 524KB, 531AB
R - on the RH wing, remove the access doors 612AB, 612BB, 612CB, 612DB, 612EB, 612FB, 612GB, 612HB, 612JB, 612KB, 623AB, 623BB, 623CB, 623DB, 623EB, 623FB, 623GB, 623HB, 623JB, 623KB, 623LB, 623MB, 624AB, 624BB, 624CB, 624DB, 624EB, 624FB, 624GB, 624HB, 624JB, 624KB, 631AB.
R (g)Remove the trailing edge access doors:
R - on the LH wing, remove the access doors 572AB, 572BB, 572CB, 572DB, 575AB, 575BB, 575CB, 575DB, 575EB, 581AB, 581BB, 581CB, 581DB, 581EB, 581FB, 581GB, 581HB, 581JB, 591CB
R - on the RH wing, remove the access doors 672AB, 672BB, 672CB, 672DB, 675AB, 675BB, 675CB, 675DB, 675EB, 681AB, 681BB, 681CB, 681DB, 681EB, 681FB, 681GB, 681HB, 681JB, 691CB.

R (2)Inspection
R (a)Use a spark-proof light source and a flexible inspection mirror to do a visual inspection of the leading and trailing edge wiring. Make sure

R that:
R - there is no sign of wear or damage to the wiring harnesses or harness connections
R - there is no sign of corrosion on the wiring connections
R - the harness insulation is in good condition
R - the harness clamps and brackets are all correctly installed.

R NOTE : If wear or damage is found, refer to the Electrical Standard Practices Manual.

R (3)Close-up
R (a)Make sure that the work area is clean and clear of tools and all other items of equipment.
R (b)Install the leading edge access doors:
R - on the LH wing, install the access doors 512AB, 512BB, 512CB, 512DB, 512EB, 512FB, 512GB, 512HB, 512JB, 512KB, 523AB, 523BB, 523CB, 523DB, 523EB, 523FB, 523GB, 523HB, 523JB, 523KB, 523LB, 523MB, 524AB, 524BB, 524CB, 524DB, 524EB, 524FB, 524GB, 524HB, 524JB, 524KB, 531AB
R - on the RH wing, install the access doors 612AB, 612BB, 612CB, 612DB, 612EB, 612FB, 612GB, 612HB, 612JB, 612KB, 623AB, 623BB, 623CB, 623DB, 623EB, 623FB, 623GB, 623HB, 623JB, 623KB, 623LB, 623MB, 624AB, 624BB, 624CB, 624DB, 624EB, 624FB, 624GB, 624HB, 624JB, 624KB, 631AB.
R (c)Install the trailing edge access doors:
R - on the LH wing, install the access doors 572AB, 572BB, 572CB, 572DB, 575AB, 575BB, 575CB, 575DB, 575EB, 581AB, 581BB, 581CB, 581DB, 581EB, 581FB, 581GB, 581HB, 581JB, 591CB
R - on the RH wing, install the access doors 672AB, 672BB, 672CB, 672DB, 675AB, 675BB, 675CB, 675DB, 675FB, 681AB, 681BB, 681CB, 681DB, 681EB, 681FB, 681GB, 681HB, 681JB, 691CB.
R (d)Remove the safety barriers.
R (e)Remove the access platform.
R (f)Remove the warning notices from the flight compartment.
R (g)Remove the safety guard 98A27503003000 from the flap/slat control lever.
R (h)Fully retract the flaps and slats (Ref. 27-50-00, P. Block 301).

12. General Visual Inspection of Wing Fuel Pump Electrical Connections and Underwing Electrical Supply Cable

A. Reason for the Job

R NOTE : Refer to the MPD TASK: 281800-06-1

B. Equipment and Materials

ITEM	DESIGNATION
A.	Access Platform 4 m (13 ft)
B.	Flexible Inspection Mirror
C.	Safety Barriers
D.	Spark-proof Light Source
Referenced Procedures	
- 28-21-12, P. Block 401	Inboard Tank Booster Pump
- 28-21-19, P. Block 401	Outer Tank Booster Pump

C. Procedure

(1)Job Set-up
(a)Put the access platform in position.
(b)Put the safety barriers in position.
(c)At the booster pumps of the inner and outer tanks, remove the center fairing of the cable conduit (Ref. 28-21-12 and 28-21-19, P. Block 401).

(2)Inspection
(a)Use a spark-proof light source and a flexible inspection mirror to do a visual inspection of the wiring to each wing booster pump. Make sure that:
- there is no sign of wear or damage to the wiring harness or harness connections
- there is no sign of corrosion on the wiring connections
- the harness insulation is in good condition
- the harness clamps and brackets are all correctly installed.

NOTE : If wear or damage is found, refer to the Electrical Standard Practices Manual.

(3)Close-up
(a)Make sure that the work area is clean and clear of tools and all other items of equipment.
(b)At the booster pumps of the inner and outer tanks, install the center fairing of the cable conduit (Ref. 28-21-12 and 28-21-19, P. Block 401).
(c)Remove the safety barriers.
(d)Remove the access platform.

13. General Visual Inspection of the Trim Tank Vapor Seal

A. Reason for the Job

R NOTE : Refer to the MPD TASK: 281800-05-5

B. Equipment and Materials

ITEM	DESIGNATION
A.	Access Platform, 5.5 m (18 ft.)
B.	Warning Notice
C. 97A27302009000	Locking Equipment - Pitch Trim Control Wheel
Referenced Procedures	
- 21-11-35, P. Block 404	Vapor Seal
- 28-11-35, P. Block 801	Vapor Seal
- 28-13-00, P. Block 501	External Ventilating System

C. Procedure

(1)Job Set-up
(a)Position the access platform.
(b)Move the horizontal stabilizer to 3 deg A/C nose down and install the locking equipment PN 97A27302009000 at pitch trim control wheel.
(c)Put a warning notice in the flight compartment to tell persons not to operate pitch control.
(d)Open the access door 312AR and 313AL.
(e)Remove the vapor seal (Ref. 28-11-35, P. Block 401).

(2)Inspection
(a)Check the vapor seal for cuts, holes and ruptures:
- if the damage is less than 127 mm (5 in.) do a repair (Ref. 28-11-35, P. Block 801)
- if the damage is greater than 127 mm (5 in.) replace the vapor seal.
(b)Check the vapor seal for loose or missing ferrules and condition of the hangers. For the repair of the hangers and ferrules refer to 28-11-35, P. Block 801.
(c)Install the vapor seal (Ref. 28-11-35, P. Block 401).
(d)Check the vapor seal vent/drain system for good condition and security.
(e)Do a detailed inspection of the vapor seal moulded drains whilst deflecting them in different directions.
(f)Remove the locking equipment PN 97A27302009000.
(g)Do a pressure test of the vapor seal (Ref. 28-13-00, P. Block 501).

(3)Close-up
(a)Make sure that the working area is clean and clear of tools and all other items of equipment.
(b)Close the access door 312AR and 313AL.
(c)Remove the access platform.
(d)Remove the warning notice from the flight compartment.

14. Detailed Inspection of Trim Tank Bonding Leads

A. Reason for the Job

R NOTE : Refer to the MPD TASK: 281800-06-3

B. Equipment and Materials

ITEM	DESIGNATION
A.	Access Platform, 2 to 6 m (6 to 20 ft.)
B.	Inspection Lamp - Spark Proof
Referenced Procedures	
- 12-11-28, P. Block 401	Refueling of Fuel Tanks
- 20-28-11, P. Block 1	Electrical Bonding
- 28-00-00, P. Block 301	Fuel General
- 28-00-00, P. Block 801	Fuel General - Approved Repairs
- 28-10-00, P. Block 301	Storage
- 28-11-33, P. Block 401	Manhole Covers (Trim Tank)
- 28-25-00, P. Block 301	Refuel/Defuel System

C. Procedure

(1)Job Set-up
(a)Defuel the trim tank (Ref. 28-25-00, P. Block 301).
(b)Put the access platform in position.
(c)Remove all the trim-tank manhole covers (Ref. 28-11-33, P. Block 401).
(d)Prepare the tank for access (Ref. 28-10-00, P. Block 301).

(2)Inspection

NOTE : For the location of all the bonding leads for the fuel pipes in the trim tank and for the general arrangement of the manhole covers refer to 28-00-00, P. Block 601 (Para 6.B.).

(a)Use an inspection lamp to make sure that all the bonding leads are installed.
(b)Visually examine the bonding leads and make sure that:
- they are not broken
- there are no broken strands
- the outer braid sheaths are not loose in the end crimps
- there is no corrosion.

NOTE : Bonding leads which only show signs of tarnish should be kept in position until the next scheduled in-tank inspection.

(c)Carefully pull each bonding lead to make sure that the end crimps are correctly attached.
(d)Make sure that the bonding lead connections are in good condition.
(e)Replace all defective or missing bonding leads (Ref. 20-28-11, P. Block 1).

(f)Repair all defective bonding lead attachments (Ref. 28-00-00, P. Block 801).

(3)Close-up

(a)Make sure that the work area is clean and clear of tools and all other items of equipment.

(b)Do the procedure for when you come out of a fuel tank Ref. 28-10-00, P. Block 301).

(c)Remove all the ground handling and maintenance equipment, standard and special tools, ground power and all access equipment.

(d)Install the trim-tank manhole covers (Ref. 28-11-33, P. Block 401).

(e)Refuel the fuel tank(s) as necessary (Ref. 12-11-28, P. Block 301).

R 15. General Visual Inspection of Trim Tank Fuel Pump Canisters

A. Reason for the Job

R NOTE : Refer to the MPD TASK: 281800-06-5

B. Equipment and Materials

ITEM	DESIGNATION
A.	Access Platform, 4.0 m (13 ft.)
B.	Light source - spark-proof
C.	Mirror, inspection
Referenced Procedures	
- 24-00-00, P. Block 301	Electrical Power - General
- 24-41-00, P. Block 301	AC External Power Control
- 28-00-00, P. Block 301	Fuel - General
- 28-10-00, P. Block 301	Storage
- 28-11-33, P. Block 401	Manhole Covers - Trim Tank
- 28-25-00, P. Block 301	Refuel/Defuel System
- 28-27-12, P. Block 401	Canister - Transfer Pump

C. Procedure

(1)Job Set-up
(a)Make sure that the aircraft is electrically grounded (Ref. 24-00-00, P. Block 301).
(b)Defuel the trim tank (Ref. 28-25-00, P. Block 301).
(c)Put the access platform in position.
(d)Remove the access panels 319AB and 319BB from the vapor seal.
(e)Remove the manhole covers 319AZ and 319BZ (Ref. 28-11-33, P. Block 401).
(f)Prepare the tank for access (Ref. 28-10-00, P. Block 301).
(g)De-energize the aircraft electrical circuits (Ref. 24-41-00, P. Block 301).

(2)Inspection
(a)Use a spark-proof light source and a flexible inspection mirror to do a visual inspection of the fuel pump canisters. Make sure that:
- there is no sign of damage to the canister housing
- the fuel pipe joints are in good condition
- all fuel pipe joint fasteners are correctly installed.
(b)Replace pump canisters that are not in the correct condition (Ref. 28-21-37, P. Block 401).

(3)Close-up
(a)Install the manhole covers 319AZ and 319BZ (Ref. 28-11-33, P. Block 401).
(b)Install the manhole-cover access panel 319AB and 319BB in the vapor seal.
(c)Make sure that the working area is clean and clear of tools and all

other items of equipment.

(d)Remove the access platform.

R 16. General Visual Inspection of Internal Trim Tank Wiring
R and Probe Attachments
(Ref. Fig. 605)

A. Reason for the Job

R NOTE : Refer to the MPD TASK: 281800-06-4

B. Equipment and Materials

ITEM	DESIGNATION
A.	Access Platform 8 m (26 ft)
B.	Circuit Breaker Safety Clips and Tags
C.	Safety Barriers
D.	Spark-proof Light Source
Referenced Procedures	
- 28-11-33, P. Block 401	Manhole Cover (Trim Tank)
- 28-25-00, P. Block 301	Fuel - General
- 28-42-51, P. Block 401	Fuel Quantity Probes - Trim Tank
- 55-00-00, P. Block 301	Stabilizers - General

C. Procedure

(1)Job Set-up
(a)Defuel the trim tank (Ref. 28-25-00, P. Block 301).
(b)Make the horizontal and vertical stabilizers safe (Ref. 55-00-00, P. Block 301).
(c)Open, safety and tag these circuit breakers:

	PANEL	SERVICE	IDENT.	LOCATION
R	132VU	FUEL/TRIM TANK/FWD XFR MAIN VALVE	1QL	325/K53
R	132VU	FUEL/FQI SUPPLY & IND	1QT	321/P59
R	132VU	FUEL/FQI/CHAN SUPPLY 1	3QT	321/P60
R	132VU	FUEL/FQI/CHAN SUPPLY 2	4QT	321/P61

(d)Position the access platform.
(e)Put the safety barriers in position.
(f)Remove the appropriate manhole cover (Ref. 28-11-33, P. Block 401):

	PROBE NO.	MANHOLE COVER
R	1	333GB
R	2	333EB
R	3	333DB
R	4	333CB
R	5 and 6	333BB
R	7 and 8	319AZ
R	9	319BZ
R	10 and 11	343BB
R	12	343CB

PROBE NO.	MANHOLE COVER
13	343DB
14	343EB
15	343GB

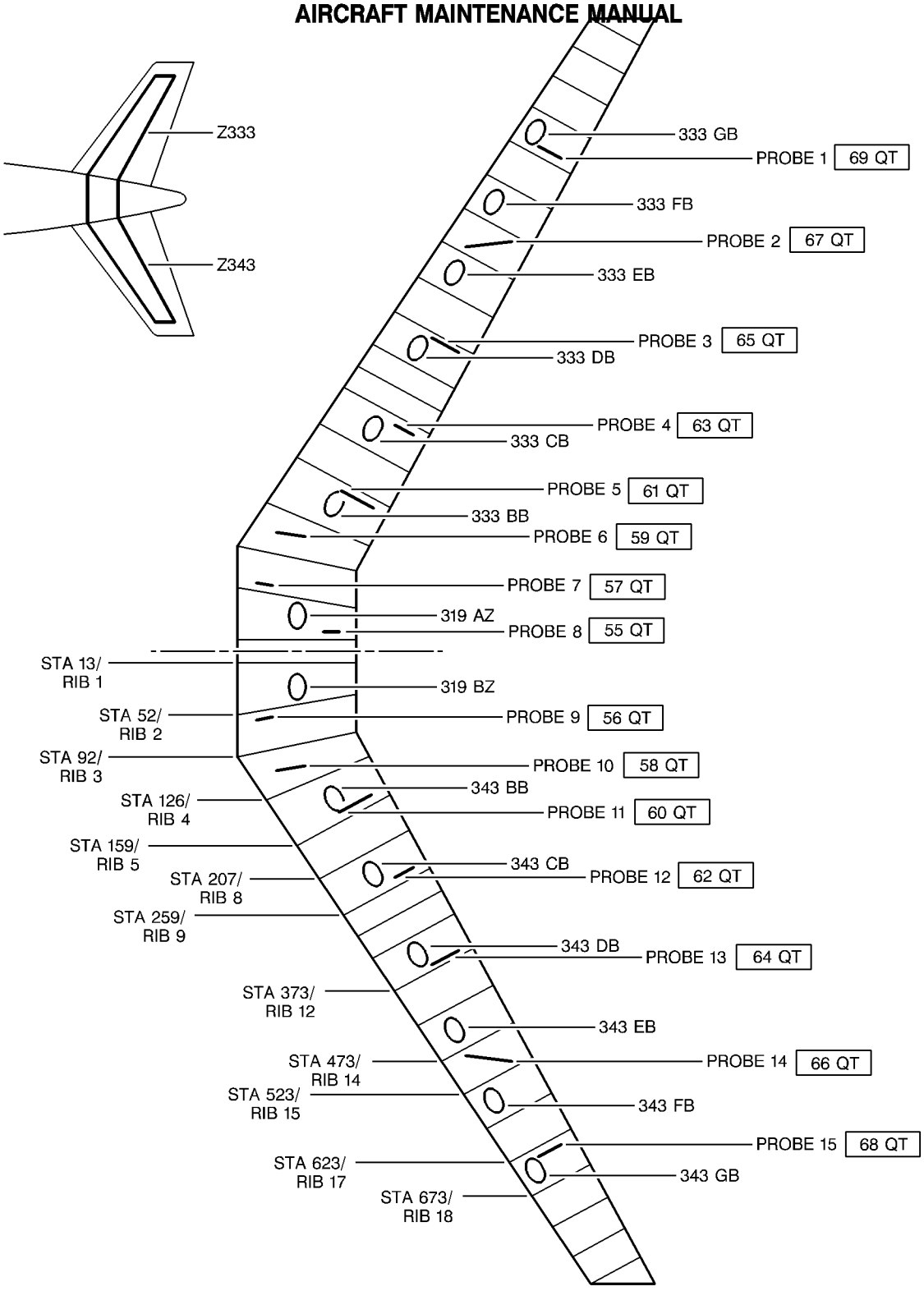
(2)Inspection of Internal Wiring
(a)Use a spark-proof light source to examine all of the tank wiring harnesses. Make sure that:
- there is no sign of wear or damage to the harness or harness connections
- there is no sign of corrosion on the harness connections
- the harness insulation is in good condition
- the harness clamps and brackets are all correctly installed.

NOTE : If wear or damage is found, refer to the Electrical Standard Practices Manual.

(3)Inspection of Fuel Quantity Probes
(a)Use a spark-proof light source to examine all the fuel quantity probes. Make sure that:
- there is no sign of damage to the probes
- there is no sign of corrosion on the probe connections
- the probe clamps and brackets are all correctly installed.

(b)Replace all probes that are not in the correct condition (Ref 28-42-51, P. Block 401).

(4)Close-up
(a)Make sure that the work area is clean and clear of tools and all other items of equipment.
(b)Install the manhole cover(s) (Ref. 28-11-33, P. Block 401).
(c)Remove the safety barriers.
(d)Remove the access platform.
(e)Put the stabilizers back to their normal operating condition (Ref. 55-00-00, P. Block 301).
(f)On panel 132VU, remove the safety clips and tags and close the FUEL circuit breakers 1QL on line 325 and 1QT, 3QT, 4QT on line 321.



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Probe Location - Trim Tank
Figure 605

R 17. General Visual Inspection of Trim Tank External Electric Wiring
R and Connections

A. Reason for the Job

R NOTE : Refer to the MPD TASK: 281800-05-9

B. Equipment and Materials

ITEM	DESIGNATION
A.	Access Platform 8 m (26 ft)
B.	Flexible Inspection Mirror
C.	Safety Barriers
D.	Spark-proof Light Source
E.	Warning Notices - Prohibiting Operation of Flaps and Slats
F. 98A27503003000	Flap/Slat Control Lever Safety Guard
Referenced Procedures - 55-00-00, P. Block 301	Stabilizers - General

C. Procedure

(1)Job Set-up
(a)Put the access platform in position.
(b)Put the safety barriers in position.
(c)Open the access door 312AR.
(d)Make the horizontal and vertical stabilizers safe (Ref. 55-00-00, P. Block 301).

(2)Inspection
(a)Use a spark-proof light source and a flexible inspection mirror to do a visual inspection of the trim tank external wiring. Make sure that:
- there is no sign of wear or damage to the wiring harnesses or harness connections
- there is no sign of corrosion on the wiring connections
- the harness insulation is in good condition
- the harness clamps and brackets are all correctly installed.

NOTE : If wear or damage is found, refer to the Electrical Standard Practices Manual.

(3)Close-up
(a)Put the stabilizers back to their normal operating condition (Ref. 55-00-00, P. Block 301).
(b)Make sure that the work area is clean and clear of tools and all other items of equipment.
(c)Close the access door 312AR.
(d)Remove the safety barriers.
(e)Remove the access platform.

R 18. General Visual Inspection of Center-Tank Forward Cargo-Bay Insulation Mats

A. Reason for the Job

R NOTE : Refer to the MPD TASK 281800-05-6

B. Equipment and Materials

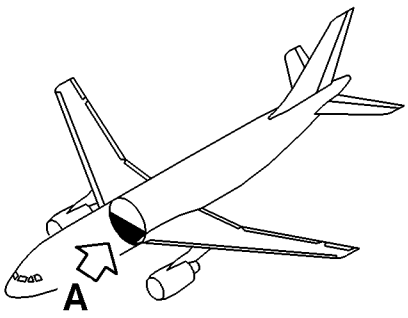
ITEM	DESIGNATION
A.	Access Platform 2.5 m (8ft 4in.)
B.	Warning Noices
C.	Inspection Lamp - Spark Proof
Referenced Procedures	
- 06-41-53, P. Block 1	Access Doors on Fuselage
- 24-00-00, P. Block 301	Electrical Power - General
- 52-30-00, P. Block 1	Cargo Compartment Doors

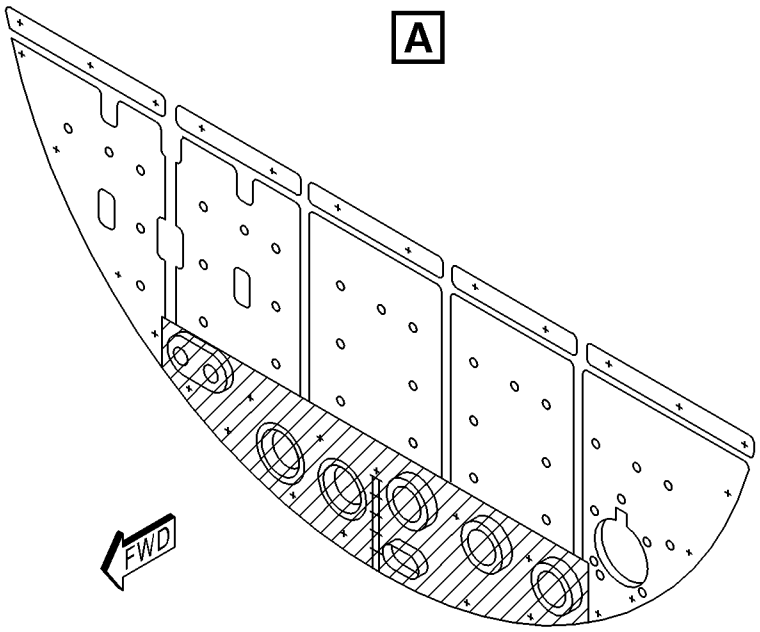
C. Procedure
(Ref. Fig. 606)

R (1)Job Set-up
R (a)Make sure that the aircraft is electrically grounded (Ref. 24-00-00, P. Block 301).
R (b)Put the access platform(s) in position.
R (c)Open the FWD cargo compartment door 811 (Ref. 52-30-00, P. Block 1).
R (d)To get access remove the panels 132SW, 131RW and 131SW (Ref. 06-41-53, P. Block 1).
R (e)In the cockpit put a Warning Notice:
R - on the center-pedestal, to tell persons not to operate the slats and flaps.
R - on the air conditioning control panel to tell persons not to operate the air conditioning packs or to pressurize the pneumatic system.

R (2)General Inspection of the Insulation Mats
R (a)Use the inspection lamp - spark proof to check the insulation mats on FR39.
R (b)Make sure that there are no:
R - tears or score marks
R - signs of too much heat
R - signs of unwanted fuel.

R (3)Close-up
R (a)Make sure that the working area is clean and clear of tools and all other items of equipment.
R (b)Install the panels 132SW, 131RW and 131SW (Ref. 06-41-53, P. Block 1).
R (c)Close the FWD cargo compartment door 811 (Ref. 52-30-00, P. Block 1).
R (d)Remove the access platform(s).
R (e)Remove the Warning Notices from the cockpit.





BM8 28 18 00 6 ARM0 00

Forward Cargo Bay Insulation Mats - Component Location
Figure 606

19. Detailed Inspection of the Center Tank Vapor Seal

A. Reason for the Job

R NOTE : Refer to the MPD TASK: 281800-02-1

B. Equipment and Materials

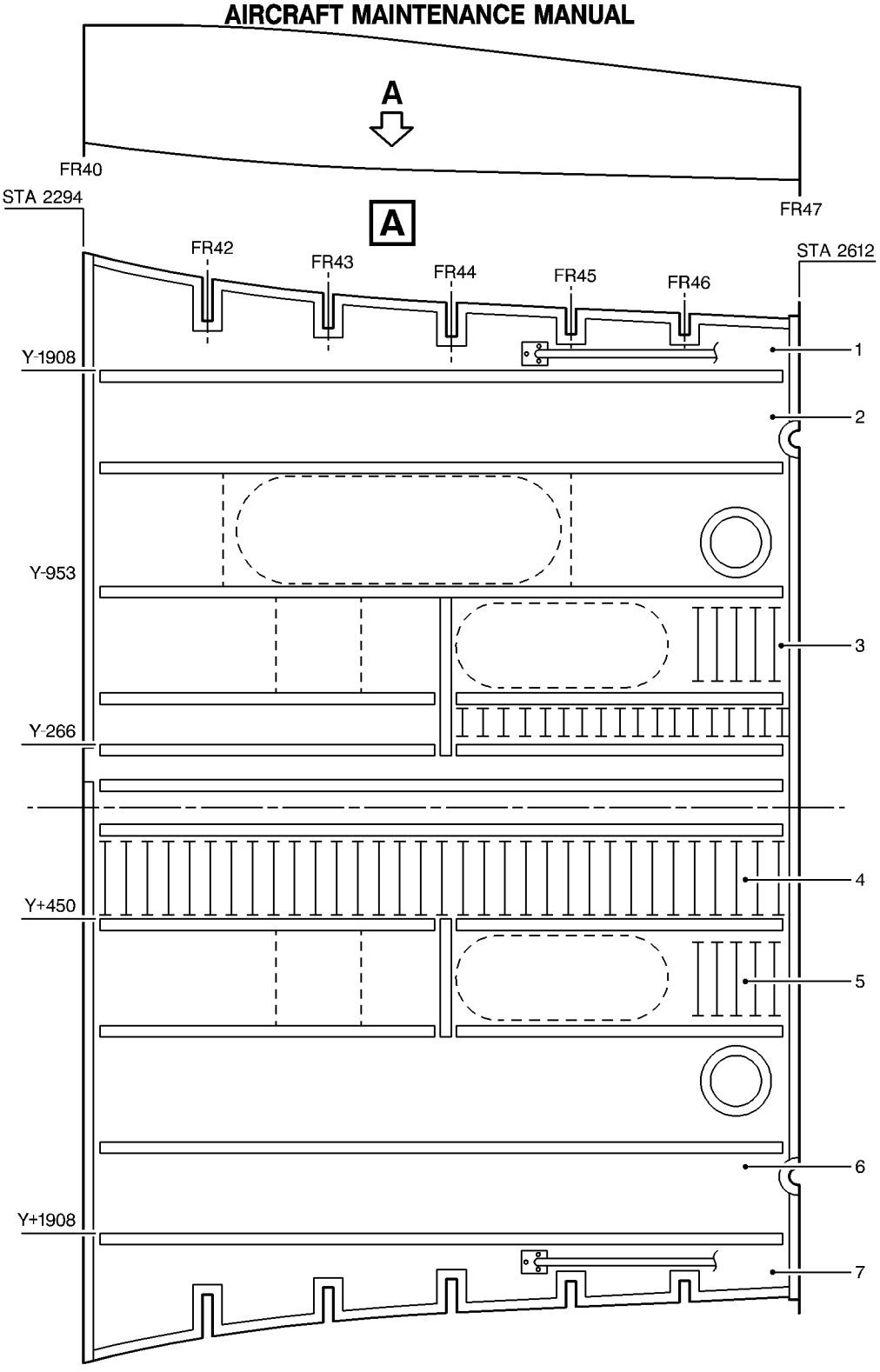
ITEM	DESIGNATION
A.	Access Platform, 5.5 m (18 ft.)
B.	Warning Notice
C.	Inspection Lamp - Spark Proof
D.	Flexible Inspection Mirror
Referenced Procedures	
- 21-11-00, P. Block 1	Flow Control and Indicating
- 28-13-21, P. Block 801	Vapor Seals
- 32-12-11, P. Block 301	Main Gear Main Door

C. Procedure
(Ref. Fig. 607)

NOTE : There are two types of vapor seal attached under the center tank lower surface:
- vapor seals 1, 3, 4, 5 and 7 are made of light alloy. The periphery of the vapor seals is reinforced by a bonded formed edge-section except in areas where they touch the rubber vapor seals
- vapor seals 2 and 6 are made of rubber coated fabric, reinforced by bonded elastomer seals along the attachments
- the sealing of both types of vapor seals is made by elastomer seals bonded to the aircraft structure.

(1)Job Set-up
(a)Open, safety and tag the circuit breakers that follow:

	PANEL	SERVICE	IDENT.	LOCATION
R	133VU	KRUGER	45CV	333/T61
R	133VU	SLATS/26VAC/SYS1	3CV	335/R65
R	133VU	SFCC/NORM SUPPLY/SLATS/SYS1	7CV	333/T63
R	133VU	SUPPLY/SLATS/SYS2	9CV	335/R66
R	133VU	SLATS/SYS2	8CV	333/T64
R	133VU	SLATS/26VAC/SYS2	4CV	335/R64
R	133VU	FLAPS & SLATS/POS/ECAM	2CN	334/S65
R	133VU	FLAPS & SLATS/POS/IND	1CN	334/S66
R	133VU	FLAPS/SYS1/26VAC	1CV	335/R61
R	133VU	SUPPLY/FLAPS/SYS1	10CV	335/R67
R	133VU	SFCC/NORM/SUPPLY/FLAPS/SYS1	5CV	332/U61
R	133VU	SFCC/NORM/SUPPLY/FLAPS/SYS2	6CV	331/V61
R	133VU	FLAPS/SYS2/26VAC	2CV	334/S62



BM8 28 18 00 6 AVM0 00

Lower Surface Vapor Seals - Center Tank
Figure 607

(b)Put a warning notice on the center pedestal to tell persons not to operate the slats.
(c)Put a warning notice on the air conditioning panel to tell persons not to operate the refrigeration unit pack.
(d)Make sure that the pneumatic system is depressurized (Ref. 21-11-00, P. Block 1).
(e)Open the left main-gear-door 734 (Ref. 32-12-11, P. Block 301).
(f)Remove the air conditioning compartment access doors 147BZ, 147CZ and and 148CZ.

(2)Detailed Inspection of the vapor seal
(a)Use the inspection lamp - spark proof and the flexible inspection mirror to inspect the vapor seals.
(b)You must make sure that there are no:
- signs of unwanted fuel
- tears or score marks on the seals
- signs of too much heat.
(c)Make sure that the vapor seals are correctly installed and attached.

(3)Close-up
(a)Make sure that the working area is clean and clear of tools and all other items of equipment.
(b)Close the circuit breakers 1CN, 2CN, 1CV, 2CV, 3CV, 4CV, 5CV, 6CV, 7CV, 8CV, 9CV, 10CV and 45CV.

CAUTION : MAKE SURE THAT ALL THE FASTENERS AND PIP PINS ARE CORRECTLY INSTALLED AND SECURED WHEN YOU INSTALL THE ACCESS DOORS AT FR47.

(c)Install the access doors 147BZ, 147CZ and 148CZ.
(d)Close the left main-gear-door 734 (Ref. 32-12-11, P. Block 301).

DISTRIBUTION - DESCRIPTION AND OPERATION

1. General

The Fuel distribution is provided by four sub-systems:

A. Engine feed system
B. APU Feed System
C. Refuel/defuel system
D. Fuel Transfer (CG) System

2. System Description

(Ref. Fig. 001)

**ON A/C 001-100,

(Ref. Fig. 002)

**ON A/C 101-200,

(Ref. Fig. 003)

**ON A/C ALL

(Ref. Fig. 004)

**ON A/C 101-200,

(Ref. Fig. 005)

R **ON A/C 101-101, 104-104,

R Post SB 28-2105 For A/C 101-101,104-104,

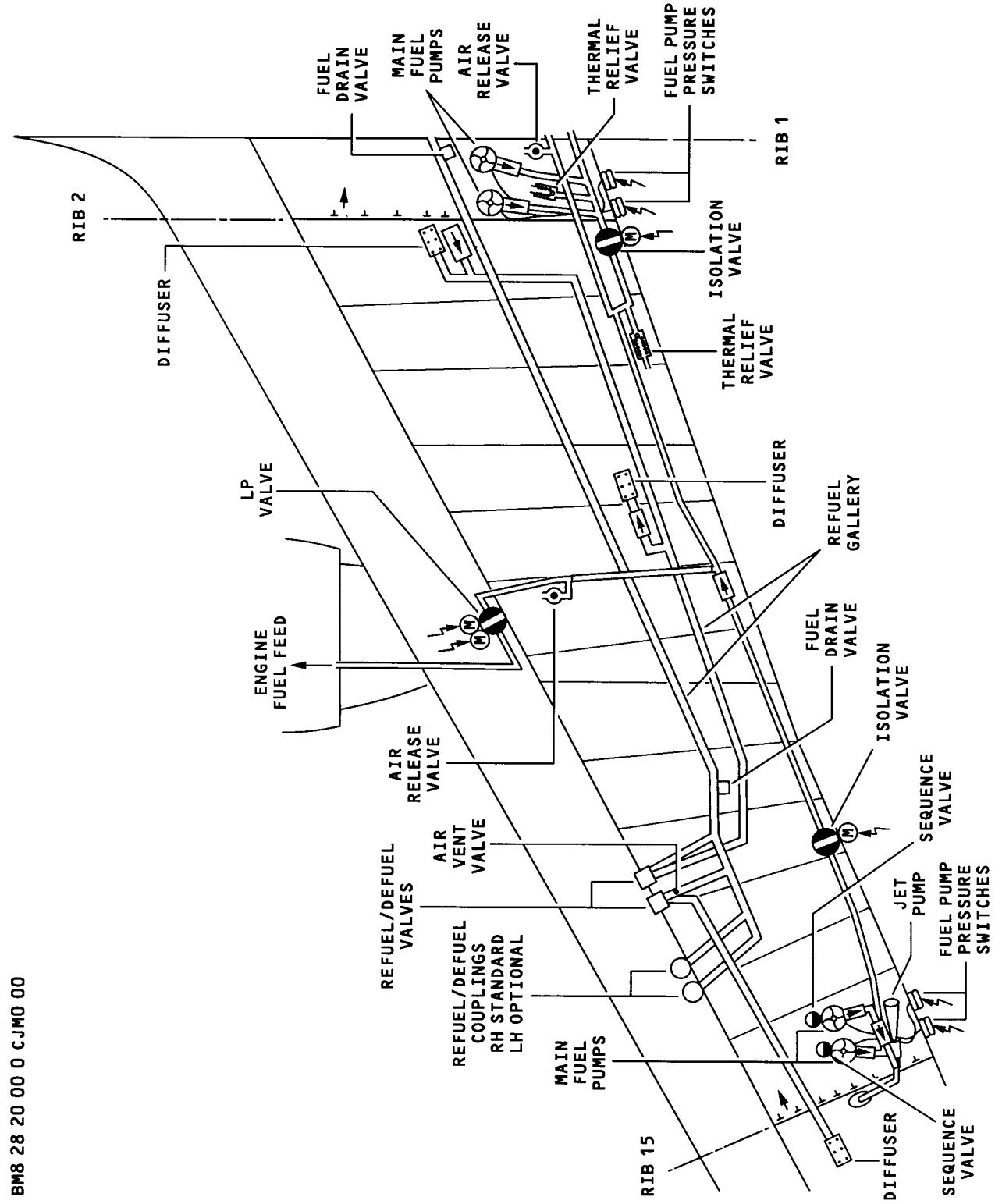
R Post SB 28-2108 For A/C 101-101,104-104,

R Post SB 28-2126 For A/C 104-104,

(Ref. Fig. 006)

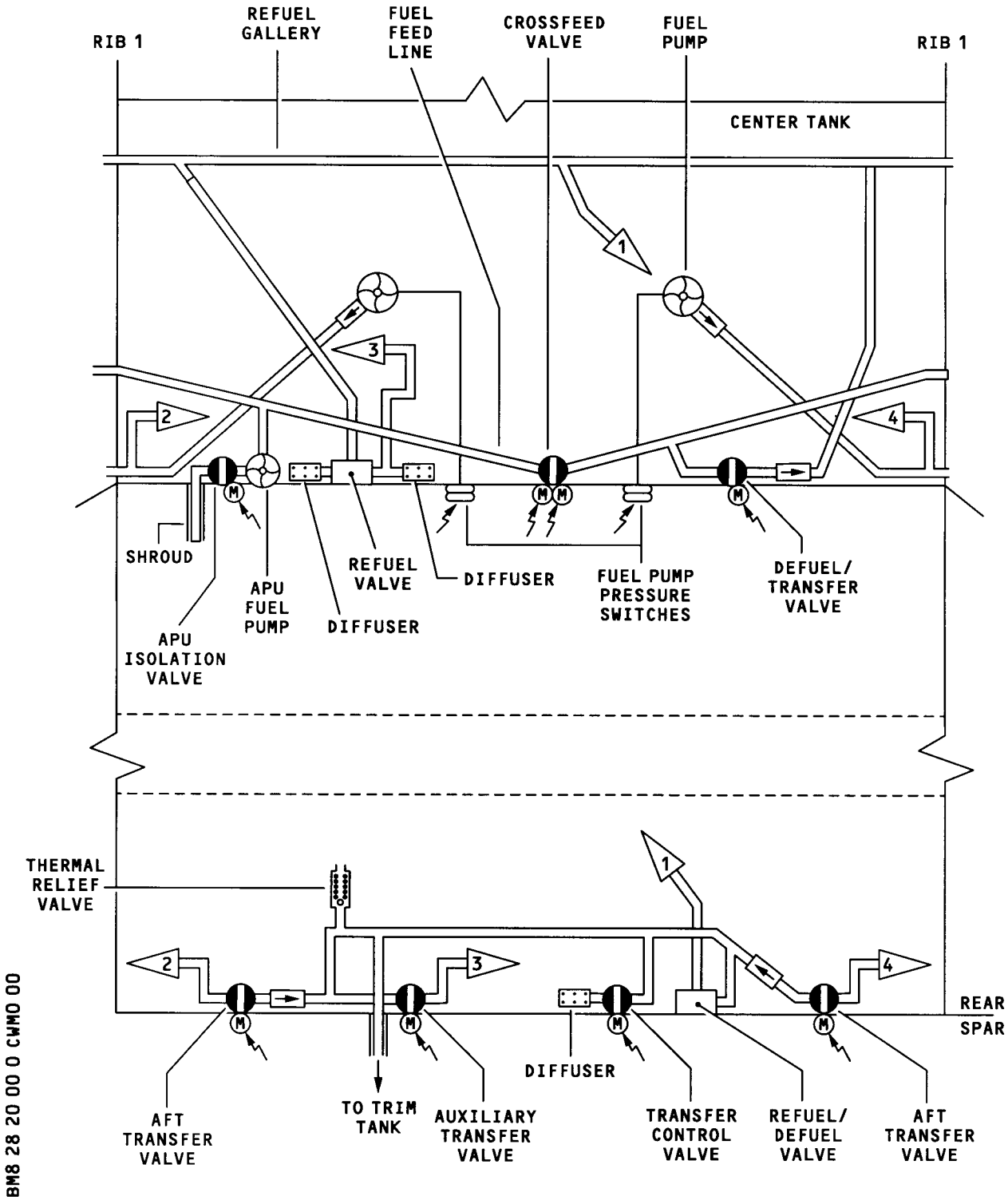
**ON A/C 102-200,

Post SB 28-2105 For A/C 102-200,

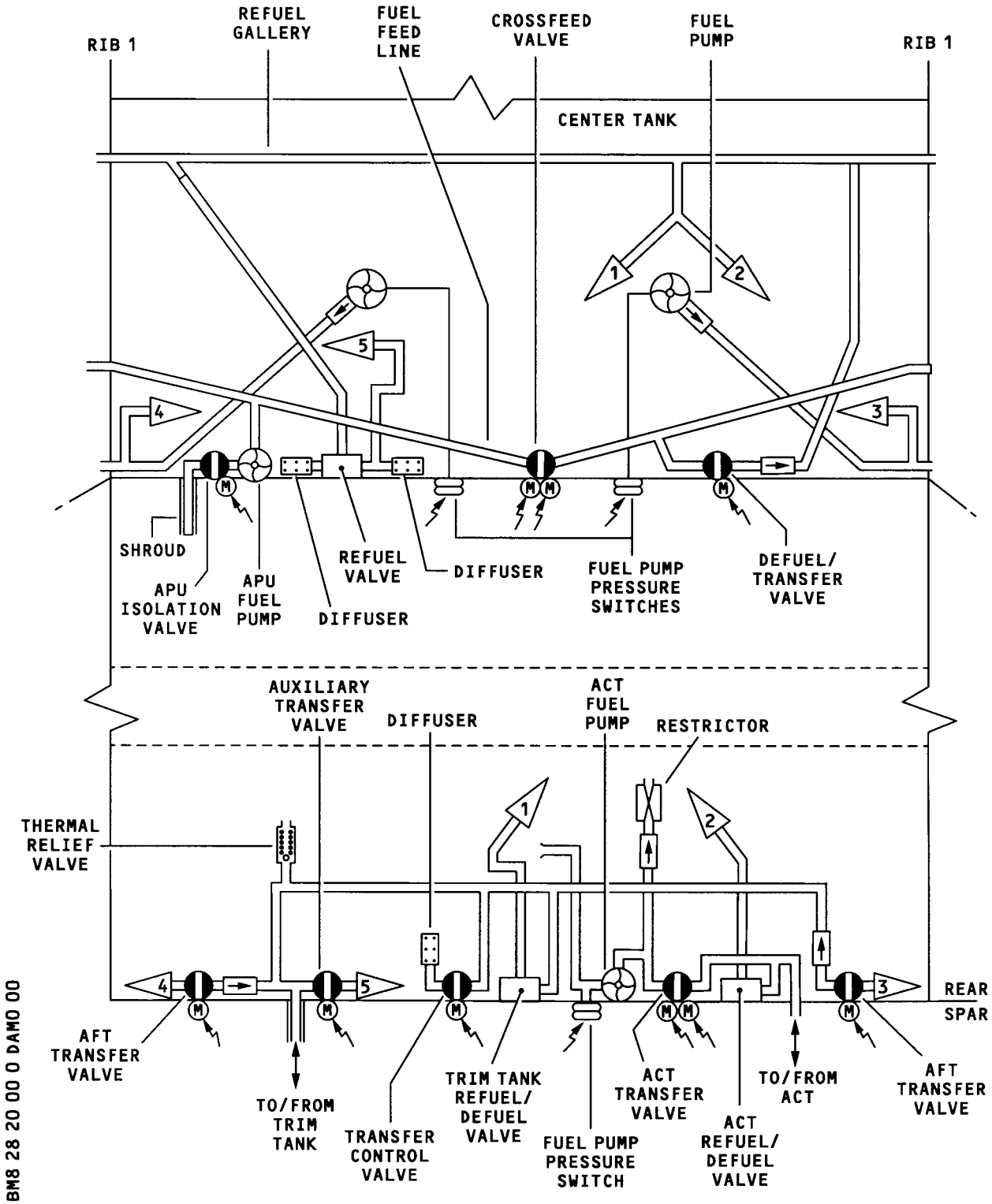


Fuel Distribution (Wing Tank) - System Schematic
Figure 001

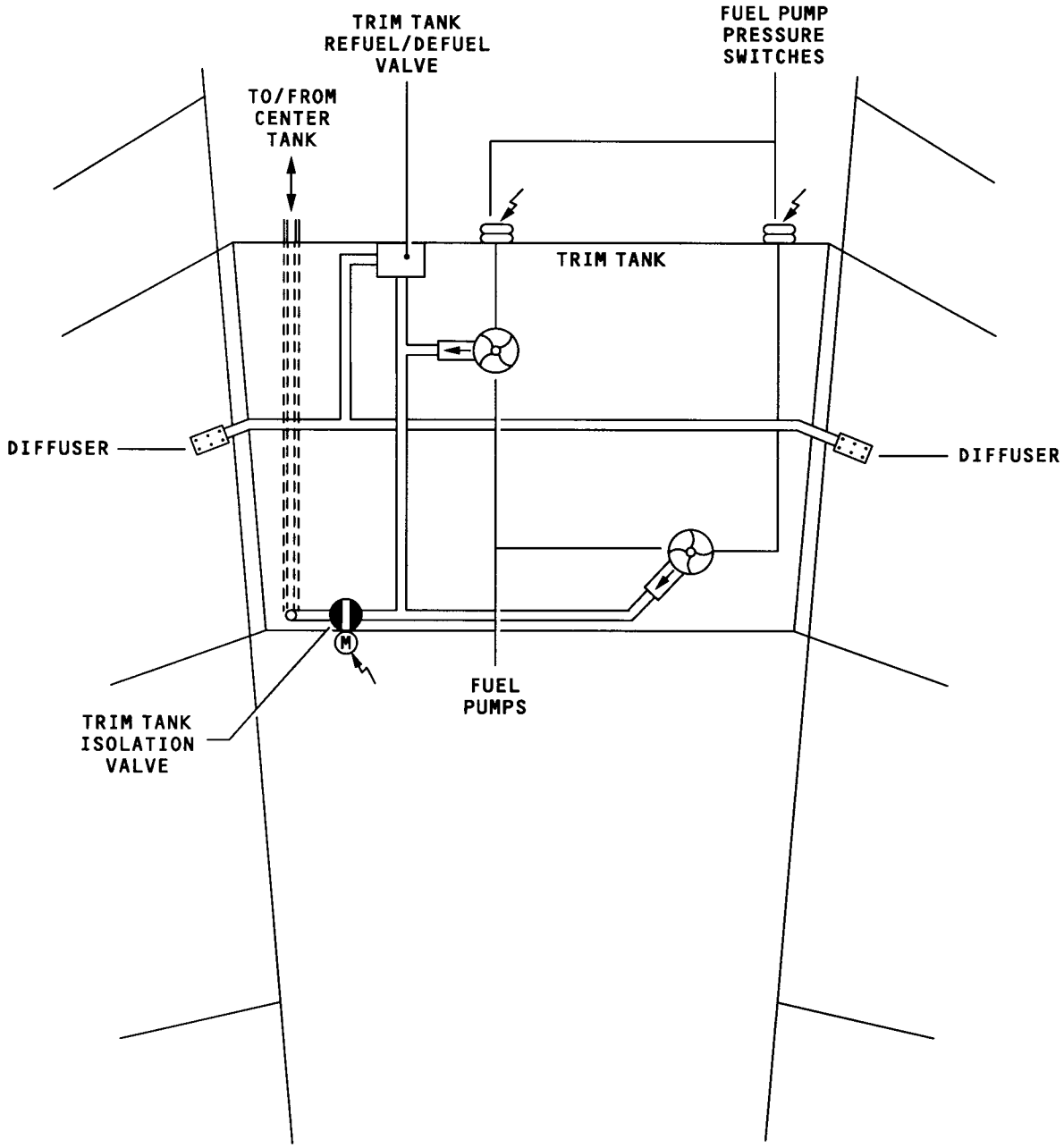
R



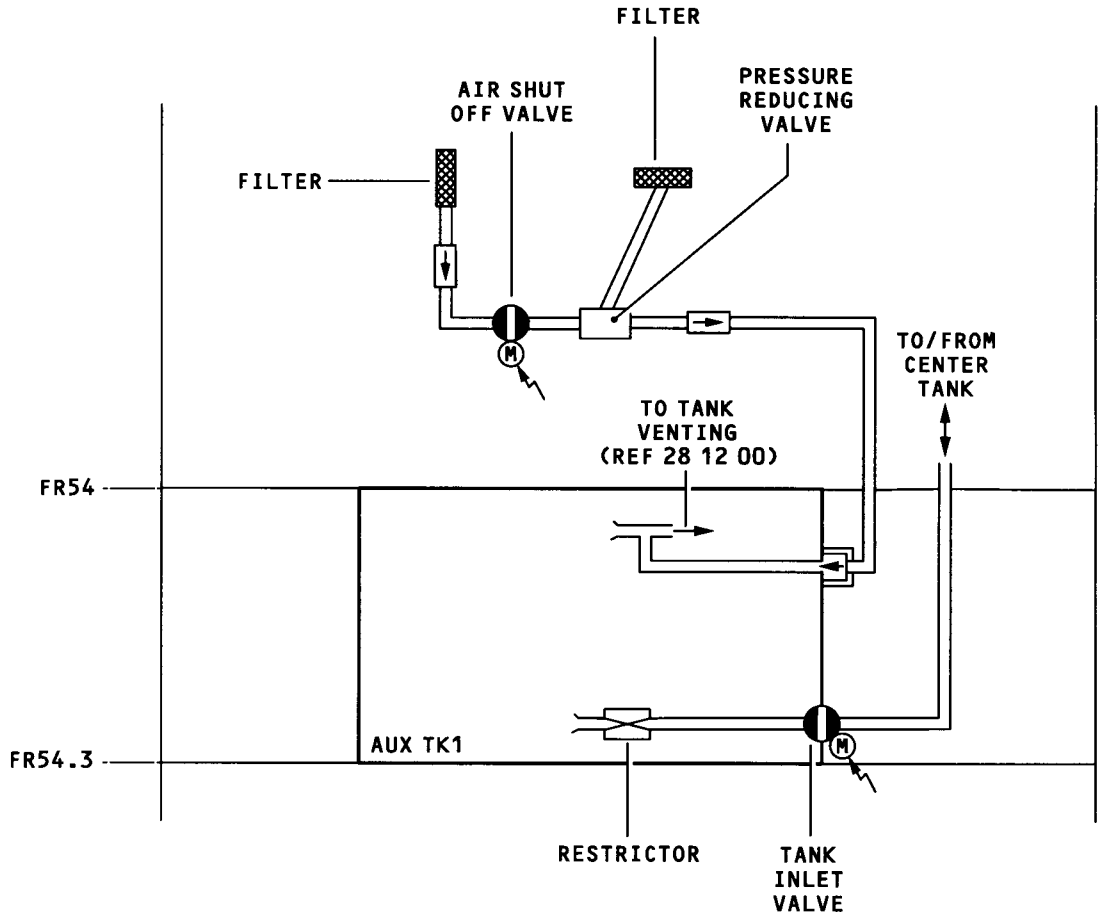
Fuel Distribution (Center Tank) - System Schematic
Figure 002



Fuel Distribution (Center Tank) - System Schematic
Figure 003



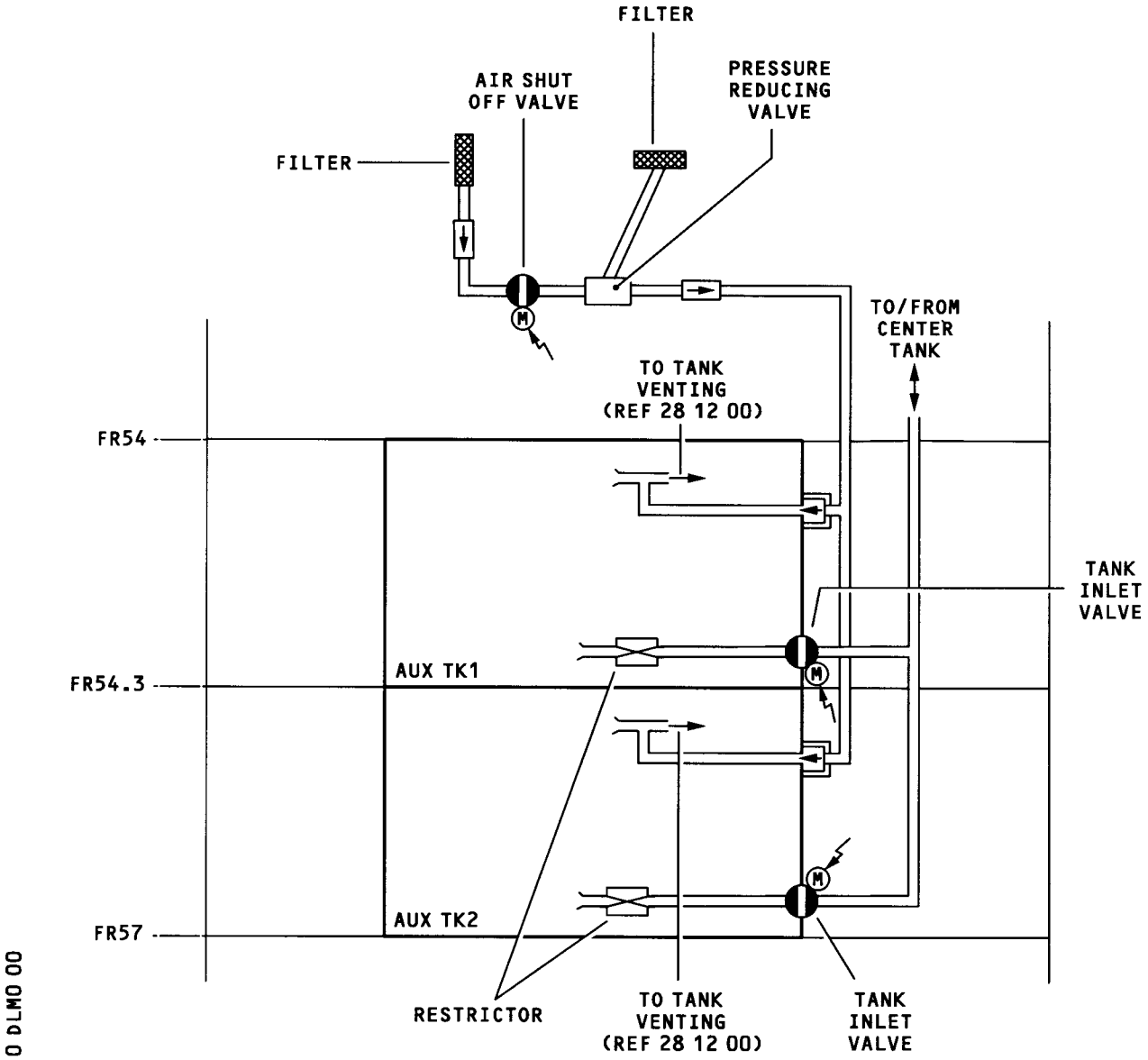
Fuel Distribution (Trim Tank) - System Schematic
Figure 004



BM8 28 20 00 0 DGM0 00

Fuel Distribution (ACT) - System Schematic
Figure 005

R



Fuel Distribution (ACTs) - System Schematic
Figure 006

Post SB 28-2108 For A/C 102-200,

(Ref. Fig. 007)

**ON A/C ALL

A. Engine Feed System

(1)Fuel Pump System (Ref. 28-21-00, P. Block 1).

Each engine feed tank has two centrifugal booster pumps capable of supplying the engines with fuel at the required pressure and flow rate.

(2)Tank Isolation System (Ref. 28-22-00, P. Block 1).

Isolation valves shut off parts of the feed system and thereby isolate the associated tanks.

(3)Crossfeed System (Ref. 28-23-00, P. Block 1)

A crossfeed line routed through the fuselage center section provides interconnection of the L and R engine feed systems.

The fuel supply is controlled by a crossfeed valve, which is normally closed.

(4)LP (Low Pressure) Fuel Fire Shut-Off Control (Ref. 28-24-00, P. Block 1).

In case of fire the fuel supply to the engines (or APU) is shut off by the LP valves which are electrically actuated by operation of the related ENG FIRE (or APU FIRE) handle.

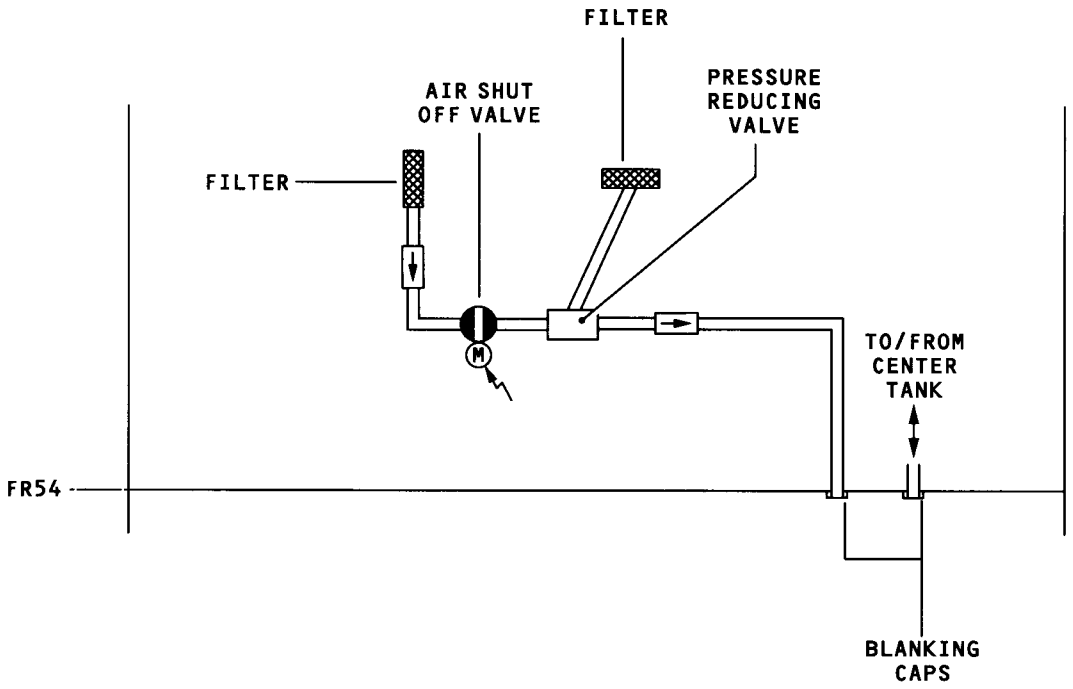
B. Auxiliary Power Unit (APU) Feed System (Ref. 49-30-00, P. Block 1)

The fuel feed system for the auxiliary power unit (APU) is supplied via a connection in the main engine feed system, and incorporates a supplementary fuel pump, a separate isolation valve and a fuel fire shut-off valve.

C. Refuel/Defuel System (Ref. 28-25-00, P. Block 1)

Fuel delivered to the refuel/defuel couplings from a ground fuel supply is distributed in the required quantities to the aircraft tanks through the refuel/defuel valves. The system can also be used to defuel the aircraft through the same couplings.

D. Fuel Transfer (CG) System (Ref. 28-26-00, P. Block 1)



BM8 28 20 00 0 DEN0 00

Fuel Distribution (ACT) - System Schematic
Figure 007

To maintain the CG within prescribed limits for each flight phase the transfer system, controlled by the Center of Gravity Control Computer (CGCC) automatically pumps fuel to or from the trim tank in the horizontal stabilizer.

**ON A/C 101-200,

E. Fuel Transfer (Ref. 28-28-00, P. Block 1)

The system transfers fuel from the ACT(s) (if installed) to the center tank. With the system in normal operation (auto mode) the system operates automatically. A manual override (ACT AUTO) P/BSW is installed on panel 430VU. This controls a pump in the center tank which transfers fuel from the ACT(s) to the center tank.

WARNING : FLIGHT CONTROLS - MAKE SURE THAT THE GROUND SAFETIES AND NOTICES ARE IN POSITION.

LANDING GEAR - MAKE SURE THAT THE GROUND SAFETIES AND CHOCKS ARE IN POSITION.

OBEY THE SAFETY PRECAUTIONS IN 28-00-00, P. BLOCK 301.

MAKE SURE THAT THE FIRE FIGHTING EQUIPMENT IS AVAILABLE AND ADEQUATE.

MAKE SURE THAT YOU ISOLATE THE ELECTRICAL CIRCUITS UPON WHICH WORK IS IN PROGRESS.

1. Engine Fuel Feed Line and Conduit Between LP Valve and Pylon Bulkhead.

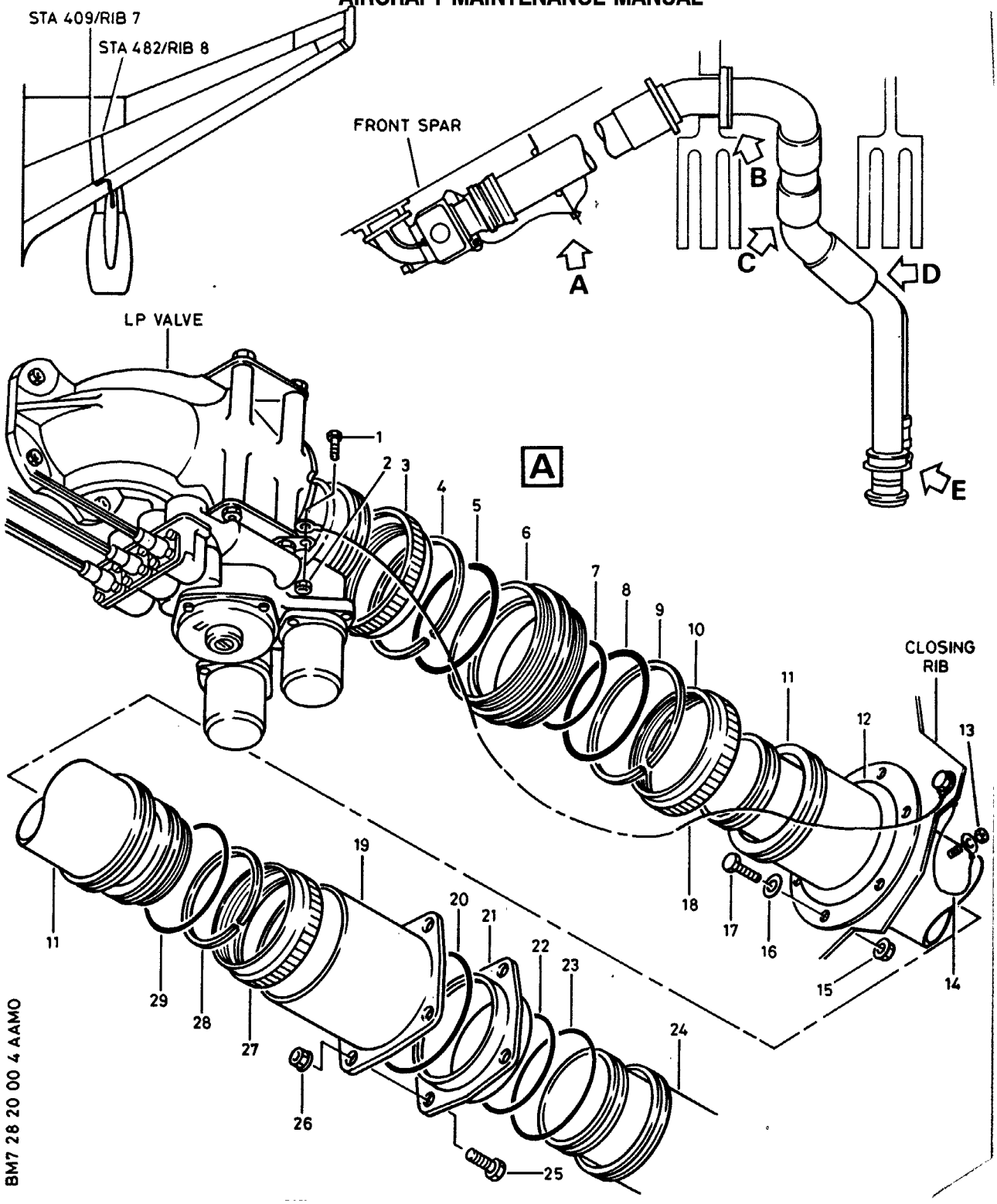
A. Equipment and Materials

ITEM	DESIGNATION
A.	Access Platform 4.5 m (15 ft)
B.	Warning Notices
C.	O-Ring Seals
D.	Container (drainage) 30 liter (8 U.S. gal)
E.	Fuel Pressure Test Rig, with Male 9/16 UNF Adapter capable of pressurizing conduit to 0.344 bar (5 psi)
F.	Lockwire, Corrosion Resistant Steel 0.8 mm (0.032 in)
G.	Circuit Breaker Safety Clips and Tags
H.	Packing
Referenced Procedures	
- 20-28-11, P. Block 1	Electrical Bonding
- 24-41-00, P. Block 301	External Power
- 27-80-00, P. Block 301	Lift Augmenting (Slats and Krueger Flaps)
- 28-00-00, P. Block 301	Fuel
- 28-00-00, P. Block 401	Fuel
- 28-21-00, P. Block 501	Fuel Pump System
- 30-11-00, P. Block 401	Ice and Rain Protection
- 30-11-00, P. Block 501	Wing Ice Protection
- 71-13-00, P. Block 301	Cowl Doors

B. Procedure

R **ON A/C 001-100,

(Ref. Fig. 401)



Installation of Top Line to L P Valve and Elbow
Figure 401

R **ON A/C 101-200,

(Ref. Fig. 402)

R **ON A/C 001-100,

(Ref. Fig. 403)

R **ON A/C 101-200,

(Ref. Fig. 404)

R **ON A/C 001-100,

(Ref. Fig. 405)

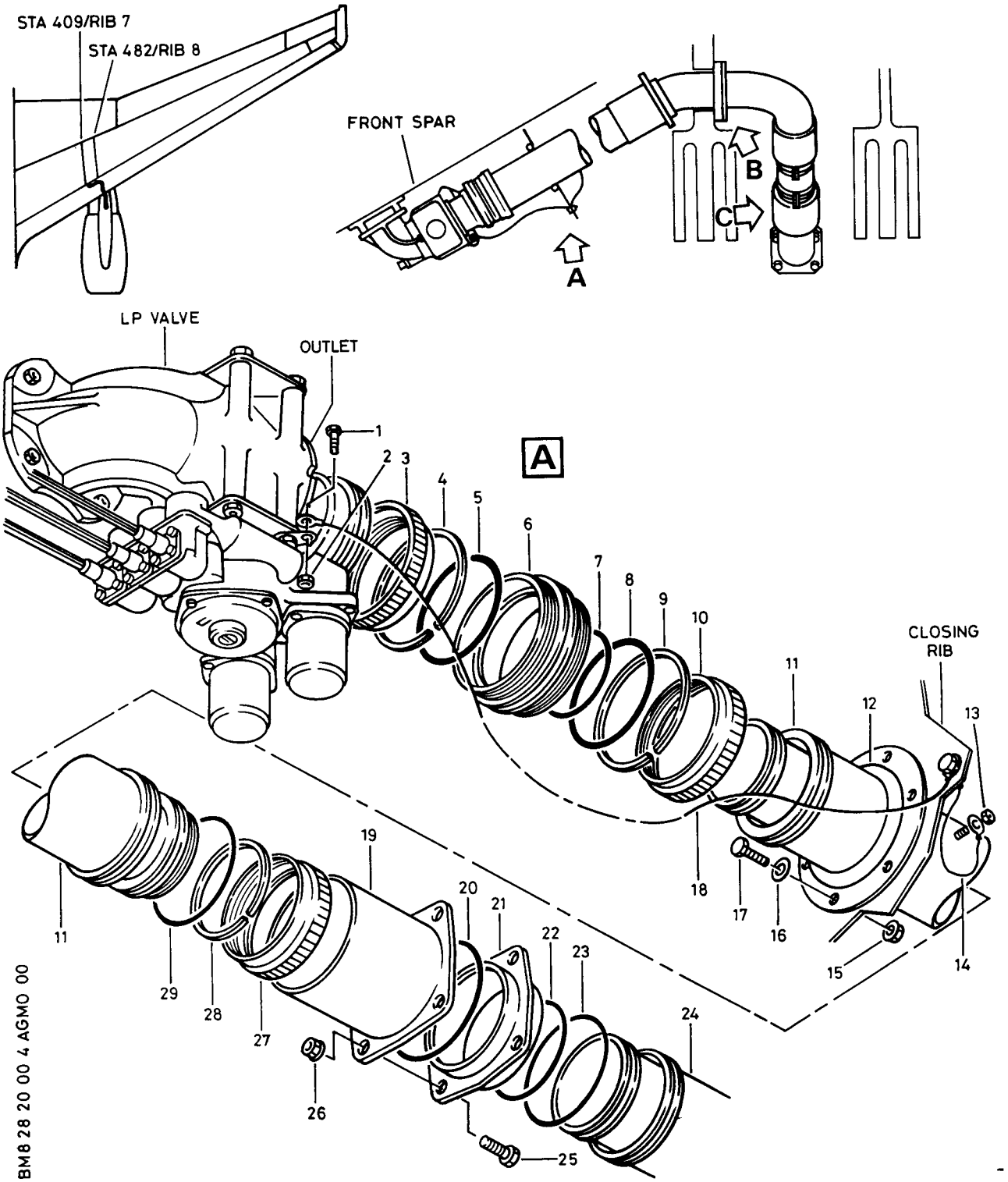
R **ON A/C ALL

(1)Job Set-Up
(a)Close LP Valve
1 Open, safety and tag the following circuit breakers:

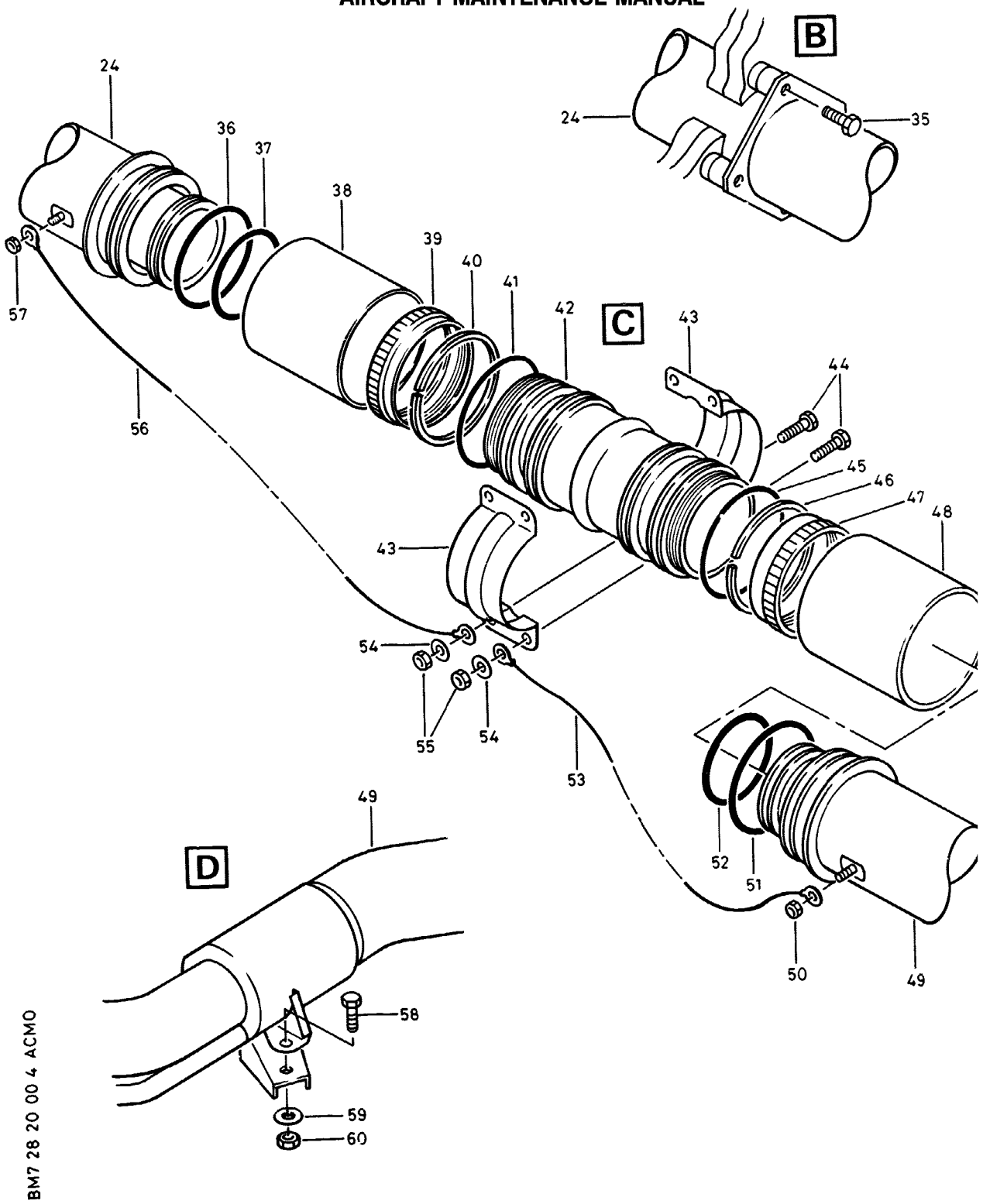
PANEL	SERVICE	IDENT.	LOCATION
22VU	ENG 1&2 FIRE EXTING/SQUIB B/BTL 1	5WE	207/C19
22VU	ENG 1&2 FIRE EXTING/SQUIB B/BTL 2	7WE	207/C20
133VU	ENG 1&2 FIRE EXTING/SQUIB A/BTL 1	1WE	335/R71
133VU	ENG 1&2 FIRE EXTING/SQUIB A/BTL 2	3WE	335/R72

2 Make sure that the following circuit breakers are closed:

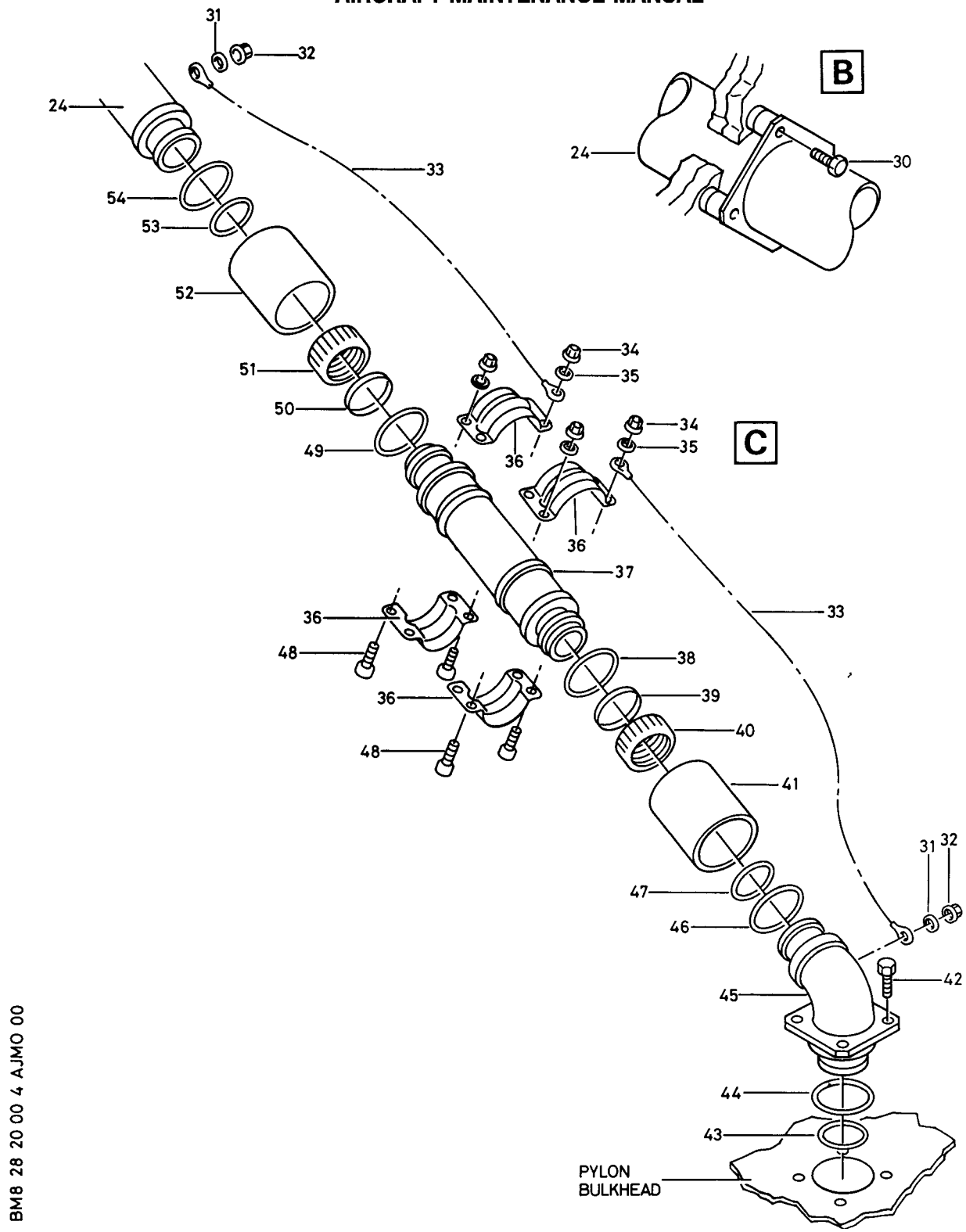
PANEL	SERVICE	IDENT.	LOCATION
22VU	FUEL/LP VALVES/ENG 1/MOTOR 2	3QG	201/J19
22VU	FUEL/LP VALVES/ENG 2/MOTOR 2	4QG	201/J20
132VU	FUEL/LP VALVES/ENG 1/MOTOR 1	1QG	323/M53
132VU	FUEL/LP VALVES/ENG 2/MOTOR 1	2QG	322/N54
132VU	FUEL/LP VALVES/ENG 1/POS ANN	5QG	322/N53
132VU	FUEL/LP VALVES/ENG 2/POS ANN	6QG	323/M54
133VU	KRUGER	45CV	333/T61
133VU	SLATS/SYS 1/26 VAC	3CV	335/R65
133VU	SLATS/SYS 1/SFCC & CTL SUPPLY/NORM	7CV	333/T63
133VU	SLATS/SYS 1/SFCC & CTL SUPPLY/LAND RECOVERY	9CV	335/R66
133VU	SLATS/SYS 2/SFCC & CTL SUPPLY/NORM	8CV	333/T64
133VU	SLATS/SYS 2/26 VAC	4CV	335/R64
133VU	FLAPS/SYS 1/26 VAC	1CV	335/R61
133VU	FLAPS/SYS 1/SFCC & CTL SUPPLY/LAND RECOVERY	10CV	335/R67
133VU	FLAPS/SYS 1/SFCC & CTL SUPPLY/NORM	5CV	332/U61
133VU	FLAPS/SYS 2/SFCC & CTL SUPPLY/NORM	6CV	331/V61
133VU	FLAPS/SYS 2/26 VAC	2CV	334/S62



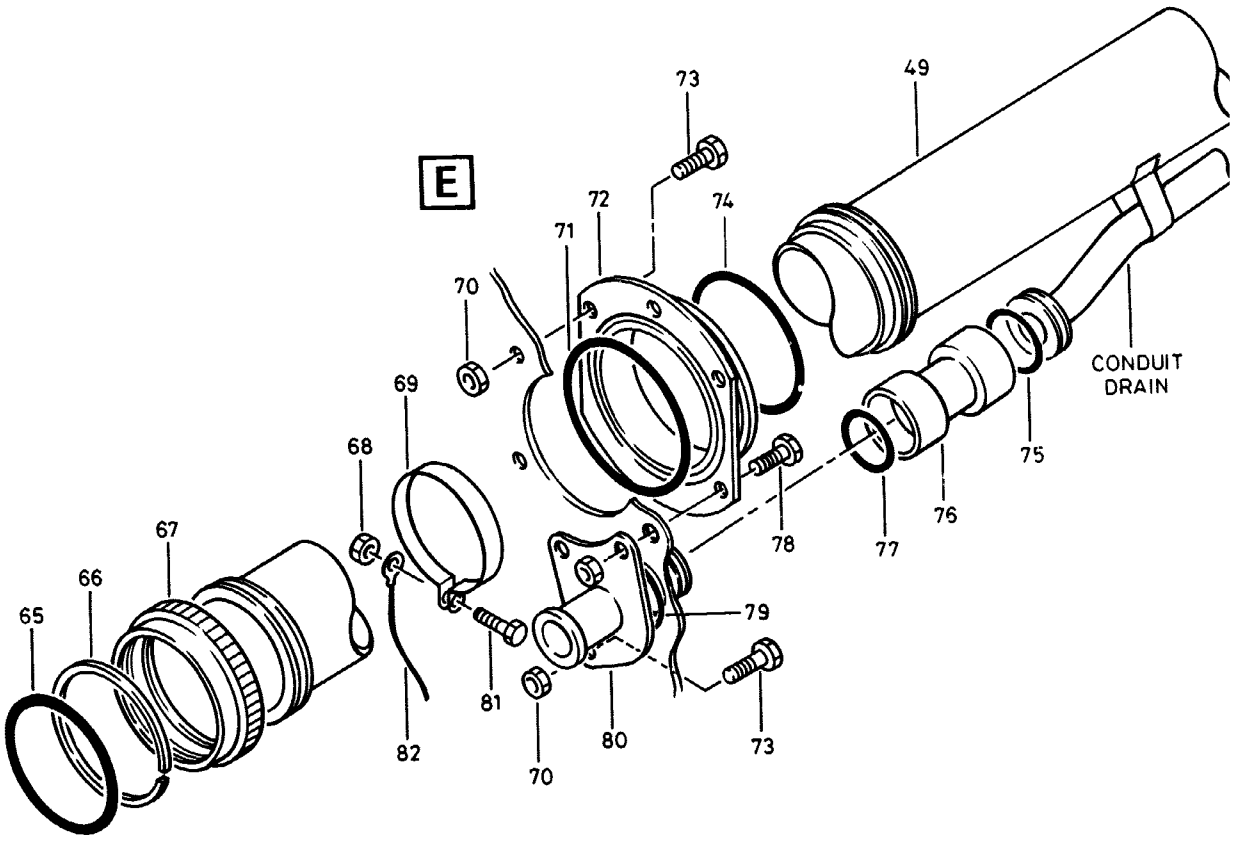
Installation of Top Line to L P Valve and Elbow
Figure 402



Installation of Center Line to Elbow
and Bottom Line
Figure 403



Installation of Fuel Feed Pipes to Elbow
Figure 404



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Installation of Bottom Line
Figure 405

R 3 Connect electrical ground power unit and energize the aircraft
R electrical network (Ref. 24-41-00, P. Block 301).
R 4 On the pilots roof panel 20VU, pull the fire control handle for
R engine 1(2), check the LP valve annunciator SHUT legend comes on.
R (b)Fully extend the slats (Ref. 27-80-00, P. Block 301).
R (c)Open, safety and tag the circuit breakers that follow:
R 1 On panel 22VU:
R - the LP VALVE circuit breakers 3QG and 4QG
R 2 On panel 132VU:
R - the LP VALVE circuit breakers 1QG, 2QG, 5QG and 6QG.
R 3 on panel 133VU:
R - the FLAPS circuit breakers 6CV, 5CV, 2CV, 1CV and 10CV
R 4 On panel 133VU:
R - The KRUGER circuit breaker 45CV
R 5 On panel 133VU:
R - the SLATS circuit breakers 7CV, 8CV, 4CV, 3CV and 9CV.
R (c)Display warning notices to prohibit opening of LP valve, or operation
R of slats.
R (d)Position access platform.
R (e)Open access doors 512(612)JB and 512(612)KB and access doors in pylon
R zones 471(481), 472(482), 413(423) and 414(424).
R (f)Drain fuel from engine feed pipe in pylon:
R 1 Open engine cowls (Ref. 71-13-00, P. Block 301) to gain access to
R engine fuel pump.
R 2 Place drainage container under engine fuel pump.
R 3 Remove drain plug from fuel pump inlet; allow residual fuel to
R drain into container. Remove container on completion.
R 4 Install drain plug, complete with new packing, on fuel pump inlet
R and safety with lockwire.
R (g)Remove section of anti-icing duct exposed by removal of door 512(612)
R KB (Ref. 30-11-00, P. Block 401).
R (h)Remove heatshield exposed by removal of duct in step B.(1)(g).

**ON A/C 001-100,

(2)Removal

NOTE: Top line ends 'float' in adjoining section. Use cumulative top line end float to facilitate removal.

This procedure is to be read in conjunction with 28-00-00, P. Block 401.

(a)Release top line (11) at points where secured to structure:
1 Remove bolts (35) securing elbow (24) to pylon fitting.
2 Remove nuts (60), bolts (58) and washers (59) securing attachment lugs of bottom line (49).

(b)Remove top line (11):
1 Remove nuts (2) and (13) and bolt (1) disconnect bonding straps

(14) and (18) from LP valve and top line (11).
2 Remove nuts (15), bolts (17), washers (16) and release seal (12).
3 Cut and remove lockwire, unscrew nuts (3) and (10), release retaining rings (4) and (9).
4 Remove nuts (26), bolts (25) and slide sleeve (19) along pipe to reveal inner joint of elbow (24).
5 Cut and remove lockwire, unscrew nut (27) and release retaining ring (28).
6 Withdraw top line (11) through closing rib. Remove sleeves (19) and (21), connector (6) and seal (12).

(c)Remove elbow (24):
1 Remove nuts (50) and (57) securing bonding straps (53) and (56) to elbow (24) and bottom line (49).
2 Remove nuts (55), washers (54), bolts (44), bonding clips (43) and bonding straps (53) and (56) from center line (42).
3 Slide upper conduit sleeve (38) downwards on center line (42). Cut and remove lockwire and unscrew nut (39).
4 Withdraw elbow (24) through pylon fitting. Remove retaining rings (28) and (40) and nuts (27) and (39).

(d)Remove center line (42):
1 Slide conduit sleeve (48) upwards. Cut and remove lockwire and unscrew nut (47).
2 Remove center line (42) together with sleeves (38) and (48).

(e)Remove bottom line (49):
1 Remove nut (68), bolt (81) and disconnect bonding strap (82). Remove bonding clip (69).
2 Cut and remove lockwire, unscrew nut (67).
3 Remove nuts (70), bolts (73) and (78) securing bulkhead seal housing (72) and conduit drain adapter (80).
4 Remove conduit drain adapter (80). Withdraw bottom line (49) through pylon bulkhead.
5 Remove nuts (67) and (47), retaining rings (66) and (46) and bulkhead seal housing (72) from bottom line (49).
6 Remove housing (76) from conduit drain.
(f)Cap open line ends and LP valve.
(g)Discard all O-ring seals.

(3)Preparation of Replacement Components
(a)Install new O-ring seals as follows (Ref. 28-00-00, P. Block 401):
1 Seal (5) on LP valve outlet.
2 Seals (7), (8), (29) on ends of top line (11).
3 Seal (20) on conduit sleeve (21).
4 Seals (22), (23), (36), (37) on ends of elbow (24).
5 Seals (41), (45) on ends of center line (42).
6 Seals (51), (52), (65), (74) on ends of bottom line (49).
7 Seal (71) on bulkhead seal housing (72).
8 Seals (77), (79) on conduit drain adapter (80).
9 Seal (75) on conduit drain.

**ON A/C 101-200,

(2)Removal

NOTE: Top line ends 'float' in adjoining section. Use cumulative line end 'float' in adjoining sections to facilitate removal.

This procedure is to be read in conjunction with 28-00-00, P. Block 401.

(a)Remove top line (11) as follows:
1 Remove bolts (30) securing elbow (24) to pylon fitting.
2 Remove nuts (2), (13) and bolt (1), and disconnect bonding straps (14) and (18) from LP valve and top line (11).
3 Remove nuts (15), bolts (17), washers (16) and release seal (12).
4 Cut and remove lockwire, unscrew nuts (3) and (10) and remove retaining rings (4) and (9).
5 Remove nuts (26) and bolts (25) and slide sleeve (19) along pipe to reveal inner joint of sleeve (21).
6 Cut and remove lockwire, unscrew nut (27) and release retaining ring (28).
7 Withdraw top line (11) through closing rib. Remove sleeves (19) and (21), connector (6) and seal (12).

(b)Remove elbow (24) as follows:
1 Remove nuts (32), washers (31) and bonding straps (33) from elbow (24) and fuel feed pipe (45).
2 Remove nuts (34), washers (35), bolts (48), bonding clips (36) and bonding straps (33) from fuel feed pipe (37).
3 Slide sleeve (52) downwards along fuel feed pipe (37). Cut and remove lockwire and remove retaining ring (50) and nut (51).
4 Withdraw elbow (24) through pylon fitting. Remove retaining rings (28) and (50) and nuts (27) and (51).

(c)Remove fuel feed pipe (37) as follows:
1 Slide sleeve (41) upwards along fuel feed pipe (37). Cut and remove lockwire and unscrew nut (40).
2 Remove fuel feed pipe (37) together with sleeves (52) and (41).

(d)Remove fuel feed pipe (45) as follows:
1 Remove bolts (42) and fuel feed pipe (45).
2 Remove retaining ring (39) and nut (40).

(e)Remove and discard O-ring seals (5), (7), (8), (20), (22), (23), (29), (38), (43), (44), (46), (47), (49), (53) and (54).

(3)Preparation of Replacement Components
(a)Install new O-ring seals as follows (Ref. 28-00-00, P. Block 401):
1 Seal (5) on LP valve outlet.

2 Seals (7), (8),and (29) on ends of top line (11).
3 Seal (20) on sleeve (21).
4 Seals (22), (23), (54) and (53) on ends of elbow (24).
5 Seals (38) and (49) on ends of fuel feed pipe (37).
6 Seals (47), (46), (44) and (43) on ends of fuel feed pipe (45).

**ON A/C 001-100,

(4)Installation

NOTE: Use cumulative line end 'float' on adjoining sections to facilitate installation of line.

(a)Install bottom line (49):
1 Position bulkhead seal housing (72) and nuts (47) and (67) on bottom line (49). Secure nuts with retaining rings (46) and (66).
2 Offer up bottom line (49) through pylon bulkhead to engine feed pipe. Secure with nut (67) and wirelock.
3 Slide housing (76) on to conduit drain and slide conduit drain adapter (80) into housing (76).

CAUTION: MAKE SURE FACE SEALS (71), (79) ARE IN CORRECT POSITION.

4 Secure adapter (80) together with bulkhead seal housing (72) to pylon bulkhead using bolts (73) and (78) and nuts (70).
5 Install bonding clip (69) together with bonding strap (82) to bottom line (49), using bolt (81) and nut (68) (Ref. 20-28-11, P. Block 1).

NOTE: The bonding strap must be installed under the nut.

(b)Install center line (42):
1 Install center line (42) to bottom line (49) and secure with nut (47) and wirelock.
2 Slide conduit sleeves (48) and (38) on to center line (42).
(c)Install top line (11) as follows:
1 Position nut (3) on LP valve and safety with retaining ring (4).
2 Install connector (6) to LP valve using nut (3) and wirelock.
3 Position nut (10) on top line (11) and safety with retaining ring (9).
4 Position seal (12) and sleeve (19) on top line (11) and insert top line (11) through closing rib, locate in LP valve and connector (6). Secure with nut (10) and wirelock.
5 Secure seal (12) to closing rib with bolts (17), washers (16) (under bolt heads) and nuts (15).
6 Attach bonding straps (14) and (18) to top line (11) and LP valve using bolt (1) and nuts (2) and (13).

(d)Install elbow (24):
1 Position nuts (27) and (39) on elbow (24) and safety with retaining rings (28) and (40).

2 Insert elbow (24) through pylon, slide sleeve (21) on elbow and engage elbow ends in top line (11) and center line (42).
3 Secure elbow (24) to center line (42) with nut (39) and wirelock. Cover with conduit sleeve (38).
4 Install bonding clips (43) and bonding straps (53) and (56) using bolts (44), washers (54) and nuts (55) (Ref. 20-28-11, P. Block 1).
5 Attach bonding straps (56) and (53) to elbow (24) and bottom line (49) using nuts (57) and (50) (Ref. 20-28-11, P. Block 1).
6 Secure elbow (24) to top line (11) with nut (27) and wirelock.
7 Slide sleeve (19) along top line (11) to cover joint. Secure sleeve (19) to sleeve (21) using bolts (25) and nuts (26).
8 Secure elbow (24) to pylon fitting with bolts (35).

(e)Secure the lugs of bottom line (49) to the structure using bolts (58), washers (59) and nuts (60).

**ON A/C 101-200,

(4)Installation

NOTE: Use cumulative line end 'float' in adjoining sections to facilitate installation.

(a)Install fuel feed pipe (45) as follows:
1 Position fuel feed pipe (45) on pylon bulkhead and install bolts (42).
2 Position nut (40) on fuel feed pipe (45) and safety with retaining ring (39).

(b)Install fuel feed pipe (37) as follows:
1 Position sleeves (41) and (52) on fuel feed pipe (37).
2 Install fuel feed pipe (37) to fuel feed pipe (45) and secure with nut (40) and wirelock.
3 Slide sleeve (41) downwards to cover joint of fuel feed pipe (37) and sleeve of fuel feed pipe (45).

(c)Install top line (11) as follows:
1 Position nut (3) on LP valve and safety with retaining ring (4).
2 Install connector (6) on LP valve using nut (3) and wirelock.
3 Position nut (10) on top line (11) and safety with retaining ring (9).
4 Position seal (12) and sleeve (19) on top line (11). Insert top line (11) through closing rib and locate in connector (6). (6).
5 Secure with nut (10) and wirelock.
6 Secure seal (12) to closing rib with bolts (17), washers (16) (under bolt heads) and nuts (15).
7 Attach bonding straps (14) and (18) to top line (11) and LP valve with bolt (1), nuts (2) and (13) (Ref. 20-28-11, P. Block 1).

(d)Install elbow (24):
1 Position nuts (27) and (51) on elbow (24) and safety with retaining rings (28) and (50).
2 Insert elbow (24) through pylon, slide sleeve (21) on elbow and engage elbow ends in top line (11) and fuel feed pipe (37).
3 Secure elbow (24) to fuel feed pipe (37) with nut (51) and wirelock. Cover with conduit sleeve (52).
4 Install bonding clips (36) and bonding straps (33) using bolts (48) washers (35) and nuts (34) (Ref. 20-28-11, P. Block 1).
5 Attach bonding straps (33) to elbow (24) and fuel feed pipe (45) using washers (31) and nuts (32) (Ref. 20-28-11, P. Block 1).
6 Secure elbow (24) to top line (11) with nut (27) and wirelock.
7 Slide sleeve (19) along top line (11) to cover joint. Secure sleeve (19) to sleeve (21) using bolts (25) and nuts (26).
8 Secure elbow (24) to pylon fitting with bolts (30).

R **ON A/C ALL

(5)Tests
(a)Pressure test conduit.
1 Connect pressure test rig to conduit drain adapter.
2 Pressurize system to 0.344 bar (5 psi).
3 Check that there is no leakage over a period of 10 minutes.
4 Remove test rig on completion of test.
(b)Pressure test feed line in pylon.
1 Perform leak test procedure for engine-feed system pipeline in pylon (Ref. 28-21-00, P. Block 501).

(6)Close-Up
(a)Install heatshield.
(b)Install section of anti-icing duct (Ref. 30-11-00, P. Block 401).
(c)Close appropriate pylon doors and wing access doors 512(612)JB and 512(612)KB.
(d)Close engine cowls (Ref. 71-13-00, P. Block 301).
R (e)Remove the safety clips and tags and close the circuit breakers that
R follow:
R 1 On panel 22VU:
R - the LP VALVE circuit breakers 3QG and 4QG
R 2 On panel 132VU:
R - the LP VALVE circuit breakers 1QG, 2QG, 5QG and 6QG.
R 3 on panel 133VU:
R - the FLAPS circuit breakers 6CV, 5CV, 2CV, 1CV and 10CV
R 4 On panel 133VU:
R - The KRUGER circuit breaker 45CV
R 5 On panel 133VU:
R - the SLATS circuit breakers 7CV, 8CV, 4CV, 3CV and 9CV.
R (f)Fully retract the slats (Ref. 27-80-00, P. Block 301).
(g)Remove all ground handling and maintenance equipment, standard and special tools, all access equipment and miscellaneous items.

(h)Complete system test of wing anti-icing (Ref. 30-11-00, P. Block 501).

FUEL PUMP SYSTEM - DESCRIPTION AND OPERATION

1. General

(Ref. Fig. 001)

The fuel pump system installed in the aircraft includes:
- a quantity of P/BSWs that are on a fuel control panel (430VU) in the flight compartment
- two fuel (booster) pumps in the center tank, the left and right inner tanks and the left and right outer tanks
- a pressure switch for each fuel pump
- a jet pump in each outer tank
- a sequence valve for each outer tank pump
- a set of jet pumps in the center tank
- a system of pipes that includes a quantity of valves
- an electrical control system that includes a quantity of relays.

The P/BSWs supply an on/off function for each fuel pump (Ref. 28-00-00, P. Block 1). Each P/BSW includes an annunciator that comes on when a fault (related to its pump) occurs. The fuel panel also supplies P/BSWs for the valves that let you isolate the fuel supply (Ref. 28-22-00, P. Block 1).

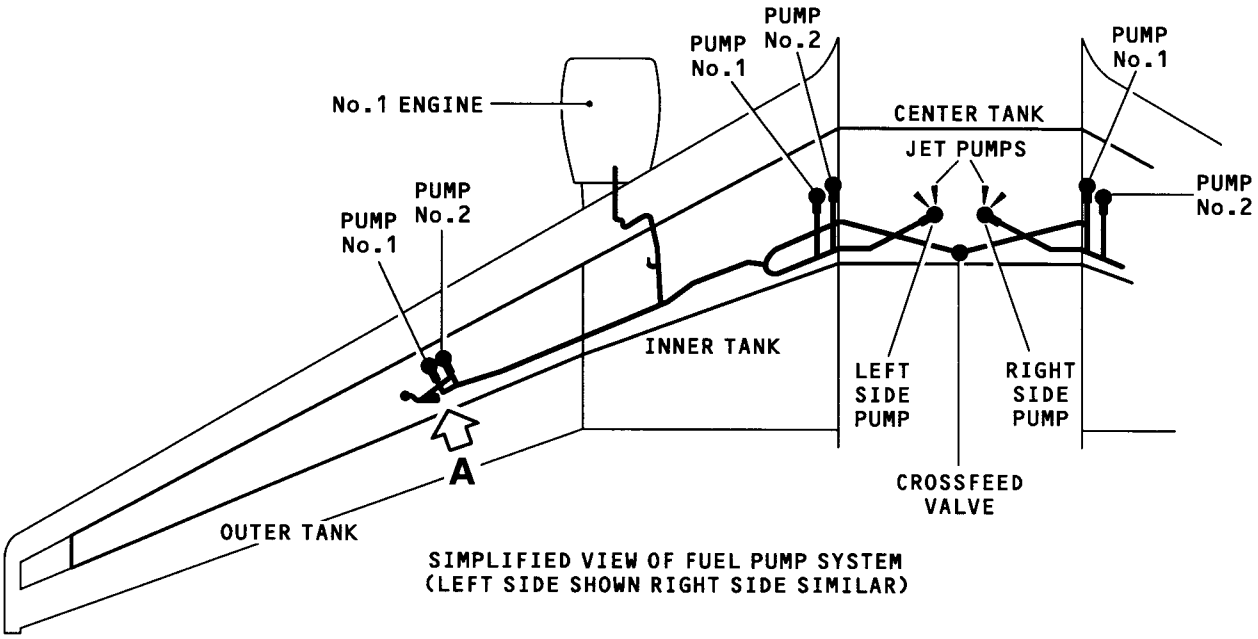
The fuel pumps will operate in an auto or manual mode of control. Those in the left wing and the left side of the center tank supply fuel to the No.1 engine. The pumps on the right side supply the No. 2 engine. The pumps on the left side also supply the APU (Ref. 49-00-00, P. Block 1).

Each pressure switch monitors the operation of its related pump. When the pump does not make sufficient pressure at its outlet, the applicable LO PR (outer tank pumps) or FAULT (inner and center tank pumps) annunciator comes on at the fuel panel. The low pressure FAULT indication for the inner and center tank pumps is inhibited when necessary to stop nuisance warnings.

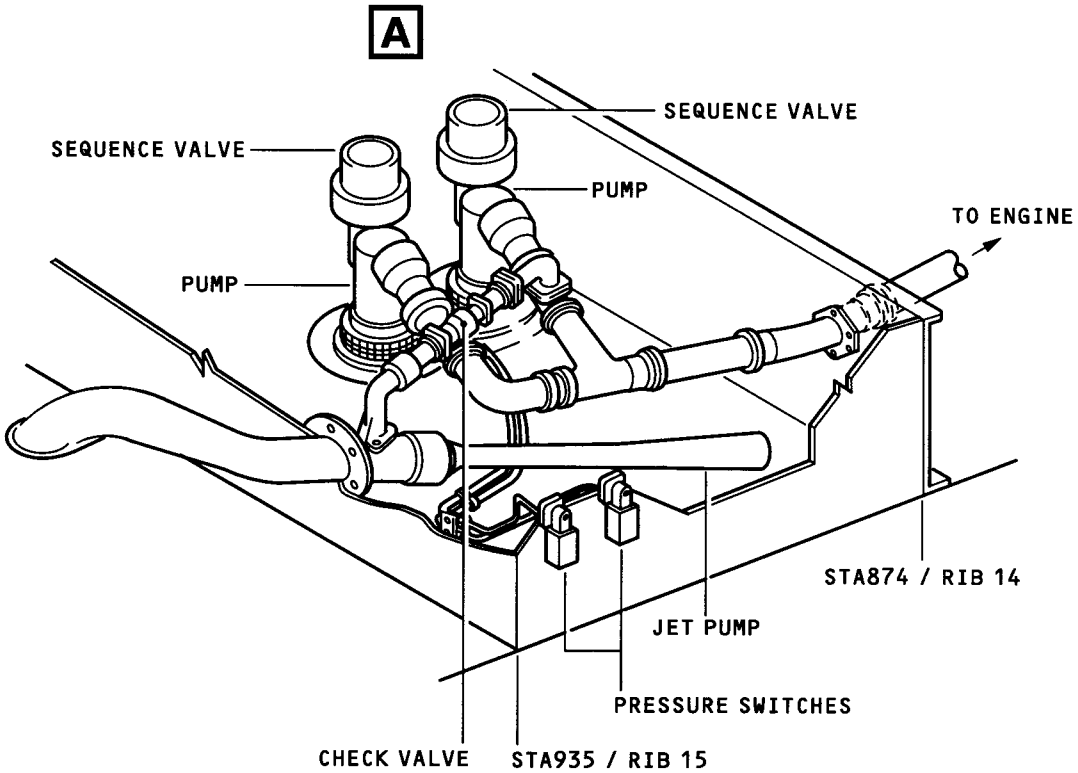
The jet pump in each outer tank and those in the center tank operate at the same time as their related booster pumps. When these operate they cause the jet pumps to move the fuel by suction. The jet pump in each outer tank moves the fuel from the outboard side of rib 15 to the adjacent collector bay in which the booster pumps are installed. The jet pumps in the center tank supply an automatic water-scavenge system. They cause a fuel spray to mix any water with the fuel.

The system of pipes and valves connect the center and left side wing tanks through the engine pylon to the No. 1 engine. The system for the No. 2 engine is similar.

The valves installed in the system have different functions and include:
- check valves that control the direction of fuel flow
- bleed valves that let air leave the system automatically
- sequence valves that keep the output pressure of the outer tank pumps to less than the other pumps



SIMPLIFIED VIEW OF FUEL PUMP SYSTEM
(LEFT SIDE SHOWN RIGHT SIDE SIMILAR)



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R Fuel Pump System
Figure 001

- thermal expansion valves that keep the fuel pressure to a safe limit
- a crossfeed valve that lets the left and right side fuel tanks connect with each other (Ref. 28-23-00, P. Block 1)
- drain valves in the inner tanks. These let fuel caught in the refuel system during refuel go into the inner tank when necessary (Ref. 28-25-00, P. Block 1)
- isolation valves that let you isolate specified tanks (Ref. 28-22-00, P. Block 1).

The relays that are installed in the electrical control system, control pump operation in accordance with the set mode of control and the aircraft configuration. They do this in response to the inputs that come from:
- the P/BSWs on the fuel panel
- the refuel/defuel system (Ref. 28-25-00, P. Block 1)
- the fuel level amplifier (Ref. 28-46-00, P. Block 1)

The system gives outputs to:
- the SDAC to show the status of the pumps and valves in the system on the ECAM system display (FUEL page) (Ref. 31-55-00, P. Block 1)
- the flight warning computer to show a message at the left ECAM CRT (warning display) when a fault occurs (Ref. 31-53-00, P. Block 1)
- the FUEL panel (430VU) when a fault occurs.

2. Component Location
(Ref. Fig. 002)
(Ref. Fig. 003)

FIN	FUNCTIONAL DESIGNATION	PANEL	ZONE	ACCESS DOOR	ATA REF
280014	CANISTER - BOOSTER PUMP L INR TK		540	540AB	28-21-13
280015	CANISTER - BOOSTER PUMP R INR TK		640	640AB	28-21-13
280016	CANISTER - BOOSTER PUMP L INR TK		540	540AB	28-21-13
280017	CANISTER - BOOSTER PUMP R INR TK		640	640AB	28-21-13
280018	CANISTER - BOOSTER PUMP L OUTR TK		550	550AB	28-21-21
280019	CANISTER - BOOSTER PUMP R OUTR TK		650	650AB	28-21-21
280020	CANISTER - BOOSTER PUMP L OUTR TK		550	550AB	28-21-21
280021	CANISTER - BOOSTER PUMP R OUTR TK		650	650AB	28-21-21
280022	CANISTER - BOOSTER PUMP L CTR TK		141	147AZ	28-21-37
280023	CANISTER - BOOSTER PUMP R CTR TK		142	148AZ	28-21-37
280056	CHECK VALVE - FUEL (1.25 INCH) L OUTR TK		550	540AB	28-21-23
280057	CHECK VALVE - FUEL (1.25 INCH) R OUTR TK		650	650AB	28-21-23
280054	CHECK VALVE - FUEL (2 INCH) L INR TK		540	540BB	28-21-15
280055	CHECK VALVE - FUEL (2 INCH) R INR TK		640	640BB	28-21-15
280192	VALVE - THRM EXP L INR TK		540	540AB	28-21-11
280193	VALVE - THRM EXP R INR TK		640	640AB	28-21-11
280194	VALVE - THRM EXP L OUTR TK		540	540BB	28-21-11
280195	VALVE - THRM EXP R OUTR TK		640	640BB	28-21-11
280399	PUMP - JET L CTR TK		141	147AZ	28-11-31
280400	PUMP - JET L CTR TK		141	147AZ	28-11-31
280401	PUMP - JET R CTR TK		142	148AZ	28-11-31

	FIN	FUNCTIONAL DESIGNATION	PANEL	ZONE	ACCESS DOOR	ATA REF
	280402	PUMP - JET R CTR TK		142	148AZ	28-11-31
	1QA	C/B - FUEL/L/INNER/TK/PUMP 2/SUPPLY	101VU	121	ESS/B01	28-00-00
	2QA	C/B - FUEL/R/INNER/TK/PUMP 1/SUPPLY	101VU	121	ESS/A01	28-00-00
	3QA	C/B - FUEL/L/OUTER/TK/PUMP 2/SUPPLY	101VU	121	GEN1/A20	28-00-00
	4QA	C/B - FUEL/R/OUTER/TK/PUMP 1/SUPPLY	101VU	121	GEN1/A14	28-00-00
	5QA	C/B - FUEL/L/OUTER/TK/PUMP 1/SUPPLY	101VU	121	GEN2/A17	28-00-00
	6QA	C/B - FUEL/R/OUTER/TK/PUMP 2/SUPPLY	101VU	121	GEN2/B02	28-00-00
	7QA	C/B - FUEL/L/INNER/TK/PUMP 1/SUPPLY	101VU	121	GEN2/A23	28-00-00
	8QA	C/B - FUEL/R/INNER/TK/PUMP 2/SUPPLY	101VU	121	GEN2/A20	28-00-00
R	11QA	C/B - FUEL/L INR TK/PUMP 2/WARN	132VU	212	322/N61	28-00-00
	12QA	C/B - FUEL/R INR TK/PUMP 1/WARN	132VU	212	323/M62	28-00-00
	13QA	C/B - FUEL/OUTR TK PUMP 2/L TK/WARN	22VU	212	201/J16	28-00-00
	14QA	C/B - FUEL/R OUTR TK/PUMP 1/WARN	132VU	212	322/N57	28-00-00
	15QA	C/B - FUEL/L OUTR TK/PUMP 1/WARN	132VU	212	323/M56	28-00-00
	16QA	C/B - FUEL/OUTR TK PUMP 2/R TK/WARN	22VU	212	201/J17	28-00-00
	17QA	C/B - FUEL/L INR TK/PUMP 1/WARN	132VU	212	323/M60	28-00-00
	18QA	C/B - FUEL/R INR TK/PUMP 2/WARN	132VU	212	322/N63	28-00-00
	19QA	P/B SW - FUEL, L INR TK PUMP 2	430VU	210		
	20QA	P/B SW - FUEL, R INR TK PUMP 1	430VU	210		
	21QA	P/B SW - FUEL, L OUTR TK PUMP 2	430VU	210		
	22QA	P/B SW - FUEL, R OUTR TK PUMP 1	430VU	210		
	23QA	P/B SW - FUEL, L OUTR TK PUMP 1	430VU	210		
	24QA	P/B SW - FUEL, R OUTR TK PUMP 2	430VU	210		
	25QA	P/B SW - FUEL, L INR TK PUMP 1	430VU	210		
	26QA	P/B SW - FUEL, R INR TK PUMP 2	430VU	210		
R	35QA	RELAY - L INR TK, PUMP 2 PWR SUPPLY	107VU	121	132AZ	
R	36QA	RELAY - R INR TK, PUMP 1 PWR SUPPLY	107VU	121	132AZ	
R	37QA	RELAY - L OUTR TK, PUMP 2 PWR SUPPLY	107VU	121	132AZ	
R	38QA	RELAY - R OUTR TK, PUMP 1 PWR SUPPLY	107VU	121	132AZ	
R	39QA	RELAY - L OUTR TK, PUMP 1 PWR SUPPLY	107VU	121	132AZ	
R	40QA	RELAY - R OUTR TK, PUMP 2 PWR SUPPLY	107VU	121	132AZ	
R	41QA	RELAY - L INR TK, PUMP 1 PWR SUPPLY	107VU	121	132AZ	
R	42QA	RELAY - R INR TK, PUMP 2 PWR SUPPLY	107VU	121	132AZ	
	43QA	PUMP - FUEL BOOSTER 2 L INR TK		540	540AB	28-21-12
	44QA	PUMP - FUEL BOOSTER 1 R INR TK		640	640AB	28-21-12
	45QA	PUMP - FUEL BOOSTER 2 L OUTR TK		550	550AB	28-21-19
	46QA	PUMP - FUEL BOOSTER 1 R OUTR TK		650	650AB	28-21-19
	47QA	PUMP - FUEL BOOSTER 1 L OUTR TK		550	550AB	28-21-19
	48QA	PUMP - FUEL BOOSTER 2 R OUTR TK		650	650AB	28-21-19
	49QA	PUMP - FUEL BOOSTER 1 L INR TK		540	540AB	28-21-12
	50QA	PUMP - FUEL BOOSTER 2 R INR TK		640	640AB	28-21-12
	51QA	PRESS SW - BOOSTER PUMP 2 L INR TK		571		28-21-52
	52QA	PRESS SW - BOOSTER PUMP 1 R INR TK		671		28-21-52
	53QA	PRESS SW - BOOSTER PUMP 2 L OUTR TK		581	581CB	28-21-52
	54QA	PRESS SW - BOOSTER PUMP 1 R OUTR TK		681	681CB	28-21-52
	55QA	PRESS SW - BOOSTER PUMP 1 L OUTR TK		581	581CB	28-21-52
	56QA	PRESS SW - BOOSTER PUMP 2 R OUTR TK		681	681CB	28-21-52
	57QA	PRESS SW - BOOSTER PUMP 1 L INR TK		571		28-21-52

FIN	FUNCTIONAL DESIGNATION	PANEL	ZONE	ACCESS DOOR	ATA REF
58QA	PRESS SW - BOOSTER PUMP 2 R INR TK		671		28-21-52
59QA	C/B - FUEL/L INR TK/PUMP 2/CTL	132VU	212	323/M61	28-00-00
60QA	C/B - FUEL/R INR TK/PUMP 1/CTL	132VU	212	322/N62	28-00-00
61QA	C/B - FUEL/OUTR TK PUMP 2/L TK/CTL	22VU	210	201/J15	28-00-00
62QA	C/B - FUEL/R OUTR TK/PUMP 1/CTL	132VU	212	323/M57	28-00-00
63QA	C/B - FUEL/CTR TK/L/PUMP/CTL	132VU	212	322/N58	28-00-00
64QA	C/B - FUEL/CTR TK/R/PUMP/CTL	132VU	212	323/M59	28-00-00
65QA	C/B - FUEL/AUTO FEED/CTL	132VU	212	323/M55	28-00-00
66QA	C/B - FUEL/AUTO FEED/WARN	132VU	212	322/N55	28-00-00
67QA	C/B - FUEL/L OUTR TK/PUMP 1/CTL	132VU	212	322/N56	28-00-00
68QA	C/B - FUEL/OUTR TK PUMP 2/R TK/CTL	22VU	210	201/J18	28-00-00
69QA	C/B - FUEL/L INR TK/PUMP 1/CTL	132VU	212	322/N60	28-00-00
70QA	C/B - FUEL/R INR TK/PUMP 2/CTL	132VU	212	323/M63	28-00-00
81QA	PUMP - FUEL BOOSTER L CTR TK		147	734	28-21-36
82QA	PUMP - FUEL BOOSTER R CTR TK		148	744	28-21-36
83QA	PRESS SW - L BOOSTER PUMP CENTER TK		147	734	28-21-52
84QA	PRESS SW - R BOOSTER PUMP CENTER TK		148	744	28-21-52
89QA	RELAY - LOW LEVEL L INR TK	282VU	122	132AZ	
90QA	RELAY - LOW LEVEL R INR TK	282VU	122	132AZ	
91QA	RELAY - LOW LEVEL L CTR TK	282VU	122	132AZ	
92QA	RELAY - LOW LEVEL R CTR TK	282VU	122	132AZ	
93QA	P/B SW - FUEL, CTR TK, PUMP L	430VU	210		
94QA	P/B SW - FUEL, CTR TK, PUMP R	430VU	210		
99QA	C/B - FUEL/CTR TK/L PUMP/SUPPLY	101VU	120	ESS/B04	28-00-00
100QA	C/B - FUEL/CTR TK/R PUMP/SUPPLY	101VU	120	GEN2/B17	28-00-00
101QA	C/B - FUEL/CTR TK/L/PUMP/WARN	132VU	212	323/M58	28-00-00
102QA	C/B - FUEL/CTR TK/R/PUMP/WARN	132VU	212	322/N59	28-00-00
103QA	RELAY - AUTO CTL PUMP 1 L INR TK	107VU	121	132AZ	
104QA	RELAY - AUTO CTL PUMP 2 R INR TK	107VU	121	132AZ	
105QA	RELAY - AUTO CTL PUMP 2 L INR TK	107VU	121	132AZ	
106QA	RELAY - AUTO CTL PUMP 1 R INR TK	107VU	121	132AZ	
107QA	RELAY - AUTO CTL L PUMP CTR TK	107VU	121	132AZ	
108QA	RELAY - AUTO CTL R PUMP CTR TK	107VU	121	132AZ	
109QA	CONTACTOR - L PUMP CTL CTR TK	107VU	121	132AZ	
110QA	CONTACTOR - R PUMP CTL CTR TK	107VU	121	132AZ	
131QA	RELAY - CENTER TANK FAULT	282VU	122	132AZ	
132QA	RELAY - INNER TANK FAULT	282VU	122	132AZ	
133QA	RELAY - CENTER TANK LO LVL	105VU	121	132AZ	
134QA	RELAY - L INNER TANK PUMP OFF SIGNAL	282VU	122	132AZ	
135QA	RELAY - R INNER TANK PUMP OFF SIGNAL	282VU	122	132AZ	
136QA	RELAY - CENTER TANK PUMP OFF SIGNAL	282VU	122	132AZ	
139QA	RELAY - AUTO FUEL FEED LATCH	282VU	122	132AZ	
140QA	RELAY - CENTER TANK LO LVL FAULT L	282VU	122	132AZ	
141QA	RELAY - CENTER TANK LO LVL FAULT R	282VU	122	132AZ	
147QA	RELAY - TK SELECT ENG START/TAKE OFF	80VU			
148QA	RELAY - L INNER TK PUMP EMERG SUPPLY OFF	106VU			
149QA	C/B - INNER TK PUMPS EMERG SUPPLY	132VU	212	324/L52	

FIN	FUNCTIONAL DESIGNATION	PANEL	ZONE	ACCESS DOOR	ATA REF
150QA	RELAY - INNER TK PUMPS EMERG SUPPLY	104VU			
153QA	RELAY - INNER TK PUMPS EMERG SUPPLY OFF	105VU	120		
154QA	RELAY - CTR TK PUMP LATCH L OR R INR TK LO LVL	282VU	122		
164QA	RELAY - R INNER LO LVL	107VU	121		
165QA	RELAY - L INNER LO LVL	107VU	121		
166QA	RELAY - CENTER TK R FAULT DELAY	107VU	121		
167QA	RELAY - CENTER TK L FAULT DELAY	107VU	121		
168QA	RELAY - R INNER LO LEVEL LATCH	107VU	121		
169QA	RELAY - L INNER LO LEVEL LATCH	107VU	121		
170QA	RELAY - R INNER LO LEVEL RESET	107VU	121		
171QA	RELAY - L INNER LO LEVEL RESET	107VU	121		
	VALVE - AIR BLEED ENGINE FUEL FEED		540	540AB	28-21-14
	VALVE - AIR BLEED ENGINE FUEL FEED		640	640AB	28-21-14
	VALVE - AIR BLEED ENGINE FUEL FEED		540	540CB	28-21-14
	VALVE - AIR BLEED ENGINE FUEL FEED		640	640CB	28-21-14
	SEQUENCE VALVE - FUEL BOOSTER PUMP 1		550	550AT	28-21-22
	SEQUENCE VALVE - FUEL BOOSTER PUMP 2		550	550AT	28-21-22
	SEQUENCE VALVE - FUEL BOOSTER PUMP 1		650	650AT	28-21-22
	SEQUENCE VALVE - FUEL BOOSTER PUMP 2		650	650AT	28-21-22

**ON A/C ALL

Post SB 24-2041 For A/C 001-003,

181QA	RELAY - FUEL PUMPS OVRD CTL	104VU	120		

**ON A/C ALL

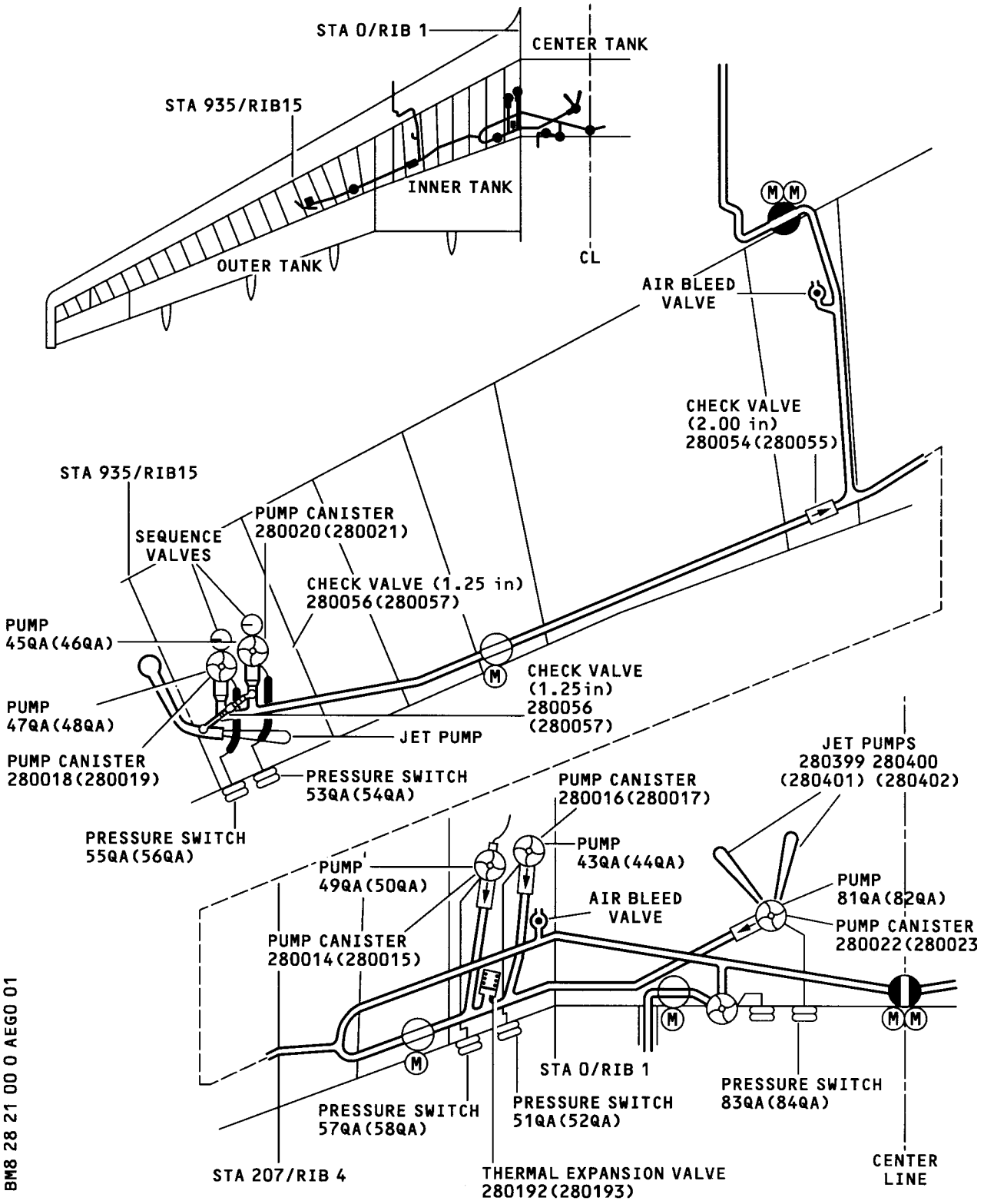
R

3. Description

In each wing tank two pumps supply fuel into one feed line that goes forward through the engine pylon to the engine. The left system also supplies fuel to the APU through a line that goes from the fuel feed line.

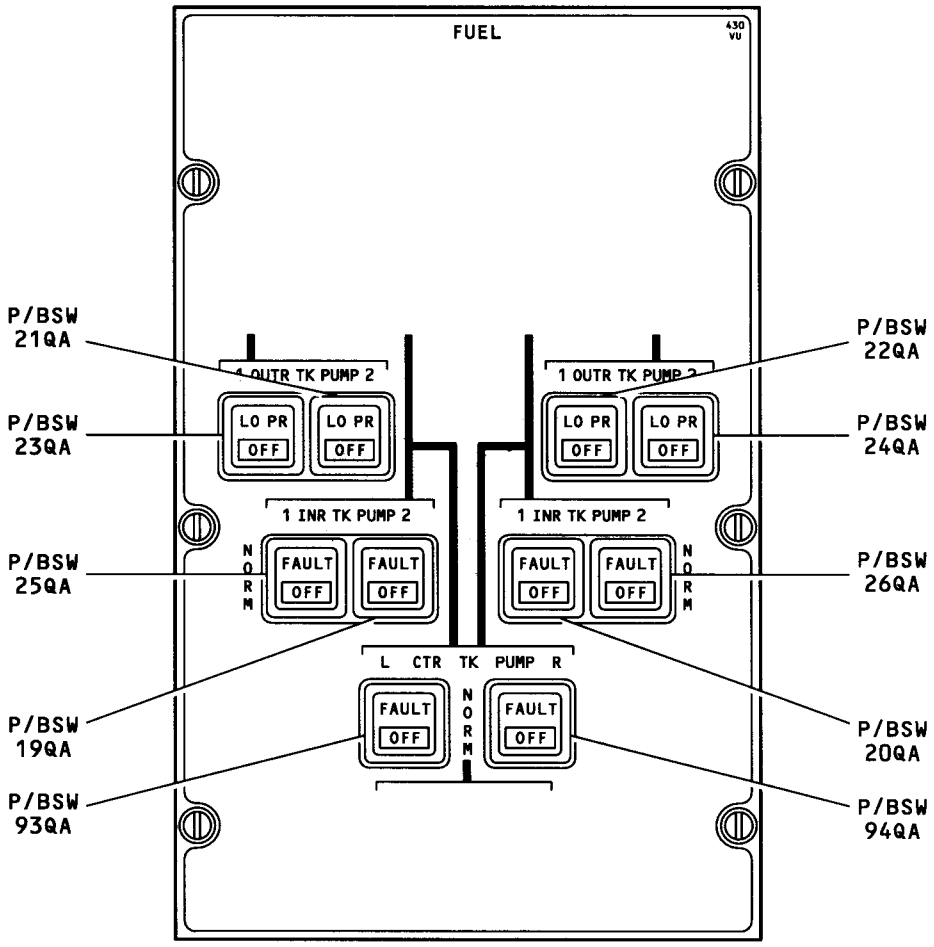
The center tank contains two pumps which supply fuel through separate lines, the left pump into the left feed line and the right pump into the right feed line. Usually fuel from the left wing tanks and from the left side pump in the center tank goes to the No.1 engine. Fuel from the right wing tanks and the right side pump in the center tank goes to the No. 2 engine.

A jet pump is installed in each outer tank to keep a collector bay, between RIB 14 and RIB 15 full of fuel. The jet pump gets its primary fuel supply from the two pumps which are installed in the collector bay. A check valve installed in the primary supply line prevents air from entering the system when the pumps stop.



Fuel Pump System - Component Location
Figure 002

FUEL PANEL 430 VU (REF 28-00-00)



BM8 28 21 00 0 BPM0 01

Fuel Pump System Controls - Component Location
Figure 003

The jet pump takes fuel from immediately outboard of RIB 15 and delivers it to the collector bay at a pressure not more than 0.1 bar (1.5 psi). Excess fuel goes outboard through small holes at the top of RIB 15. This makes sure that the outer tank pumps, which always operate, can supply fuel for a short time during negative 'G' conditions.

The operation of the jet pumps installed in the center tank is similar to jet pumps in the outer tanks. The pumps move fuel from a low point in the tank to a high point in the tank. They do this to prevent an acccumulation of water at the low point.

The outer tank pumps are the same as the inner and center tank pumps. Sequence valves reduce the output pressure of the outer pumps which makes sure that fuel from the center and inner tanks is used first. The supply lines go to high locations in the tanks and air bleed valves are installed at these locations. These valves let air which may collect at these high locations to leave the system. They also stop the entry of air during suction feed, fuel will not go through these valves.

Thermal expansion valves are installed in the sections or pipe that go between:
- the pump check valves and the wing-tank isolation valves
- the wing-tank isolation valves and the engine low-pressure valves.

These valves protect the pipe sections from damage if a large increase in temperature occurs.

Fuel is used from the individual tanks in this order, center, inner and outer. Usually this occurs automatically (auto mode set) but manual control can be used.

The auto mode sequence may change during flight if a fuel transfer from the trim tank to the center tank occurs. This may cause the inner tank pumps to stop and the center tank pumps to operate.

The automatic fuel feed sequence continues after the aircraft lands until its electrical network is de-energized. When the electrical network is next energized the auto sequence begins again. If the electrical network stays energized after a landing then the auto sequence resets when the MODE SEL/ SELECT/SELECTOR switch at the refuel/defuel panel (Ref. 28-25-00 P, Block 1) is set to REFUEL. The auto sequence will also reset if the pumps mode of operation is set to manual mode then set to the auto mode.

During taxi/take-off with the fuel tanks full and the engines being supplied with fuel from the center tank, fuel which collects in the surge tank will not be scavenged into the inner tanks. This fuel could escape through the NACA intakes. To prevent this, the engines are supplied with fuel from the inner tanks three minutes after the first engine starts. This continues until the slats are retracted after take off.

A three minute time-delay relay controls the inner and center pumps to get this sequence. The ground path for this relay to energize (inner pumps

operate) occurs through relays that energize when the configurations that follow occur. These are, the engine HP valves open and the main landing gear compressed or the engine HP valves open and the slats extended less than 16 degrees.

4. Component Description
(Ref. Fig. 004)
(Ref. Fig. 005)

A. Fuel Pump Canister and Pump

The fuel pump canister has, a body, a non-return valve, a slide valve and an inlet screen. The body is hollow and contains the fuel pump (when installed). There is a mounting flange at the bottom of the body which attaches it to the fuel tank. The fuel entrance to the canister is immediately above the mounting flange and is protected with a wire screen. The slide valve seals the fuel entrance to the canister when the fuel pump is not installed. When the pump is installed it moves the slide valve to the open position.

The canister has a number of fuel outlets. The top outlet contains the non-return valve and is the fuel supply to the engine feed line. When necessary the bottom outlet is the location for a sequence valve. A small opening in the side of the canister connects the pressure from the fuel pump to its pressure switch.

The fuel pump has a rotor assembly, an impeller assembly and an inducer assembly. A shaft connects the three assemblies together. The pump is installed vertically. The rotor is at the top, the impeller in the center and the inducer assembly is at the bottom. A drain plug is installed in the bottom of the pump. This lets you drain fuel from the canister before pump removal.

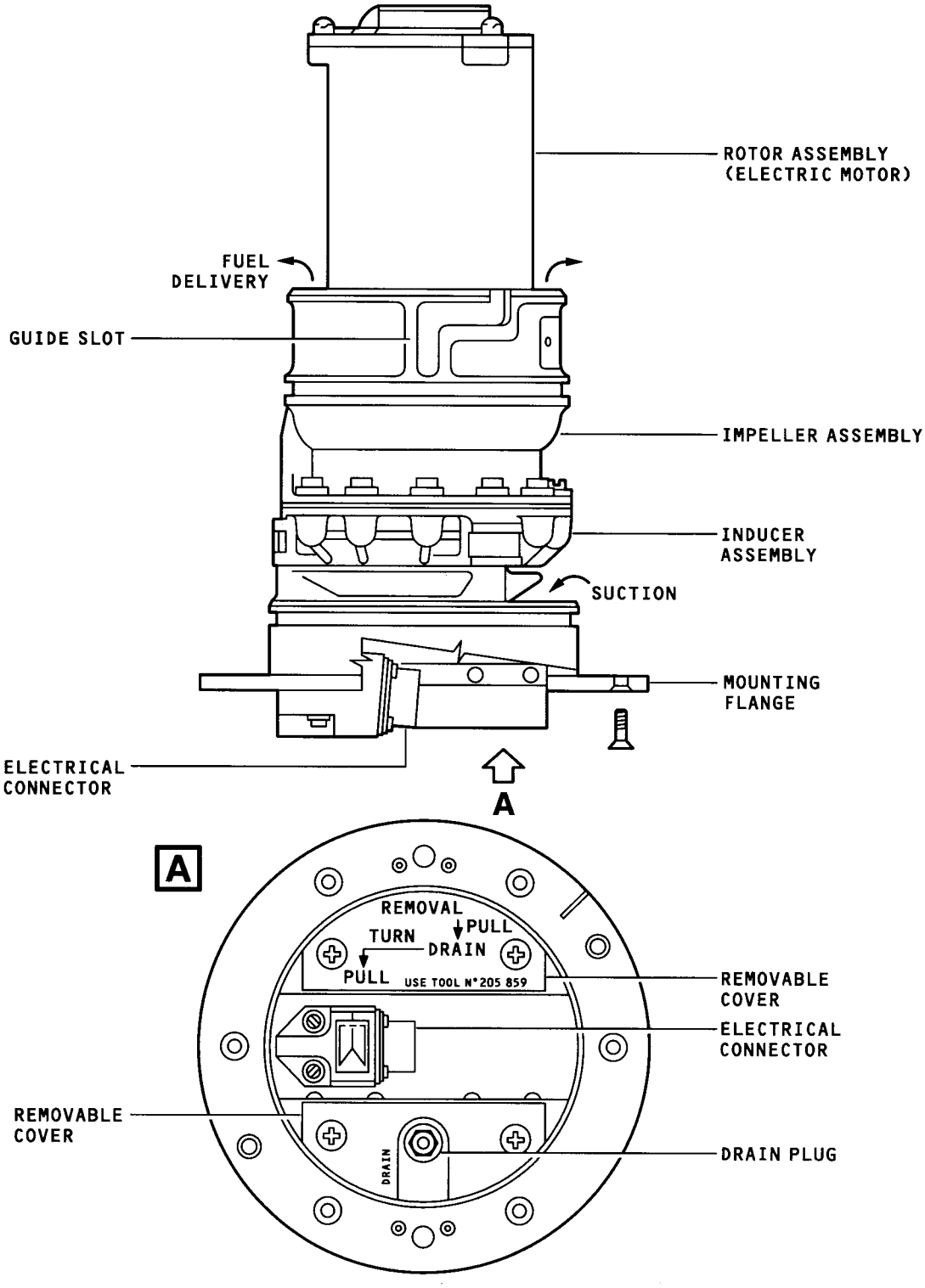
The rotor assembly is a 3 phase 115VAC electrical motor. When energized it turns the shaft to operate the impeller and inducer assemblies. The inducer causes the fuel to move to the impeller assembly. The impeller pressurizes and pushes the fuel out of the canister. The impeller has a by-pass valve. When the pump is not in operation the by-pass valve lets the fuel go through to the pumps at the engine.

Three thermal switches are installed in the rotor assembly. If the temperature of the pump element increases to more than a set limit the switches operate to stop the pump. The switches cannot be reset.

B. Pressure Switch

The primary components of the pressure switch are the body and the banjo adapter. The body contains a flexible diaphragm, a switch mechanism and an electrical microswitch. The diaphram isolates the switch mechanism and the microswitch from the fuel.

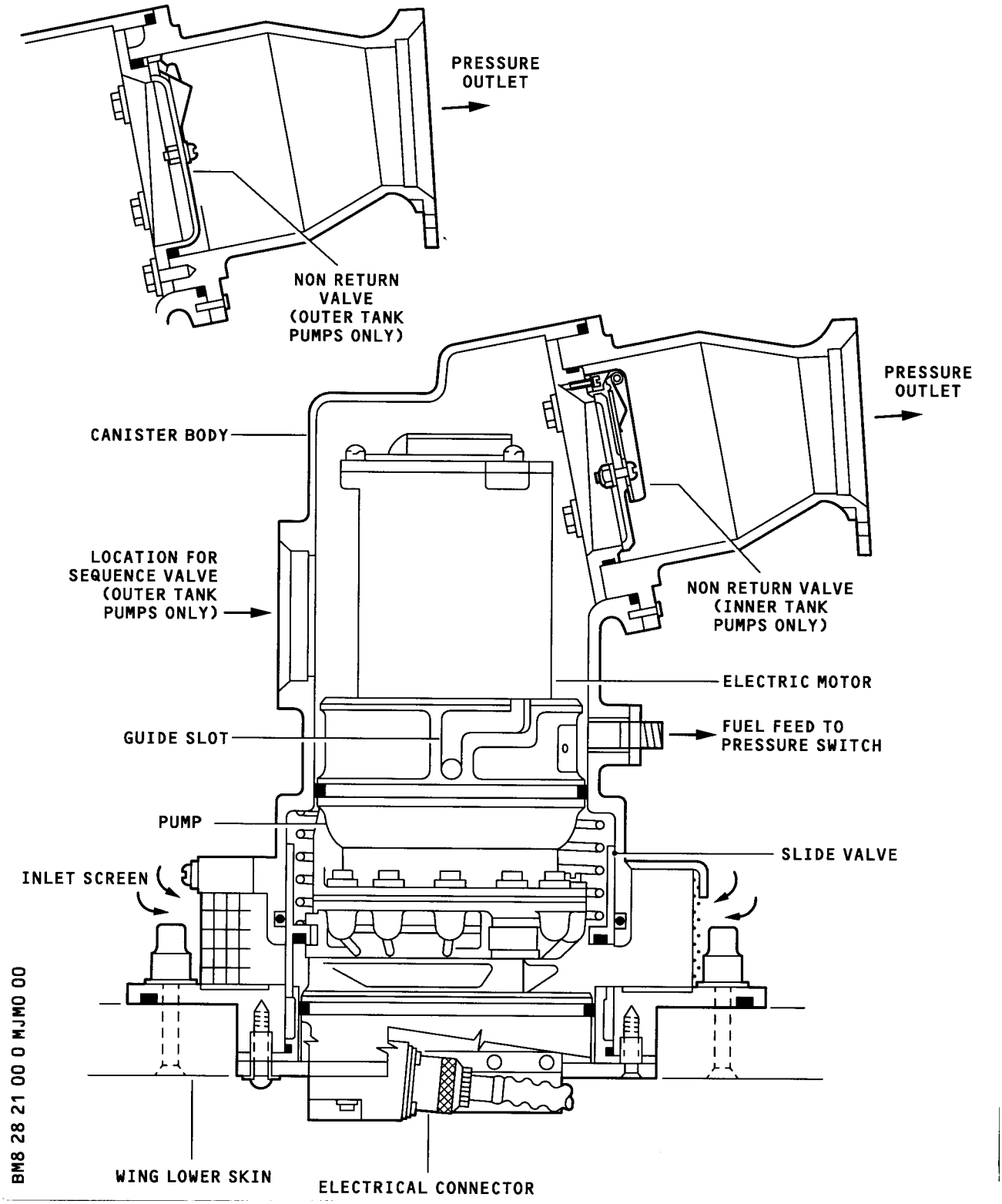
When the fuel pressure on the pump delivery side is more than 0.55 bar



BM8 28 21 00 0 MEMO 00

Fuel Pump Details
Figure 004

R



Fuel Pump Canister and Pump
Figure 005

R

(8 psi) the diaphragm moves to operate the switch mechanism (this opens the contacts of the microswitch). The opposite action occurs when fuel pressure is less than 0.41 bar (6 psi).

C. Outer Tank Jet Pumps

The jet pump has two fuel inlets, the motive-flow inlet and the suction inlet. When the jet pump is in operation the flow of fuel through the motive-flow nozzle causes a secondary flow (from the fuel tank). The mixed flow becomes stable in the mixing tube and slows down in the diffuser before it goes into the collector cell.

D. Sequence Valves

The sequence valves are pressure relief valves attached to the secondary outlet of each outer-tank pump-canister. The valve prevents the related pump pressure being more than 1.2 bar (17.4 psi).

E. Thermal Expansion Valves

The valve body contains a ball and a spring. The spring holds the ball against a valve seat. When the fuel pressure increases to more than 3.0 bar (43.5 psi) the ball lifts (against the pressure of the spring) to release the fuel through the outlet hole.

F. Air Bleed Valves

The air bleed valves are simple gravity ball valves which allow air to be expelled from the high points, but prevent fuel from being expelled when the pumps are switched on, or entry of air into the pipe under suction feed.

G. Check Valves

The check valves include a spring operated shutter. This opens when the fuel pressure is applied in the flow direction. When the fuel pressure is not available the shutter closes to stop fuel flow in the opposite direction.

5. Operation
(Ref. Fig. 006)

**ON A/C 001-100,

The fuel pumps can be operated either automatically (normal) or manually from the overhead fuel control panel 430VU.

**ON A/C 101-200,

All fuel pumps can be operated from the overhead fuel control panel

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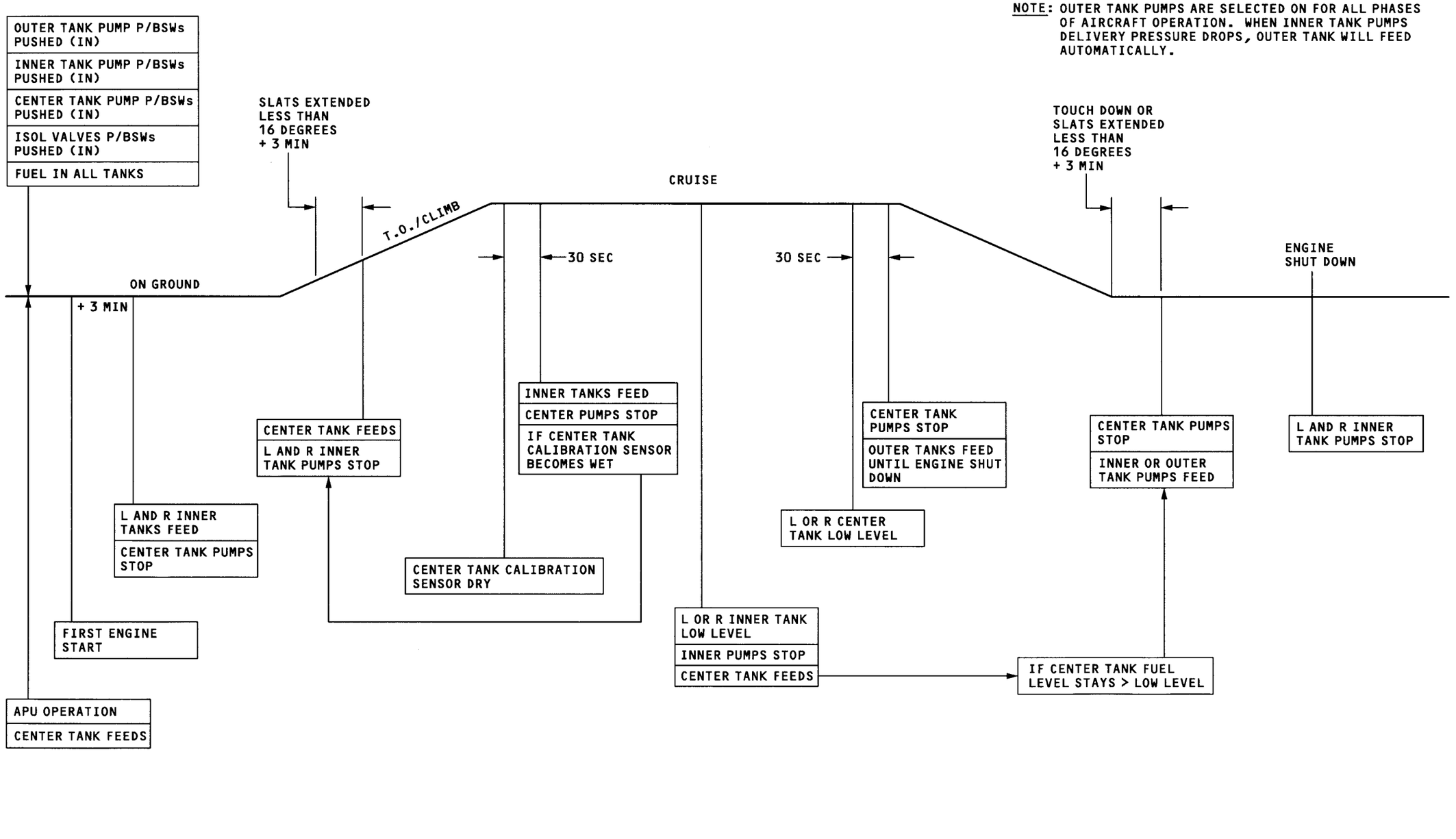

NOTE: OUTER TANK PUMPS ARE SELECTED ON FOR ALL PHASES OF AIRCRAFT OPERATION. WHEN INNER TANK PUMPS DELIVERY PRESSURE DROPS, OUTER TANK WILL FEED AUTOMATICALLY.
OUTER TANK PUMP P/BSWs PUSHED (IN)
INNER TANK PUMP P/BSWs PUSHED (IN)
CENTER TANK PUMP P/BSWs PUSHED (IN)
ISOL VALVES P/BSWs PUSHED (IN)
FUEL IN ALL TANKS
SLATS EXTENDED LESS THAN 16 DEGREES + 3 MIN
CRUISE
TOUCH DOWN OR SLATS EXTENDED LESS THAN 16 DEGREES + 3 MIN
T.O./CLIMB
ON GROUND
+ 3 MIN
30 SEC
30 SEC
ENGINE SHUT DOWN
CENTER TANK FEEDS
L AND R INNER TANK PUMPS STOP
INNER TANKS FEED
CENTER PUMPS STOP
IF CENTER TANK CALIBRATION SENSOR BECOMES WET
CENTER TANK PUMPS STOP
OUTER TANKS FEED UNTIL ENGINE SHUT DOWN
CENTER TANK PUMPS STOP
INNER OR OUTER TANK PUMPS FEED
L AND R INNER TANK PUMPS STOP
L AND R INNER TANKS FEED
CENTER TANK PUMPS STOP
L OR R CENTER TANK LOW LEVEL
CENTER TANK CALIBRATION SENSOR DRY
FIRST ENGINE START
L OR R INNER TANK LOW LEVEL
INNER PUMPS STOP
CENTER TANK FEEDS
IF CENTER TANK FUEL LEVEL STAYS > LOW LEVEL
APU OPERATION
CENTER TANK FEEDS

BM8 28 21 00 0 BJM0 00

Automatic Fuel Feed Sequence
Figure 006

430VU.
All fuel pumps can be operated automatically (normal) or manually except the ACT(s) fuel pump (if ACT(s) installed) which can only be operated manually.

**ON A/C ALL

A. Automatic Fuel Feed Sequence

With fuel in all the tanks and the slats extended the P/BSW's on the fuel panel 430VU, are positioned as follows:
- the AUTO MODE P/BSW released (out) and guarded
- the TRIM TK PUMP P/BSW's pressed (in)
- the CTR TK PUMP P/BSW's pressed (in)
- the INR TK PUMP P/BSW's pressed (in)
- the OUTR TK PUMP P/BSW's pressed (in)
- the ISOL VALVES P/BSW's pressed (in).

**ON A/C 101-200,

- the AUX TK AUTO P/BSW released (out) (if ACT installed).

**ON A/C 101-200,

Post SB 28-2108 For A/C 101-200,

R Post SB 28-2126 For A/C 104-104,

- the ACT AUTO P/BSW released (out) (if ACT(s) installed).

**ON A/C ALL

With the above settings:

- the trim tank pumps are deactivated
- the LO PR legends for the trim tank pumps are inhibited
- the center tank pumps are operating
- the inner tank pumps are deactivated
- the FAULT legends for inner tank pumps are inhibited
- the outer tank pumps are operating (pumps provide fuel at a lower pressure than those in other tanks by action of sequence valves)
- the isolation valves are open.

**ON A/C 101-200,

- (when the ACT(s) are installed) fuel is transferred from the ACT(s) into the center tank when the necessary conditions occur (Ref. 28-28-00,

P. Block 1).

**ON A/C ALL

Fuel is supplied by the center tank pumps for three minutes after the first ENG FUEL lever is positioned to ON during engine starting.
After three minutes and until slats retract after take off:
- the inner tank pumps run
- the center tank pumps stop
- the FAULT legends for the center tank pumps are inhibited.
- the outer tank pumps run continually (supplying fuel at a lower pressure than those in other tanks by action of sequence valves).

Fuel is supplied by the inner tank pumps until after take-off, irrespective of slat position.
After take-off, at slat retraction:
- the center tank pumps run
- the inner tank pumps stop
- the FAULT legends for the inner tank pumps are inhibited
- the outer tank pumps run continually.

**ON A/C 101-200,

NOTE : Pressurization and operation of the ACT(s) transfer system is automatic (Ref. 28-28-00, P. Block 1). The ACT(s) do not supply fuel directly to the engines.

**ON A/C ALL

Fuel is supplied by each center tank pump to its respective engine until thirty seconds after the center tank calibration sensor is uncovered, then:
- the LH and RH inner tank pumps operate
- the center tank pumps stop
- the FAULT legends for center tank pumps are inhibited.

**ON A/C 001-100,

If during inner tank pump feed the center tank calibration sensor rewets due to a flight attitude change or a forward transfer of fuel from the trim tank (Ref. 28-26-00, P. Block 1), then:

NOTE: When fuel is being transferred forward from the trim tank the center tank pumps will run whenever the center tank calibration sensor is rewetted; except during the first inner

tank three minute scavenge.

- the center tank pumps operate
- the inner tank pumps stop
- the FAULT legends for the inner tank pumps are inhibited.

The following explains the fuel feed sequence when the LH inner tank low level sensor becomes dry before the RH inner tank low level sensor.

The cycling between the center tank pumps and the inner tank pumps will continue until the LH inner tank low level sensor becomes dry, then:
- the pumps in both inner tanks will continue to run for 3 minutes, irrespective of whether the center tank calibration sensor rewets or not, then:

NOTE: Only the pumps in the LH inner tank will perform a 3 minute scavenge at this time.

- control of the center tank pumps pass to the center tank low level sensors.

If the center tank low level sensors are wet when control is passed to them, then:
- the center tank pumps operate
- the inner tank pumps stop
- the FAULT legends for the inner tank pumps are inhibited.

If the center tank low level sensors are dry when control is passed to them due to flight attitude, then:
- the RH inner tank pumps which did not perform a 3 minute scavenge continue operating
- the LH inner tank pumps stop
- the FAULT legends for the LH inner tank pumps are inhibited
- the LH outer tank pumps will supply fuel.

If the center tank low level sensors are rewetted by forward transfer from the trim tank, then:

NOTE: When fuel is being transferred forward from the trim tank the center tank pumps will run whenever the center tank low level sensors are rewetted; except during the first inner tank three minute scavenge.

- the center tank pumps operate
- the RH inner tank pumps stop
- the FAULT legends for the RH inner tank pumps are inhibited
- the LH outer tank pumps will not supply fuel.

When one or both center tank low level sensors have been dry for 30 seconds and its respective pump(s) is/are at low pressure then:
- the RH inner tank pumps which did not perform a 3 minute scavenge will

operate
- the LH inner tank pumps which performed a 3 minute scavenge will not operate
- the LH outer tank pumps will supply fuel.
- the center tank pumps stop.

When the RH inner tank low level sensor becomes dry the pumps will perform a 3 minute scavenge.

If during the RH inner tank 3 minute scavenge the center tank low level sensors re-wet, then:
- the center tank pumps operate
- the RH inner tank pumps stop
- the FAULT legends for the RH inner tank pumps are inhibited
- the LH outer tank pumps will not supply fuel.

The cycling between the center tank pumps and the RH inner tank pumps will continue until the RH inner tank pumps complete a 3 minute uninterrupted scavenge or the pump low pressure FAULT legends come on.

Then, providing the center tank low level sensors remain dry:
- the LH outer tank pumps will continue to supply fuel
- the RH inner tank pumps stop
- the FAULT legends for the RH inner tank pumps are inhibited
- the RH outer tank pumps will supply fuel.

If the center tank low level sensors are rewetted by forward transfers from the trim tank, then:
- the center tank pumps operate
- the outer tank pumps do not supply fuel.

**ON A/C 101-200,

If during inner-tank pump feed the center-tank calibration sensor rewets due to a flight attitude change or a forward transfer of fuel from the trim tank (Ref. 28-26-00, P. Block 1) or ACT(s) (if installed) (Ref. 28-28-00, P. Block 1), then:

NOTE: When fuel is being transferred forward from the trim tank or ACT(s) the center tank pumps will run whenever the center tank calibration sensor is rewetted; except during the first inner tank three minute scavenge.

- the center tank pumps operate
- the inner tank pumps stop
- the FAULT legends for the inner tank pumps are inhibited.

The following explains the fuel feed sequence when the LH inner tank low level sensor becomes dry before the RH inner tank low level sensor.

The cycling between the center tank pumps and the inner tank pumps will continue until the LH inner tank low level sensor becomes dry, then:
- the pumps in both inner tanks will continue to run for 3 minutes, irrespective of whether the center tank calibration sensor rewets or not, then:

NOTE: Only the pumps in the LH inner tank will perform a 3 minute scavenge at this time.

- control of the center tank pumps pass to the center tank low level sensors.

If the center tank low level sensors are wet when control is passed to them, then:
- the center tank pumps operate
- the inner tank pumps stop
- the FAULT legends for the inner tank pumps are inhibited.

If the center tank low level sensors are dry when control is passed to them due to flight attitude, then:
- the RH inner tank pumps which did not perform a 3 minute scavenge continue operating
- the LH inner tank pumps stop
- the FAULT legends for the LH inner tank pumps are inhibited
- the LH outer tank pumps will supply fuel.

If the center tank low level sensors are rewetted by forward transfer from the trim tank or ACT(s), then:

NOTE: When fuel is being transferred forward from the trim tank or ACT(s) the center tank pumps will run whenever the center tank low level sensors are rewetted; except during the first inner tank three minute scavenge.

- the center tank pumps operate
- the RH inner tank pumps stop
- the FAULT legends for the RH inner tank pumps are inhibited
- the LH outer tank pumps will not supply fuel.

When one or both center tank low level sensors have been dry for 30 seconds and its respective pump(s) is/are at low pressure then:
- the RH inner tank pumps which did not perform a 3 minute scavenge will operate
- the LH inner tank pumps which performed a 3 minute scavenge will not operate
- the LH outer tank pumps will supply fuel
- the center tank pumps stop.

When the RH inner tank low level sensor becomes dry the pumps will perform a 3 minute scavenge.

If during the RH inner tank 3 minute scavenge the center tank low level sensors re-wet, then:
- the center tank pumps operate
- the RH inner tank pumps stop
- the FAULT legends for the RH inner tank pumps are inhibited
- the LH outer tank pumps will not supply fuel.

The cycling between the center tank pumps and the RH inner tank pumps will continue until the RH inner tank pumps complete a 3 minute uninterrupted scavenge or the pump low pressure FAULT legends come on.

Then, providing the center tank low level sensors remain dry:
- the LH outer tank pumps will continue to supply fuel
- the RH inner tank pumps stop
- the FAULT legends for the RH inner tank pumps are inhibited
- the RH outer tank pumps will supply fuel.

If the center tank low level sensors are rewetted by forward transfers from the trim tank or ACT(s), then:
- the center tank pumps operate
- the outer tank pumps do not supply fuel.

**ON A/C 001-100,

In flight with slats retracted fuel transfer from and to the trim tank will take place automatically, controlled by the CG Computer.

NOTE : Fuel transfer from the trim tank will always be into the center tank.

**ON A/C 101-200,

In flight, with the slats retracted, fuel transfer forward will take place automatically, fuel transfer aft takes place at approximately 20,000 ft, controlled by the CG Computer. Fuel transfer from the ACT(s) (if installed) will take place automatically although this is not controlled by the CG Computer under normal operation.

NOTE : Fuel transfer from the trim tank and ACT(s) (if installed) will always be into the center tank.

**ON A/C 001-100,

The amount of fuel transferred will be determined by the CG Computer until the inner tanks are empty. Then fuel will be transferred in increments, first of 1000 Kg (2200 lb) and thereafter 500 Kg (1100 lb) amounts, until either the trim tank is empty or the aircraft descends below 20,000ft. Below 20,000ft any fuel remaining in the trim tank will automatically be transferred to the center tank.

During trim forward transfer the center tank pumps will run whenever the center tank calibration sensors or low level sensors are rewetted.

**ON A/C 101-200,

The amount of fuel transferred will be determined by the CG Computer until the inner tanks are empty. Then fuel will be transferred in increments, first of 2200 lb (1000 Kg) and thereafter 1100 lb (500 Kg) amounts, until either the trim tank is empty or the aircraft descends below 20,000ft. Below 20,000ft any fuel remaining in the trim tank will automatically be transferred to the center tank.

During trim forward transfer the center tank pumps will run whenever the center tank calibration sensors or low level sensors are rewetted.

**ON A/C ALL

During aircraft deceleration or pitch down attitude, the fuel in the center tank runs forward uncovering the pumps causing them to go low pressure. The time delay close relays (166QA and 167QA), inhibit the low pressure signal to the Flight Warning System for 5 minutes.
The outer tank pumps will supply fuel to the engines until the center tank pumps are reimmersed in fuel.

R Three minutes after slats extend (on approach for landing) with fuel in
R and feeding from the center tank:
R - the center tank pumps stop
R - the FAULT legends for the center tank pumps are inhibited.

R Three minutes after slats extend (on approach for landing) with fuel in
R the center and inner tanks:
R - the inner tank pumps run
R - the center tank pumps stop
R - the FAULT legends for the center tank pumps are inhibited.

R On engine shut down, with fuel in the center tank (following the landing
R sequence above), fuel feed will revert to the center tank pumps.

B. Manual Control

On panel 430VU:
- outer tank pumps are selected on (pumps supply fuel at a reduced pressure by action of the sequence valves)
- pumps in the center and inner tanks are manually selected in turn to supply fuel from the required tanks.
- trim tank pumps are selected by pressing the AUTO MODE and TRIM TK PUMP pushbutton switch(es), to transfer fuel forward.
- inner and outer wing tank isolation valves can be closed by operating the appropriate guarded ISOL VALVES pushbutton switches.

- trim tank isolation valve can be closed by operating the guarded **TRIM TK ISOL VALVE** pushbutton switch.

  NOTE : **TRIM TK ISOL VALVE** pushbutton switch selected **OFF** overrides selection of the **AUTO MODE** switch and fuel will not transfer.

**ON A/C 101-200,

- (when the **ACT** is installed) the **ACT** pump is selected by pressing (in) the **AUX TK AUTO P/BSW** (Ref. 28-28-00, P. Block 1).

  NOTE : To ensure adequate pump performance it will be necessary to descend to 27,000 ft.

**ON A/C 101-200,

Post SB 28-2105 For A/C 101-200,

R Post SB 28-2126 For A/C 104-104,

- (when the **ACT**(s) are installed) the **ACT** pump is selected by pressing (in) the **ACT AUTO P/BSW** (Ref. 28-28-00, P. Block 1).

  NOTE : To ensure adequate pump performance it will be necessary to descend to 27,000 ft.

**ON A/C ALL

C. Fuel Feed Fault Indication

A single amber warning legend will come on when:
- a pump failure occurs whilst the pump is operating.

Both center tank pump **FAULT** legends will come on when:
- center tank empty; any pair of inner tank pumps not energized or any center tank pump energized.

All inner tank pump **FAULT** legends will come on when:
- center tank containing fuel; any inner tank pump is energized or both

6. Power Supplies

The figures that follow show the electrical power supplies for the fuel pump system from the system circuit breakers. For details of the circuit breaker panels, bus bar identity and the electrical distribution for the fuel pump system refer to 28-00-00. The figures show the **115VAC** supplies that power the fuel pumps and the **28VDC** supplies that operate the system control relays. Only the left side fuel pumps are shown, the right side pumps are similar.

Abbreviations given in the figures are used to identify the inputs/ouputs from other systems, these are as follows:

XE - 24-24-00	QL - 28-26-00	WY - 31-69-00
XC - 24-25-00	QT - 28-42-00	GB - 32-62-00
CV - 27-50-00	QJ - 28-46-00	LP - 33-14-00
QQ - 28-11-00	GU - 31-46-00	LT - 33-16-00
QE - 28-23-00	WW - 31-53-00	KC - 76-12-00
QU - 28-25-00	WV - 31-55-00 (SDAC)	

(Ref. Fig. 007)

**ON A/C ALL

Post SB 24-2041 For A/C 001-003,

(Ref. Fig. 008)

**ON A/C 001-003,

(Ref. Fig. 009)

**ON A/C ALL

Post SB 28-2123 For A/C 001-003,005-100,106-200,

Post SB 24-2041 For A/C 001-003,

Post SB 28-2062 For A/C 001-003,

(Ref. Fig. 010)

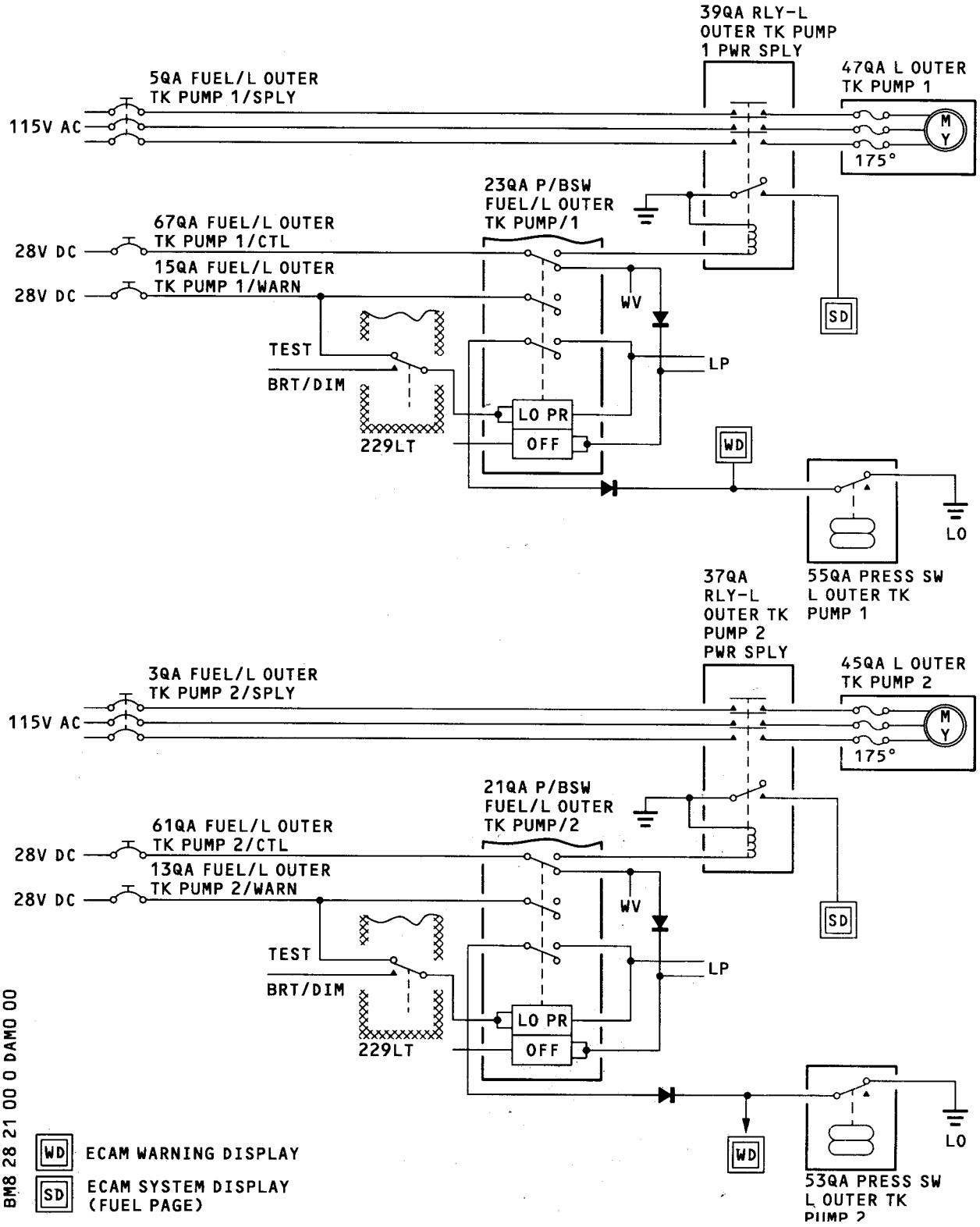
**ON A/C 001-003,

(Ref. Fig. 011)
(Ref. Fig. 012) (Sheet 1/2)

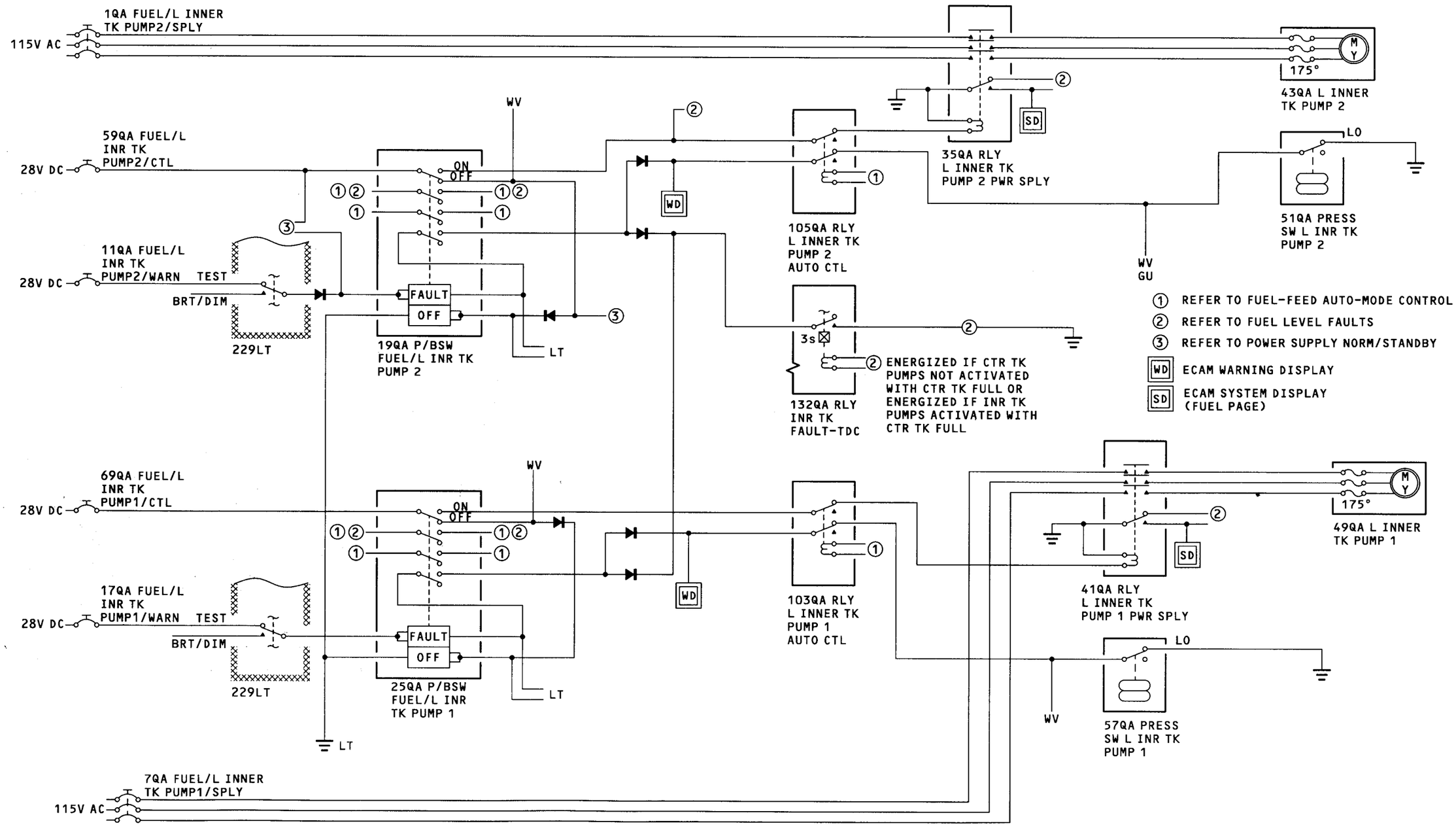
**ON A/C 006-100,

(Ref. Fig. 012) (Sheet 1/2)

**ON A/C 001-005, 101-200,

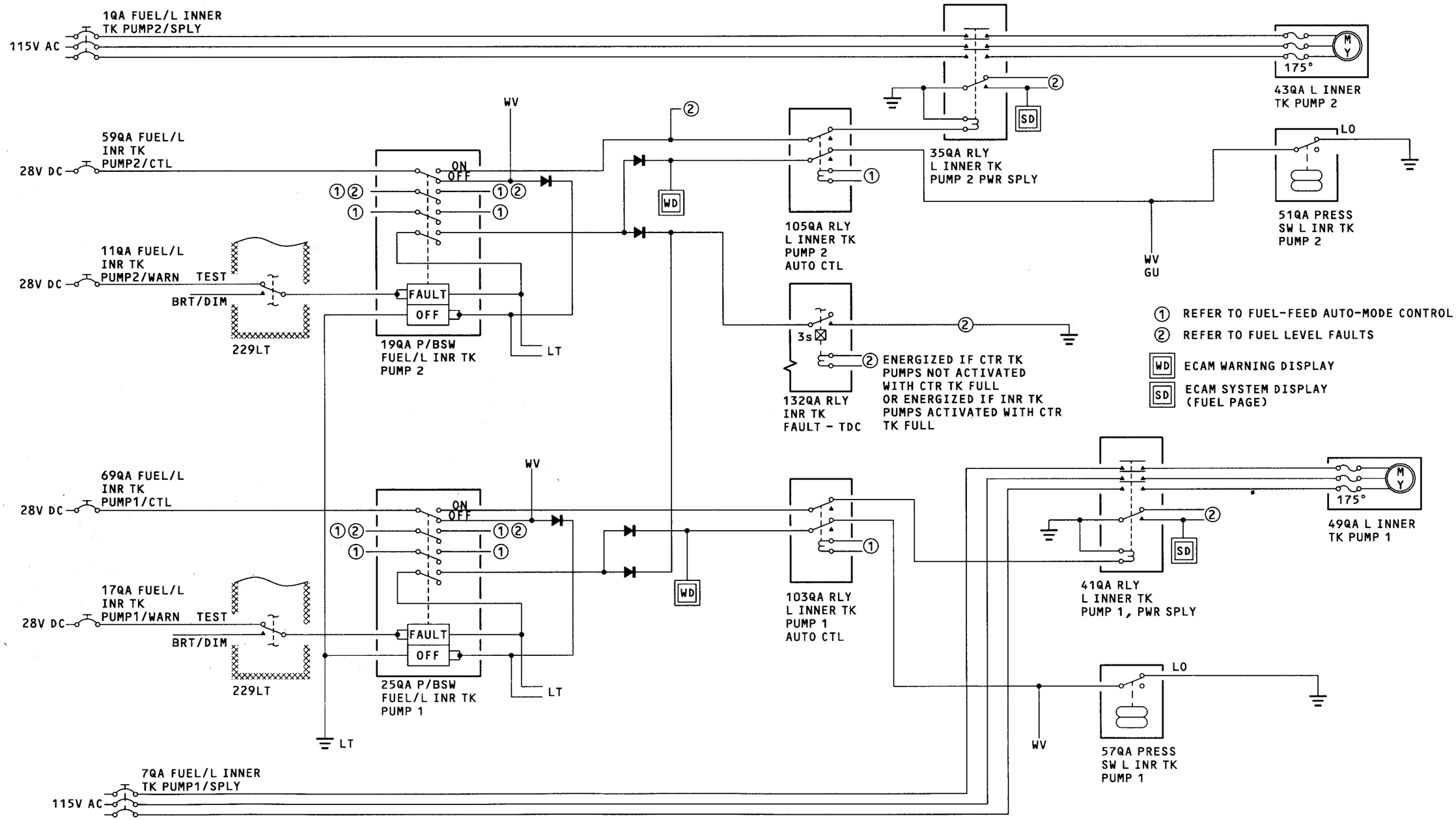


Left Outer-Tank Fuel-Pumps - Circuit Diagram
Figure 007


1QA FUEL/L INNER TK PUMP2/SPLY
115V AC
59QA FUEL/L INR TK PUMP2/CTL
28V DC
11QA FUEL/L INR TK PUMP2/WARN
28V DC
TEST
BRT/DIM
229LT
WV
ON
OFF
FAULT
OFF
19QA P/BSW FUEL/L INR TK PUMP 2
LT
WD
105QA RLY L INNER TK PUMP 2 AUTO CTL
35QA RLY L INNER TK PUMP 2 PWR SPLY
SD
43QA L INNER TK PUMP 2
M Y
175°
LO
51QA PRESS SW L INR TK PUMP 2
WV GU
3s
132QA RLY INR TK FAULT-TDC
ENERGIZED IF CTR TK PUMPS NOT ACTIVATED WITH CTR TK FULL OR ENERGIZED IF INR TK PUMPS ACTIVATED WITH CTR TK FULL
REFER TO FUEL-FEED AUTO-MODE CONTROL
REFER TO FUEL LEVEL FAULTS
REFER TO POWER SUPPLY NORM/STANDBY
ECAM WARNING DISPLAY
ECAM SYSTEM DISPLAY (FUEL PAGE)
69QA FUEL/L INR TK PUMP1/CTL
28V DC
17QA FUEL/L INR TK PUMP1/WARN
28V DC
TEST
BRT/DIM
229LT
25QA P/BSW FUEL/L INR TK PUMP 1
103QA RLY L INNER TK PUMP 1 AUTO CTL
41QA RLY L INNER TK PUMP 1 PWR SPLY
49QA L INNER TK PUMP 1
57QA PRESS SW L INR TK PUMP 1
7QA FUEL/L INNER TK PUMP1/SPLY
115V AC

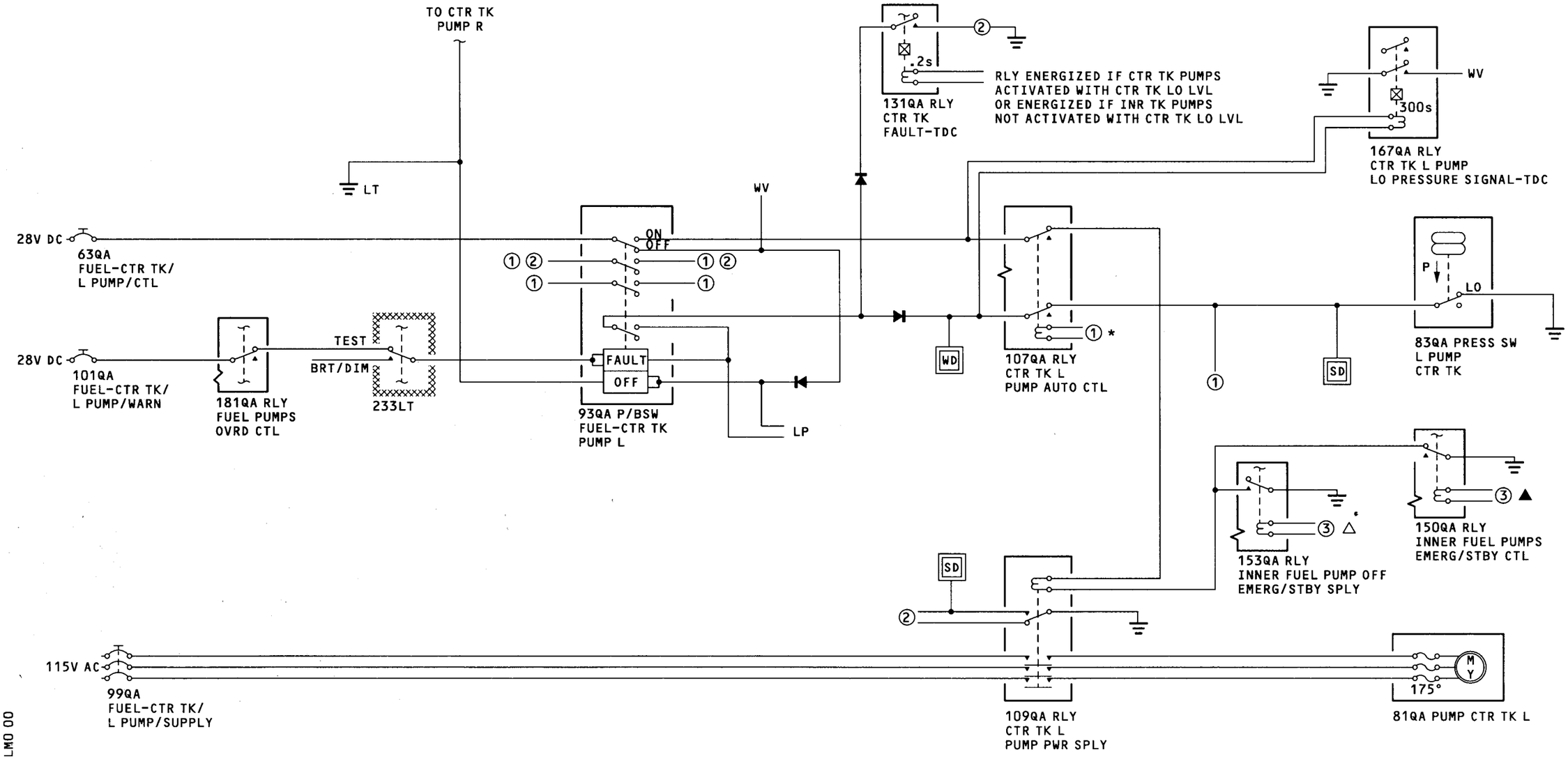
BM8 28 21 00 0 DEMO 00

Left Inner-Tank Fuel-Pumps - Circuit Diagram
Figure 008


1QA FUEL/L INNER TK PUMP2/SPLY
115V AC
59QA FUEL/L INR TK PUMP2/CTL
28V DC
11QA FUEL/L INR TK PUMP2/WARN
28V DC
TEST
BRT/DIM
229LT
WV
ON
OFF
FAULT
OFF
19QA P/BSW FUEL/L INR TK PUMP 2
LT
WD
105QA RLY L INNER TK PUMP 2 AUTO CTL
35QA RLY L INNER TK PUMP 2 PWR SPLY
SD
43QA L INNER TK PUMP 2
175°
M
Y
LO
51QA PRESS SW L INR TK PUMP 2
WV GU
3s
132QA RLY INR TK FAULT - TDC
ENERGIZED IF CTR TK PUMPS NOT ACTIVATED WITH CTR TK FULL OR ENERGIZED IF INR TK PUMPS ACTIVATED WITH CTR TK FULL
REFER TO FUEL-FEED AUTO-MODE CONTROL
REFER TO FUEL LEVEL FAULTS
ECAM WARNING DISPLAY
ECAM SYSTEM DISPLAY (FUEL PAGE)
69QA FUEL/L INR TK PUMP1/CTL
17QA FUEL/L INR TK PUMP1/WARN
25QA P/BSW FUEL/L INR TK PUMP 1
103QA RLY L INNER TK PUMP 1 AUTO CTL
41QA RLY L INNER TK PUMP 1, PWR SPLY
49QA L INNER TK PUMP 1
57QA PRESS SW L INR TK PUMP 1
7QA FUEL/L INNER TK PUMP1/SPLY

BM8 28 21 00 0 DLMO 00

Left Inner-Tank Fuel-Pumps - Circuit Diagram
Figure 009



NOTE :

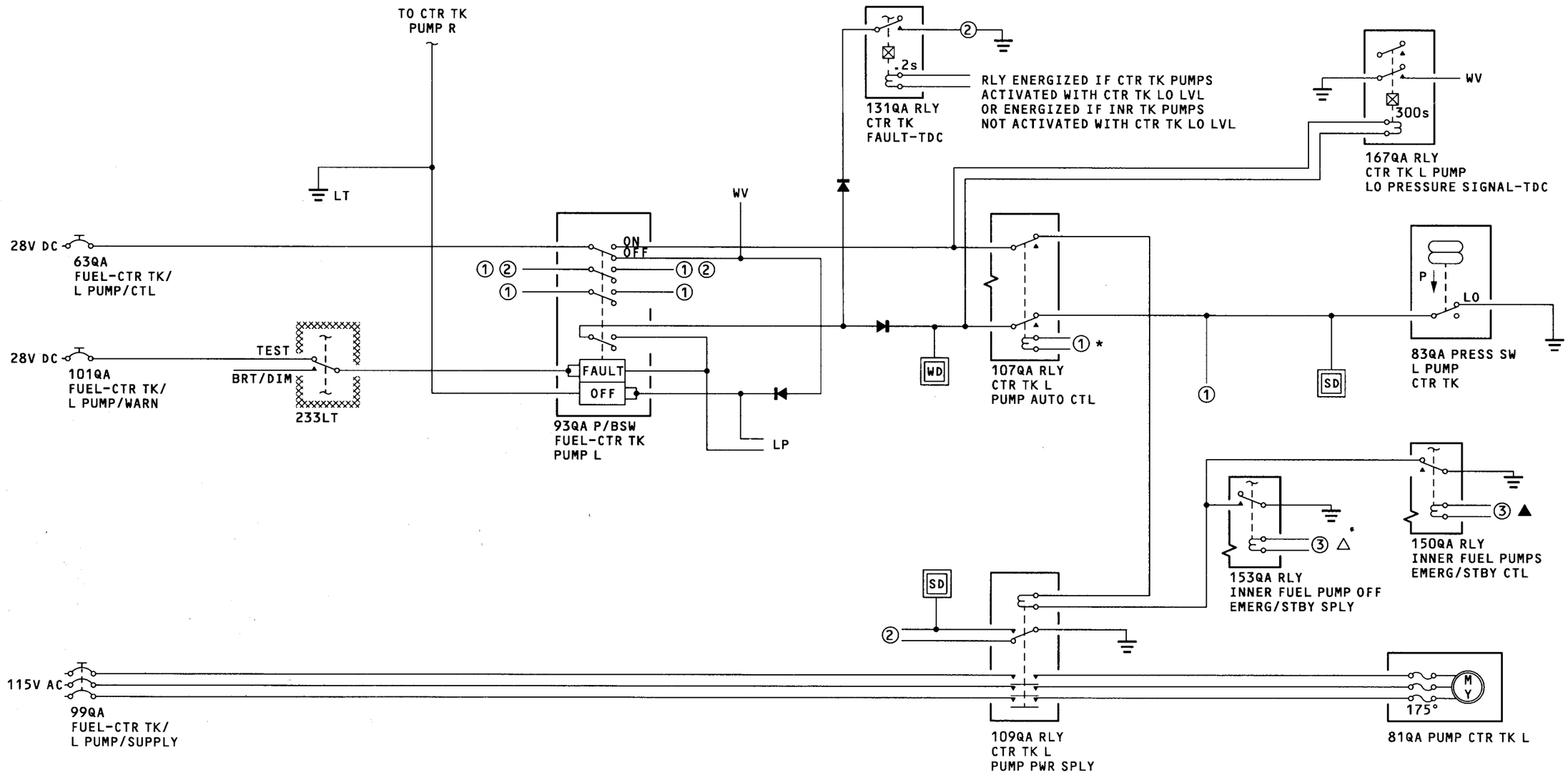
① REFER TO FUEL-FEED AUTO-MODE CONTROL
② REFER TO FUEL LEVEL FAULTS
③ REFER TO FUEL-PUMP TRANSFER POWER-SUPPLY NORM/STANDBY

WD ECAM WARNING DISPLAY
SD ECAM SYSTEM DISPLAY (FUEL PAGE)
* RLY ENERGIZED WHEN CTR TK LEFT AND RIGHT IS LOW LEVEL

△ RLY ENERGIZED IN EMERG/STBY MODE WITH L INR TK PUMP 2 P/BSW IN OFF POSITION
▲ RLY ENERGIZED IN EMERG/STBY MODE

BM8 28 21 00 0 ELMO 00

Center-Tank Fuel-Pump Left - Circuit Diagram
Figure 010



NOTE :

① REFER TO FUEL-FEED AUTO-MODE CONTROL
② REFER TO FUEL LEVEL FAULTS
③ REFER TO FUEL-PUMP TRANSFER POWER-SUPPLY NORM/STANDBY

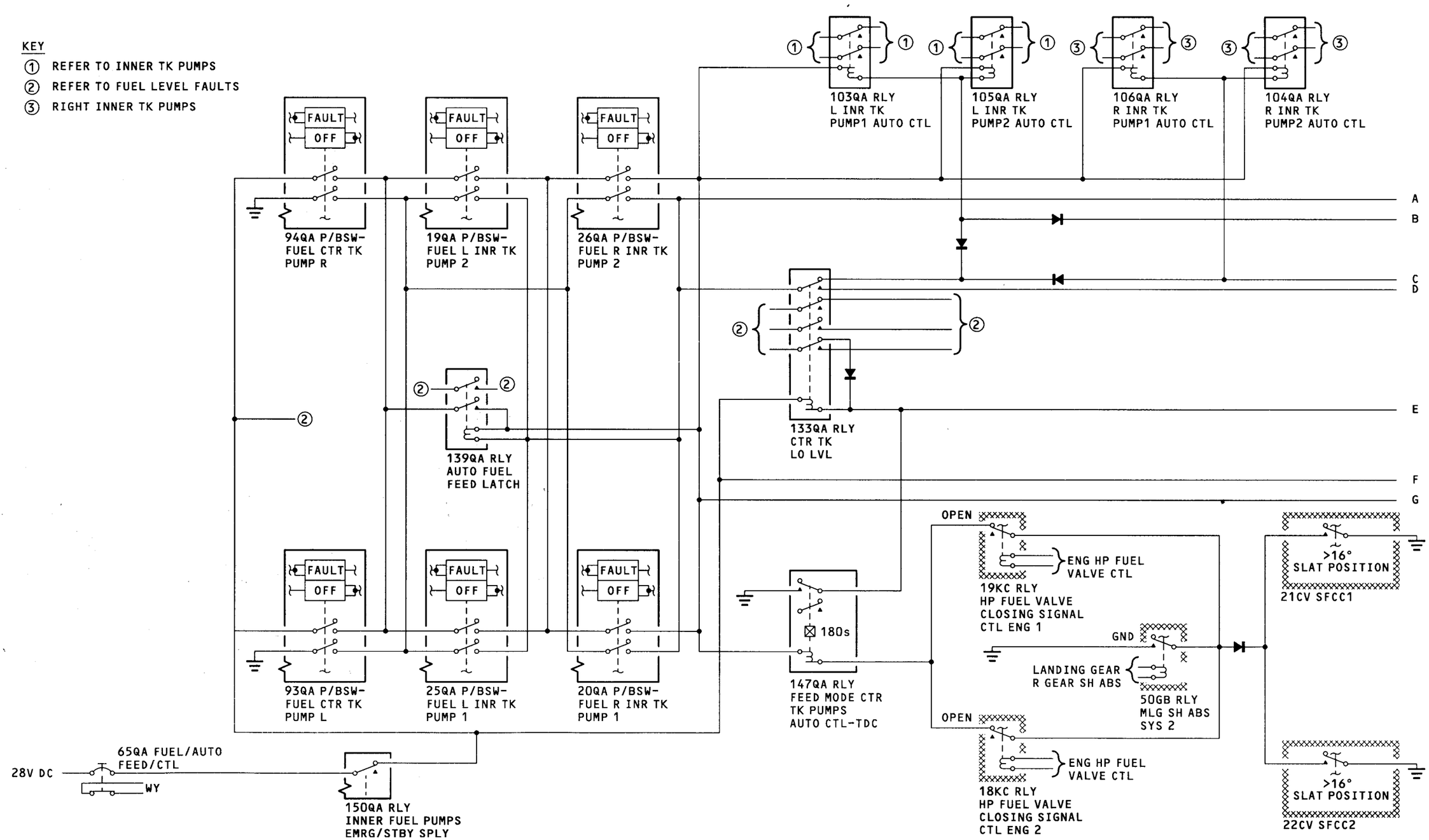
WD ECAM WARNING DISPLAY
SD ECAM SYSTEM DISPLAY (FUEL PAGE)
* RLY ENERGIZED WHEN CTR TK LEFT AND RIGHT IS LOW LEVEL

△ RLY ENERGIZED IN EMERG/STBY MODE WITH L INR TK PUMP 2 P/BSW IN OFF POSITION
▲ RLY ENERGIZED IN EMERG/STBY MODE

BM8 28 21 00 0 EPM0 00

Center-Tank Fuel-Pump Left - Circuit Diagram
Figure 011

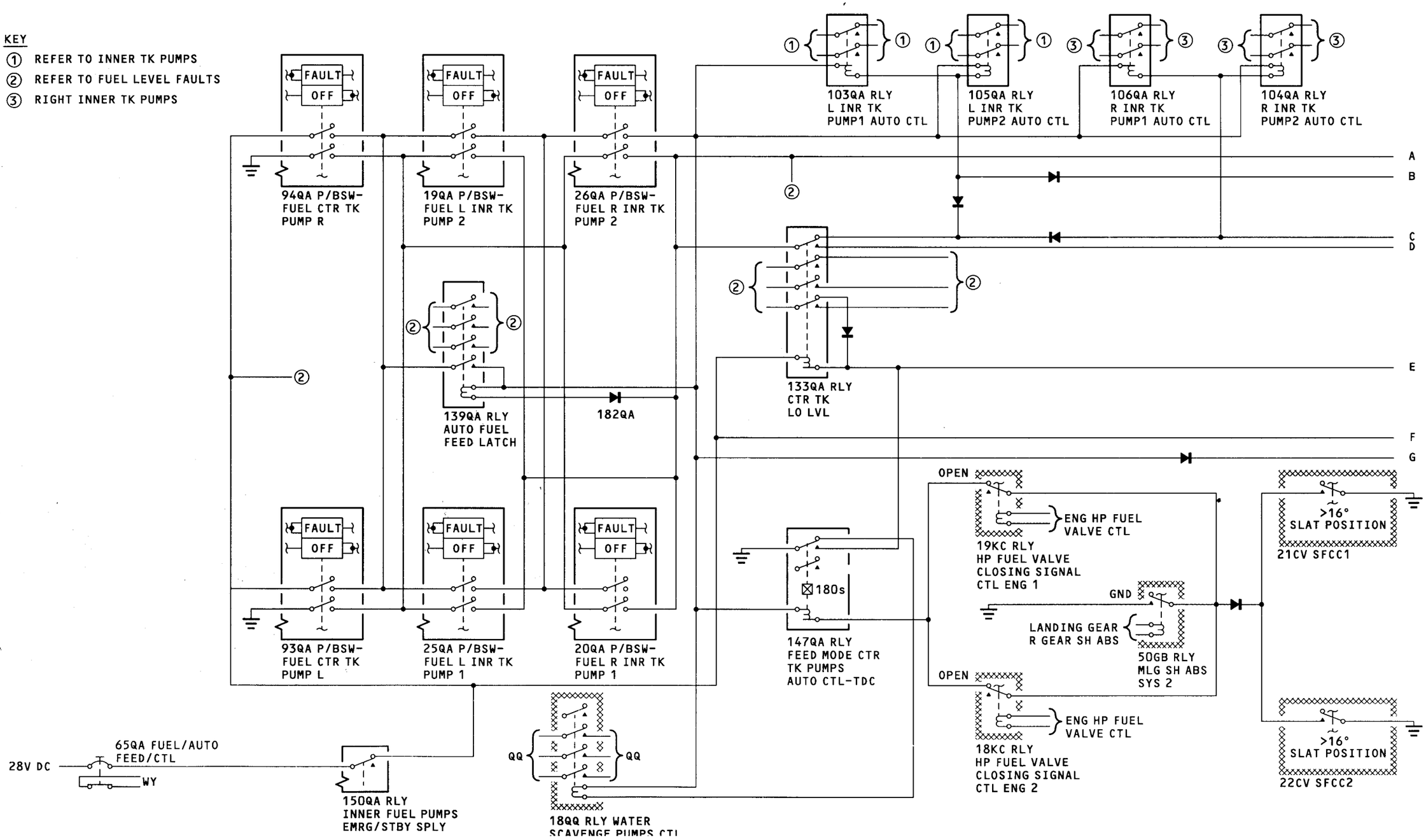
KEY
① REFER TO INNER TK PUMPS
② REFER TO FUEL LEVEL FAULTS
③ RIGHT INNER TK PUMPS



BM8 28 21 00 0 GAMD 00

Fuel-Feed Auto-Mode Control - Circuit Diagram
(Sheet 1 of 2)
Figure 012

KEY
① REFER TO INNER TK PUMPS
② REFER TO FUEL LEVEL FAULTS
③ RIGHT INNER TK PUMPS



BM8 28 21 00 0 GAMF 00

Fuel-Feed Auto-Mode Control - Circuit Diagram
(Sheet 1 of 2)
Figure 012

Post SB 28-2049 For A/C 001-003,

(Ref. Fig. 012) (Sheet 1/2)

**ON A/C ALL

(Ref. Fig. 012) (Sheet 2/2)

**ON A/C 001-003,

(Ref. Fig. 013)

**ON A/C 006-100,

(Ref. Fig. 014) (Sheet 1/2)

**ON A/C 001-005, 101-200,

Post SB 24-2041 For A/C 001-003,

(Ref. Fig. 015)

**ON A/C 006-100,

(Ref. Fig. 014) (Sheet 2/2)

**ON A/C 001-003,

(Ref. Fig. 016)

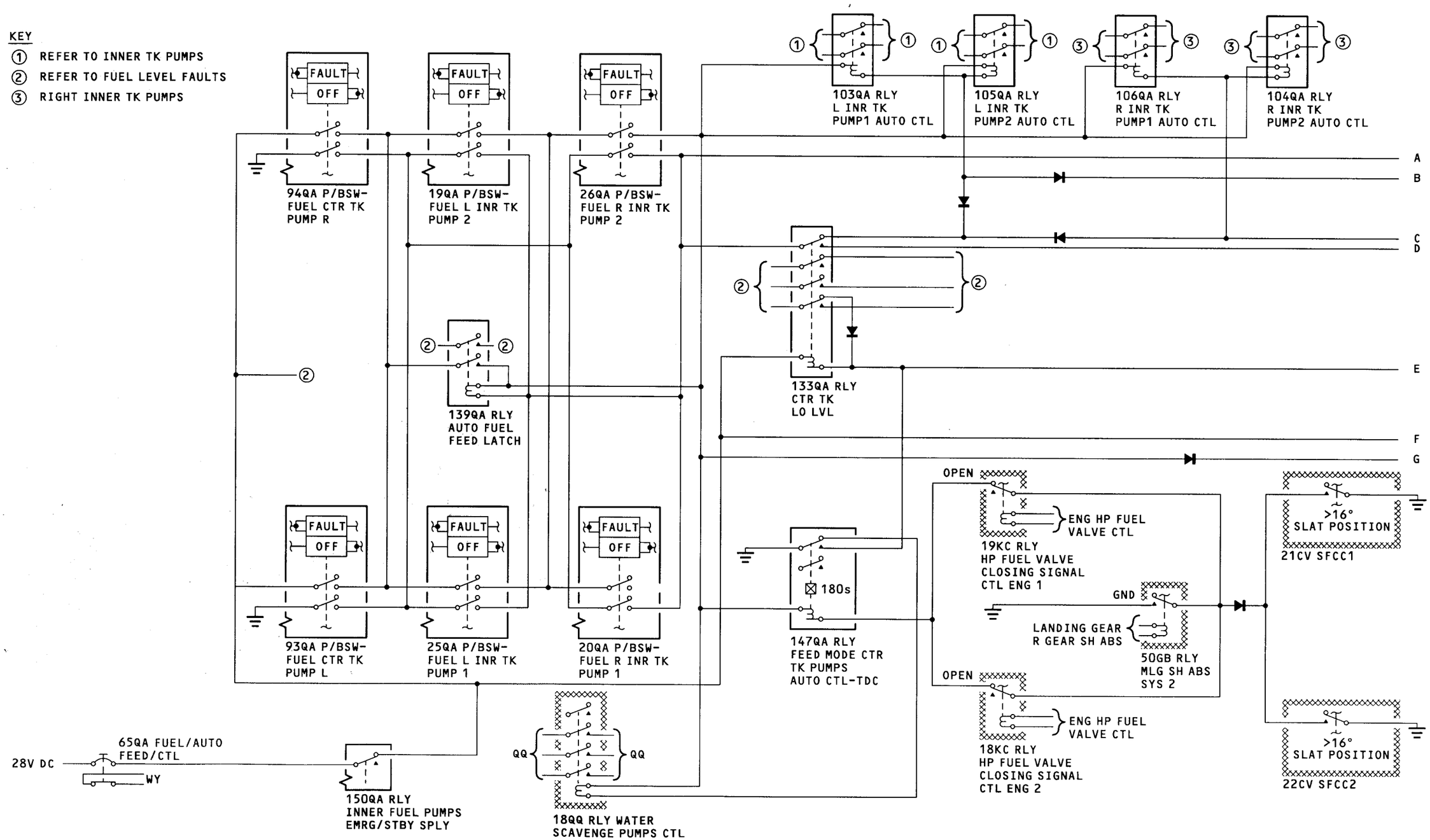
**ON A/C ALL

Post SB 24-2041 For A/C 001-003,

(Ref. Fig. 017)

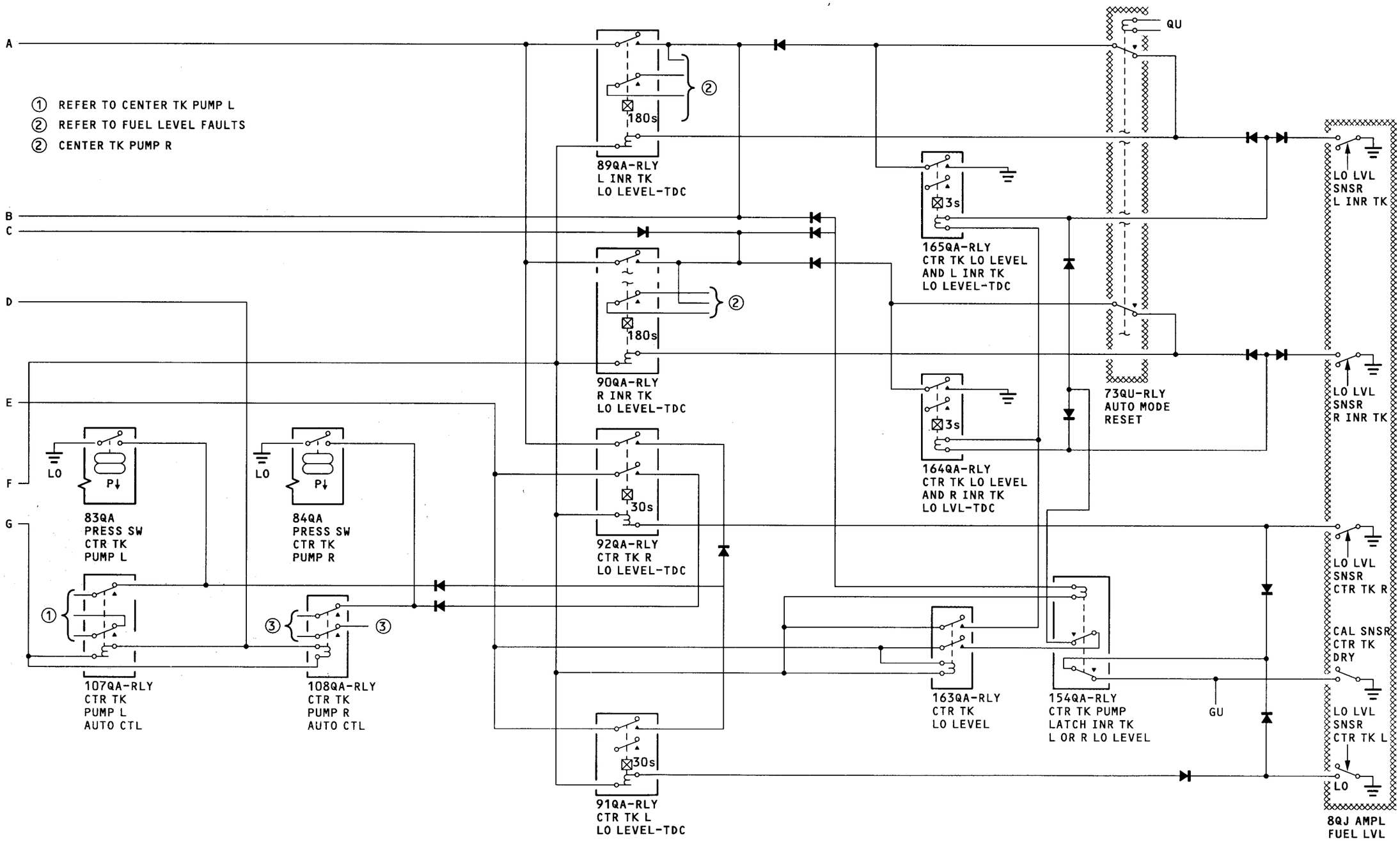
INTENTIONALLY BLANK

KEY
① REFER TO INNER TK PUMPS
② REFER TO FUEL LEVEL FAULTS
③ RIGHT INNER TK PUMPS



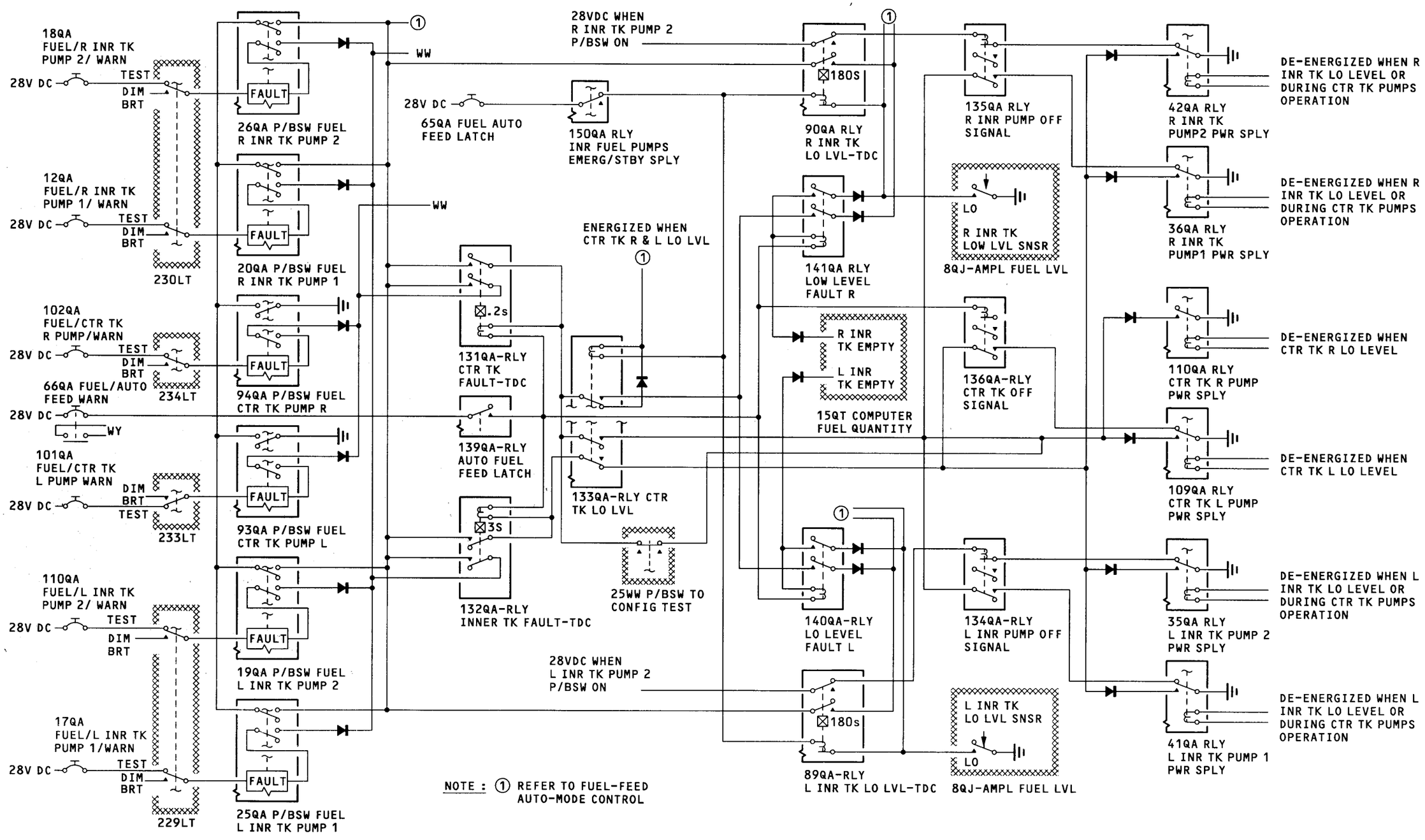
BM8 28 21 00 0 GAMJ 00

Fuel-Feed Auto-Mode Control - Circuit Diagram
(Sheet 1 of 2)
Figure 012

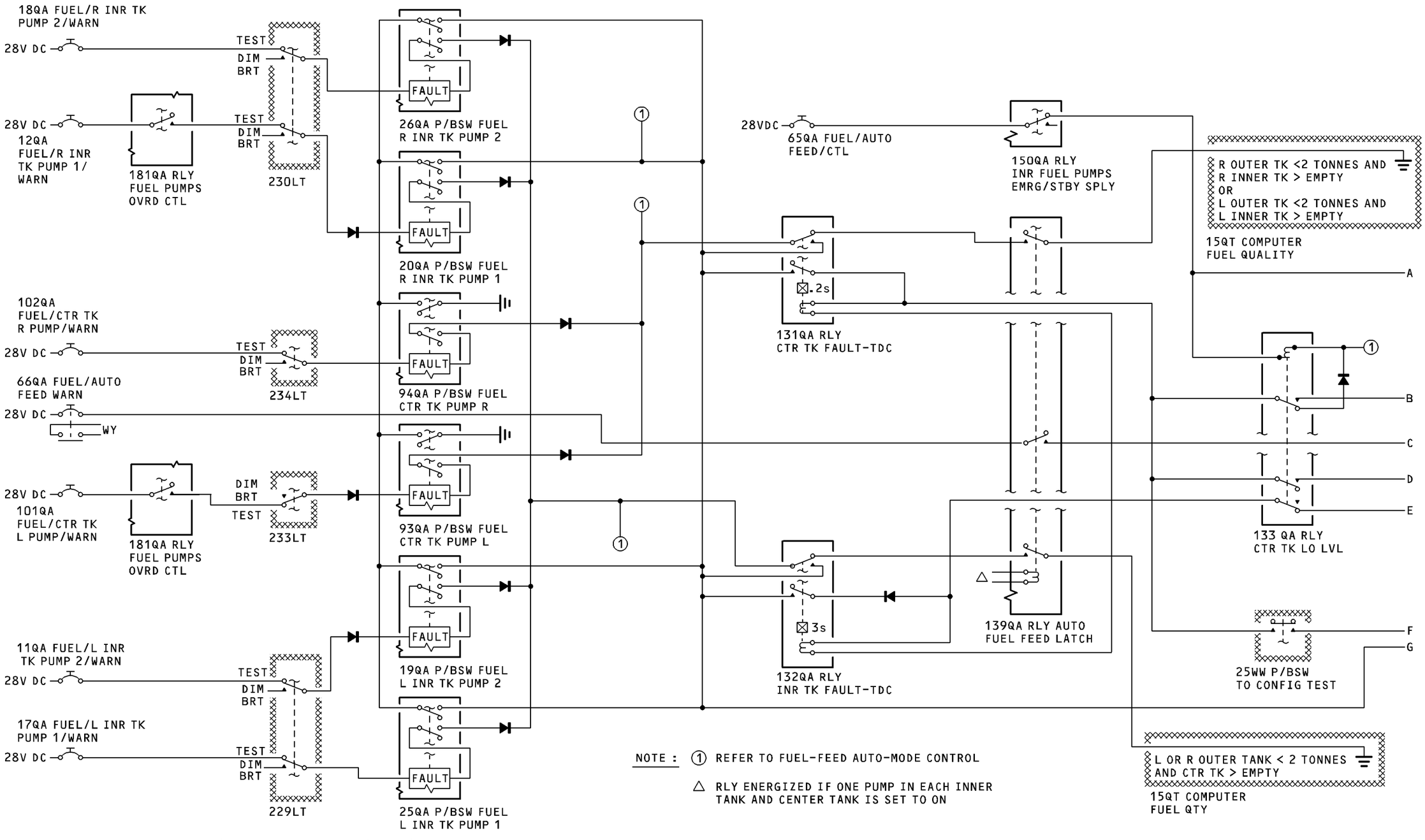


BM8 28 21 00 0 GAMT 00

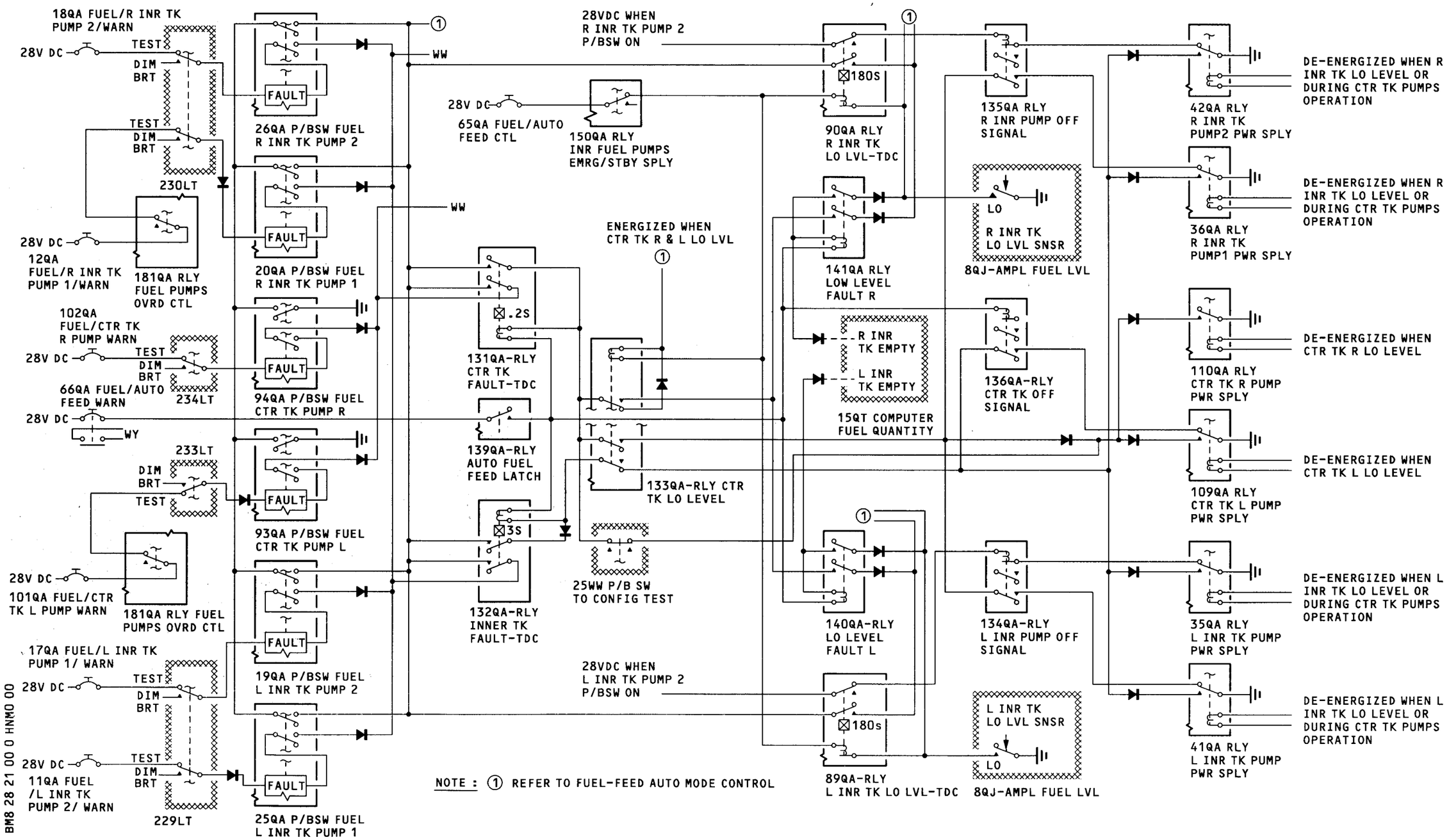
Fuel-Feed Auto-Mode Control - Circuit Diagram
(Sheet 2 of 2)
Figure 012



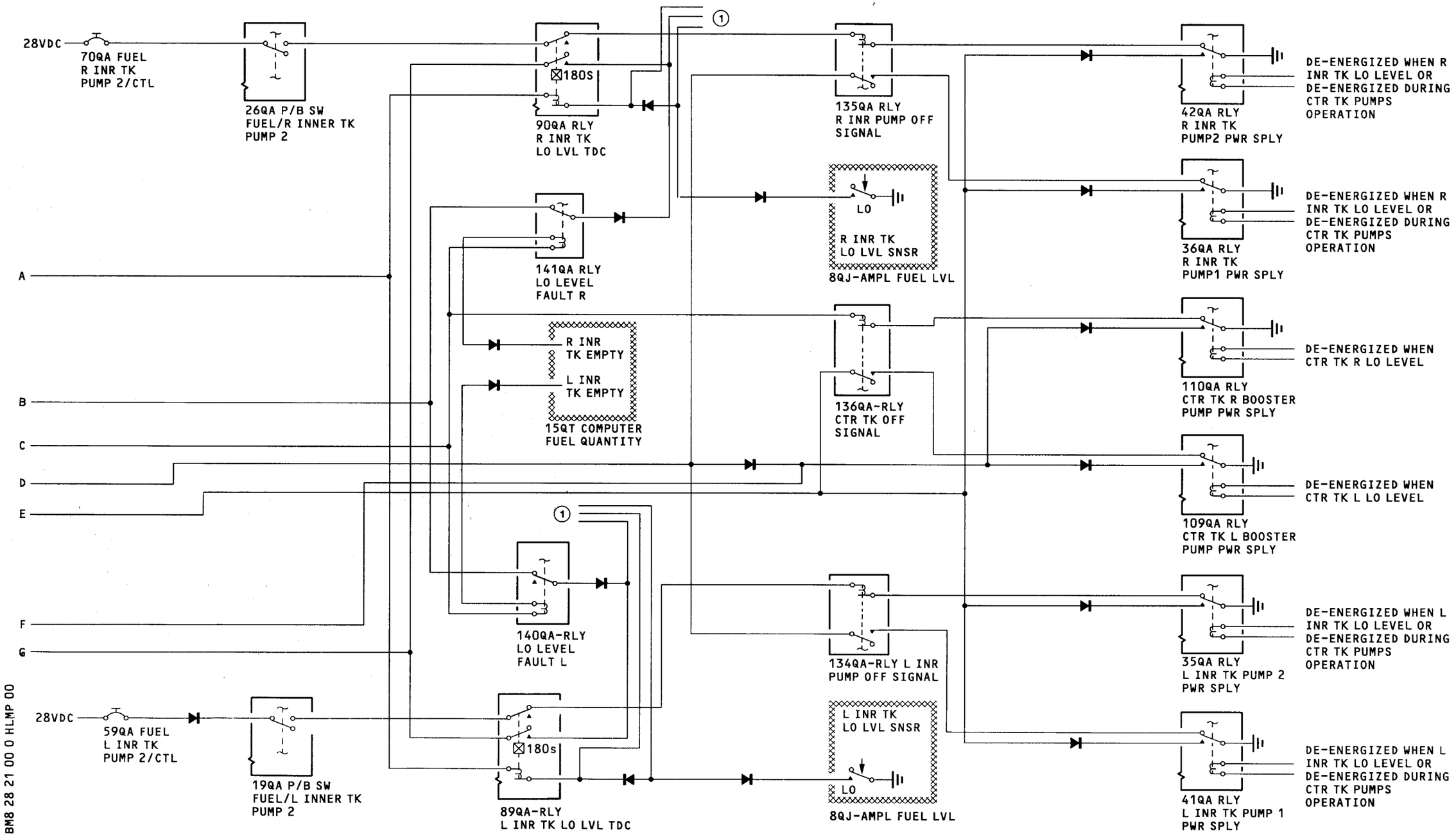
Fuel Level Faults - Circuit Diagram
Figure 013



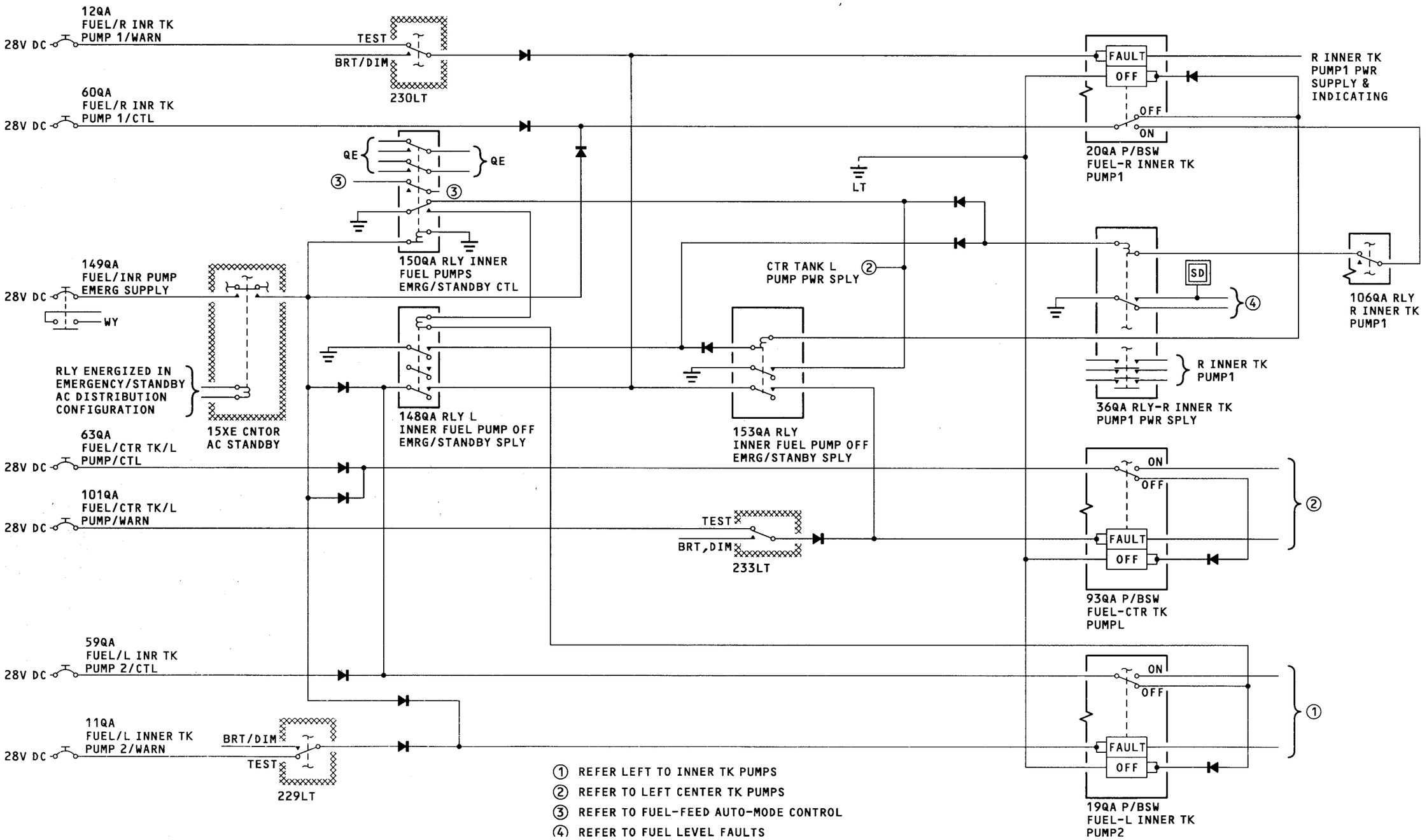
Fuel Level Faults - Circuit Diagram
(Sheet 1 of 2)
Figure 014


18QA FUEL/R INR TK PUMP 2/WARN
28V DC
TEST
DIM BRT
TEST
DIM BRT
230LT
28V DC
12QA FUEL/R INR TK PUMP 1/WARN
181QA RLY FUEL PUMPS OVRD CTL
102QA FUEL/CTR TK R PUMP WARN
28V DC
TEST
DIM BRT
66QA FUEL/AUTO FEED WARN
234LT
28V DC
WY
233LT
DIM BRT
TEST
28V DC
101QA FUEL/CTR TK L PUMP WARN
181QA RLY FUEL PUMPS OVRD CTL
17QA FUEL/L INR TK PUMP 1/ WARN
28V DC
TEST
DIM BRT
28V DC
TEST
DIM BRT
11QA FUEL /L INR TK PUMP 2/ WARN
229LT
FAULT
26QA P/BSW FUEL R INR TK PUMP 2
20QA P/BSW FUEL R INR TK PUMP 1
94QA P/BSW FUEL CTR TK PUMP R
93QA P/BSW FUEL CTR TK PUMP L
19QA P/BSW FUEL L INR TK PUMP 2
25QA P/BSW FUEL L INR TK PUMP 1
WW
WW
28VDC WHEN R INR TK PUMP 2 P/BSW ON
28V DC
65QA FUEL/AUTO FEED CTL
150QA RLY INR FUEL PUMPS EMRG/STBY SPLY
ENERGIZED WHEN CTR TK R & L LO LVL
.2S
131QA-RLY CTR TK FAULT-TDC
139QA-RLY AUTO FUEL FEED LATCH
3S
132QA-RLY INNER TK FAULT-TDC
133QA-RLY CTR TK LO LEVEL
25WW P/B SW TO CONFIG TEST
28VDC WHEN L INR TK PUMP 2 P/BSW ON
180S
90QA RLY R INR TK LO LVL-TDC
141QA RLY LOW LEVEL FAULT R
R INR TK EMPTY
L INR TK EMPTY
15QT COMPUTER FUEL QUANTITY
140QA-RLY LO LEVEL FAULT L
180s
89QA-RLY L INR TK LO LVL-TDC
135QA RLY R INR PUMP OFF SIGNAL
LO
R INR TK LO LVL SNSR
8QJ-AMPL FUEL LVL
136QA-RLY CTR TK OFF SIGNAL
134QA-RLY L INR PUMP OFF SIGNAL
L INR TK LO LVL SNSR
LO
8QJ-AMPL FUEL LVL
42QA RLY R INR TK PUMP2 PWR SPLY
DE-ENERGIZED WHEN R INR TK LO LEVEL OR DURING CTR TK PUMPS OPERATION
36QA RLY R INR TK PUMP1 PWR SPLY
DE-ENERGIZED WHEN R INR TK LO LEVEL OR DURING CTR TK PUMPS OPERATION
110QA RLY CTR TK R PUMP PWR SPLY
DE-ENERGIZED WHEN CTR TK R LO LEVEL
109QA RLY CTR TK L PUMP PWR SPLY
DE-ENERGIZED WHEN CTR TK L LO LEVEL
35QA RLY L INR TK PUMP PWR SPLY
DE-ENERGIZED WHEN L INR TK LO LEVEL OR DURING CTR TK PUMPS OPERATION
41QA RLY L INR TK PUMP PWR SPLY
DE-ENERGIZED WHEN L INR TK LO LEVEL OR DURING CTR TK PUMPS OPERATION
NOTE : (1) REFER TO FUEL-FEED AUTO MODE CONTROL
BM8 28 21 00 0 HNM0 00

Fuel Level Faults - Circuit Diagram
Figure 015

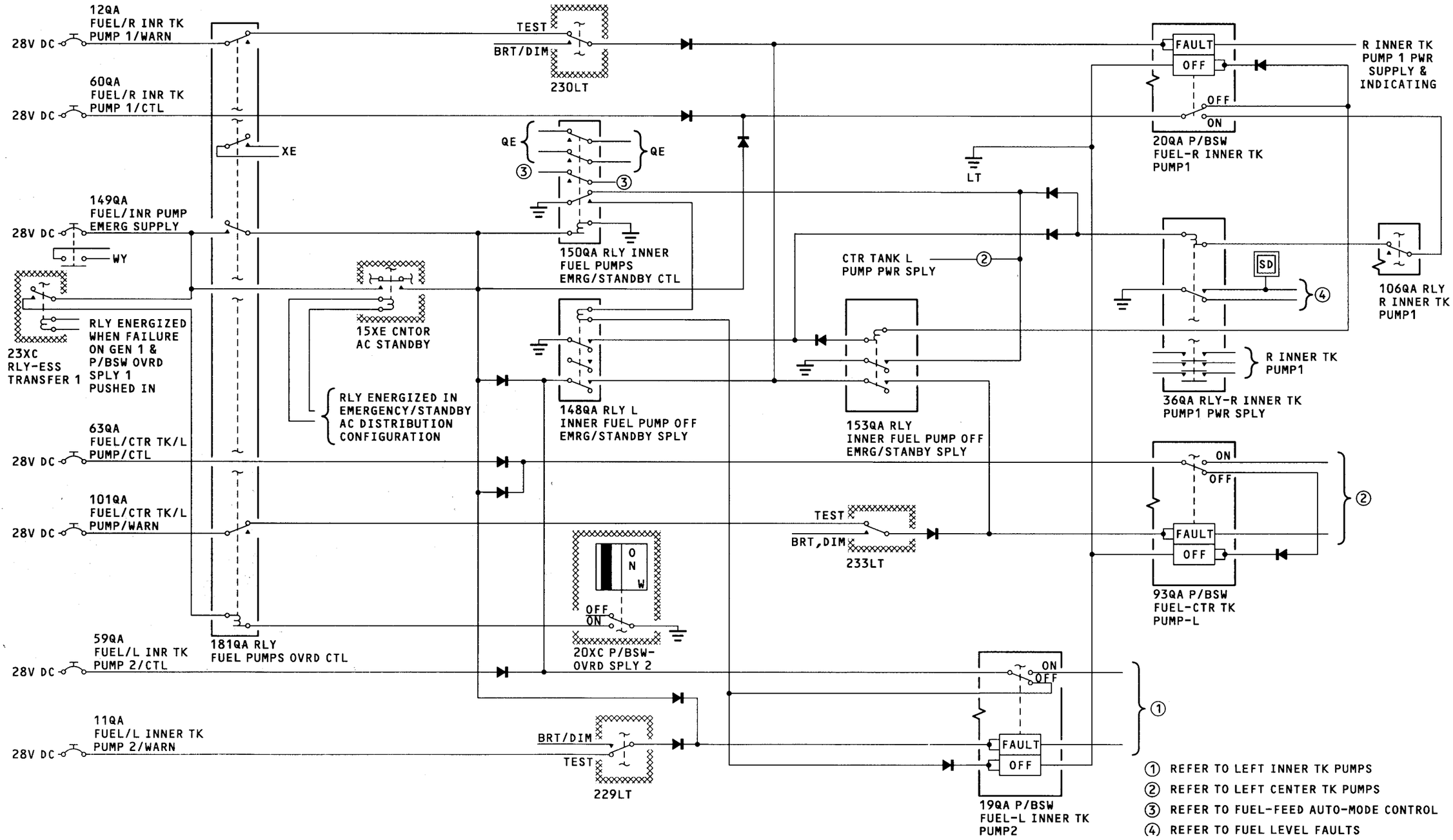

28VDC
70QA FUEL R INR TK PUMP 2/CTL
26QA P/B SW FUEL/R INNER TK PUMP 2
180S
90QA RLY R INR TK LO LVL TDC
141QA RLY LO LEVEL FAULT R
R INR TK EMPTY
L INR TK EMPTY
15QT COMPUTER FUEL QUANTITY
135QA RLY R INR PUMP OFF SIGNAL
LO
R INR TK LO LVL SNSR
8QJ-AMPL FUEL LVL
136QA-RLY CTR TK OFF SIGNAL
42QA RLY R INR TK PUMP2 PWR SPLY
36QA RLY R INR TK PUMP1 PWR SPLY
110QA RLY CTR TK R BOOSTER PUMP PWR SPLY
109QA RLY CTR TK L BOOSTER PUMP PWR SPLY
DE-ENERGIZED WHEN R INR TK LO LEVEL OR DE-ENERGIZED DURING CTR TK PUMPS OPERATION
DE-ENERGIZED WHEN CTR TK R LO LEVEL
DE-ENERGIZED WHEN CTR TK L LO LEVEL
A
B
C
D
E
F
G
1
140QA-RLY LO LEVEL FAULT L
134QA-RLY L INR PUMP OFF SIGNAL
35QA RLY L INR TK PUMP 2 PWR SPLY
41QA RLY L INR TK PUMP 1 PWR SPLY
DE-ENERGIZED WHEN L INR TK LO LEVEL OR DE-ENERGIZED DURING CTR TK PUMPS OPERATION
28VDC
59QA FUEL L INR TK PUMP 2/CTL
19QA P/B SW FUEL/L INNER TK PUMP 2
180s
89QA-RLY L INR TK LO LVL TDC
L INR TK LO LVL SNSR
LO
8QJ-AMPL FUEL LVL
BM8 28 21 00 0 HLMP 00

Fuel Level Faults - Circuit Diagram
(Sheet 2 of 2)
Figure 014



BM8 28 21 00 0 HXM0 00

Fuel-Pump Transfer Power-Supply Norm/Standby
Figure 016



BM8 28 21 00 0 HZM 00

Fuel-Pump Transfer Power-Supply Norm/Standby
Figure 017

WARNING : LANDING GEAR - MAKE SURE THAT THE GROUND SAFETIES AND CHOCKS ARE IN POSITION.

FLIGHT CONTROLS - MAKE SURE THAT THE GROUND SAFETIES AND NOTICES ARE IN POSITION.

OBSERVE THE SAFETY PRECAUTIONS IN 28-00-00, P. BLOCK 301, AND 28-10-00, P. BLOCK 301.

MAKE SURE THAT THE FIRE FIGHTING EQUIPMENT IS AVAILABLE AND ADEQUATE.

MAKE SURE THAT YOU ISOLATE THE ELECTRICAL CIRCUITS UPON WHICH WORK IS IN PROGRESS.

1. Operational Test - Pumps and Pump-Low-Pressure Warning Systems

**ON A/C 001-100,

A. Reason for the Job
(1)To prove that the outer, inner and center tank pumps and their related low-pressure warning systems operate on manual control.

**ON A/C 101-200,

A. Reason for the job
(1)To prove that the outer, inner, center and ACT(s) (if fitted) pumps and their related low-pressure warning systems operate on manual control.

**ON A/C ALL

B. Equipment and Materials

ITEM	DESIGNATION
A.	Circuit Breaker Safety Clips and Tags.
Referenced Procedures	
- 12-11-28, P. Block 301	Replenishing of Fuel Tanks
- 12-31-28, P. Block 201	Cold Weather Maintenance - Fuel
- 24-41-00, P. Block 301	AC External Power Control
- 28-00-00, P. Block 301	Fuel - General
- 28-10-00, P. Block 301	Storage
- 28-25-00, P. Block 301	Refuel/Defuel System

CAUTION : WHEN YOU MUST OPERATE THE FQI SYSTEM OR THE REFUEL/DEFUEL PANEL 110VU, IN AMBIENT TEMPERATURES BELOW -40 DEG. C. (-40 DEG. F.), REFER TO THE PROCEDURES FOR THE PREPARATION FOR OPERATION OF THE:
- FUEL QUANTITY INDICATOR SYSTEM (FQIS)
- REFUEL/DEFUEL PANEL 110VU,
(REF. 12-31-28, P. BLOCK 201).

C. Procedure
(1)Job Set-Up
(a)Energize the aircraft electrical network (Ref. 24-41-00, P. Block 301).
(b)Make sure that the following circuit breakers are closed:

PANEL	SERVICE	IDENT.	LOCATION
21VU	ECAM/CTL PNL LT	12WT	108/B01
21VU	ECAM/DISPLAY UNIT/L	7WT	108/B02
21VU	ECAM/DISPLAY UNIT/R	8WT	108/B03
21VU	ECAM/SGU 1	11WT1	108/B04
21VU	ECAM/SGU 2	11WT2	108/B05
21VU	ECAM/FWC1/EMER	7WW	108/B07
21VU	ECAM/WLDP SUPPLY/NORM	4WW	108/B08
21VU	ECAM/FLT WARN MONITOR	24WW	108/B10
22VU	FUEL/OUTER TK PUMP 2/L TK/CTL	61QA	201/J15
22VU	FUEL/OUTER TK PUMP 2/L TK/WARN	13QA	201/J16
22VU	FUEL/OUTER TK PUMP 2/R TK/WARN	16QA	201/J17
22VU	FUEL/OUTER TK PUMP 2/R TK/ CTL	68QA	201/J18
101VU	FUEL/L INNER TK/PUMP 2/SUPPLY	1QA	ESS/B01
101VU	FUEL/R INNER TK/PUMP 1/SUPPLY	2QA	ESS/A01
101VU	FUEL/L OUTER TK/PUMP 2/SUPPLY	3QA	GEN1/A20
101VU	FUEL/R OUTER TK/PUMP 1/SUPPLY	4QA	GEN2/A14
101VU	FUEL/L OUTER TK/PUMP 1/SUPPLY	5QA	GEN2/A17
101VU	FUEL/R OUTER TK/PUMP 2/SUPPLY	6QA	GEN2/B02
101VU	FUEL/L INNER TK/PUMP 1/SUPPLY	7QA	GEN2/A23
101VU	FUEL/R INNER TK/PUMP 2/SUPPLY	8QA	GEN2/A20
**ON A/C 101-200,			
101VU	FUEL/CARGO TK/PUMP SUPPLY	1QH	GEN1/A02
132VU	FUEL/AUX TK/XFR VALVE/MOTOR 1	4QH	325/K58
132VU	FUEL/AUX TK/PUMP CTL XFR VALVE/MOTOR 2	5QH	325/K59
**ON A/C ALL			
132VU	FUEL/FQI/SUPPLY & IND	1QT	321/P59
132VU	FUEL/FQI/CHAN SUPPLY 1	3QT	321/P60
132VU	FUEL/FQI/CHAN SUPPLY 2	4QT	321/P61
132VU	FUEL/CTR TK/L PUMP/CTL	63QA	322/N58
132VU	FUEL/CTR TK/R PUMP/WARN	102QA	322/N59
132VU	FUEL/CTR TK/L PUMP/WARN	101QA	323/M58
132VU	FUEL/CTR TK/R PUMP/CTL	64QA	323/M59

PANEL	SERVICE	IDENT.	LOCATION
132VU	FUEL/L INR TK/PUMP 1/CTRL	69QA	322/N60
132VU	FUEL/L INR TK/PUMP 2/WARN	11QA	322/N61
132VU	FUEL/L INR TK/PUMP 1/WARN	17QA	323/M60
132VU	FUEL/L INR TK/PUMP 2/CTL	59QA	323/M61
132VU	FUEL/L INR TK/PUMP 1/CTL	60QA	322/N62
132VU	FUEL/R INR TK/PUMP 2/WARN	18QA	322/N63
132VU	FUEL/R INR TK/PUMP 1/WARN	12QA	323/M62
132VU	FUEL/R INR TK/PUMP 2/CTL	70QA	323/M63
132VU	FUEL/L OUTR TK/PUMP 1/CTL	67QA	322/N56
132VU	FUEL/L OUTR TK/PUMP 1/WARN	15QA	323/M56
132VU	FUEL/R OUTR TK/PUMP 1/WARN	14QA	322/N57
132VU	FUEL/R OUTR TK/PUMP 1/CTL	62QA	323/M57

(c)Start the ECAM display units (DU) as follows:
1 On the flight compartment center-pedestal, press (in) the ECAM SGU 1 & 2 pushbutton switches (P/BSW).
2 Turn the LEFT and RIGHT DISPLAY rotary switches clockwise to switch on the display and adjust the brightness to the required level.
3 Press (in) the FUEL P/BSW switch to call up the fuel page.

**ON A/C 001-100,

(d)On the right ECAM DU, make sure that:
- the center tank contains at least 1000 KG (2200 LB) of fuel
- both inner tanks contain at least 500 KG (1100 LB) of fuel
- both outer tanks contain at least 500 KG (1100 LB) of fuel.
If necessary, refuel or defuel or transfer fuel (Ref. 12-11-28 or 28-25-00, P. Block 301).

(e)On panel 430VU, make sure that the TRIM TK ISOL VALVE P/BSW is released (out) and that the OFF legend is on.

**ON A/C 101-200,

(d)On the right ECAM DU, make sure that:
- the center tank contains at least 2200 LB (1000 KG) of fuel
- both inner tanks contain at least 1100 LB (500 KG) of fuel
- both outer tanks contain at least 1100 LB (500 KG) of fuel.
- the ACT (if installed) contains at least 1100 LB (500 KG) of fuel.
If necessary refuel or defuel or transfer fuel (Ref. 12-11-28 or 28-25-00, P. Block 301).

(e)On panel 430VU, make sure that the TRIM TK ISOL VALVE P/BSW is released (out) and that the OFF legend is on.

**ON A/C 101-200,

Post SB 28-2105 For A/C 101-200,

R Post SB 28-2126 For A/C 104-104,

(d)On the right ECAM DU, make sure that:
- the center tank contains at least 1000 KG (2200 LB) of fuel
- both inner tanks contain at least 500 KG (1100 LB) of fuel
- both outer tanks contain at least 500 KG (1100 LB) of fuel.
- both ACT(s) (if installed) contain at least 500 KG (1100 LB) of fuel.

If necessary, refuel or defuel or transfer fuel (Ref. 12-11-28 or 28-25-00, P. Block 301).

(e)On panel 430VU, make sure that the TRIM TK ISOL VALVE P/BSW is released (out) and that the OFF legend is on.

**ON A/C ALL

(2)Test

ACTION	RESULT
1. On panel 436VU: - Put ANN LT switch in TEST position.	On panel 430VU: - All the pump P/BSW LO PR/ FAULT legends come on.
- Put ANN LT switch in BRT position.	- All the pump P/BSW LO PR/ FAULT legends go off.
2. On panel 430VU: - Make sure that all the pump P/BSW's are released (out).	On panel 430VU: - All the pump P/BSW OFF legends are on.
- Push (in) all four OUTR TK PUMP P/BSW's.	- All four OUTR TK PUMP P/BSW OFF legends go off. - All four OUTR TK PUMP P/BSW LO PR legends come on momentarily, then go off as the pumps run.
3. On panels 22VU and 132VU: - Open, safety and tag circuit breakers 61QA, 68QA, 67QA and 62QA.	On panel 430VU: - All four OUTR TK PUMP P/BSW LO PR legends come on when the pumps stop.
4. On panel 430VU: - Release (out) all four OUTR TK PUMP P/BSW's.	On panel 430VU: - All four OUTR TK PUMP P/BSW LO PR legends go off. - All four OUTR TK PUMP P/BSW OFF legends remain off.

ACTION	RESULT
- Push (in) all four INR TK PUMP P/BSW's.	- All four INR TK PUMP P/BSW OFF legends go off. - All four INR TK PUMP P/BSW FAULT legends come on momentarily, then go off as the pumps run.
5. On panel 132VU: - Open, safety and tag circuit breakers 69QA, 59QA, 60QA and 70QA.	On panel 430VU: - All four INR TK PUMP P/BSW FAULT legends come on when the pumps stop.
6. On panel 430VU: - Release (out) all four INR TK PUMP P/BSW's.	On panel 430VU: - All four INR TK PUMP P/BSW FAULT legends go off. - All four INR TK PUMP P/BSW OFF legends remain off.
- Push (in) both CTR TK PUMP P/BSW's.	- The two CTR TK PUMP P/BSW OFF legends go off. - The two CTR TK PUMP P/BSW FAULT legends come on momentarily, then go off as the pumps run.
7. On panel 132VU: - Open, safety and tag circuit breakers 63QA and 64QA.	On panel 430VU: - The two CTR TK PUMP P/BSW FAULT legends come on when the pumps stop.
8. On panel 430VU: - Release (out) both CTR TK PUMP pushbutton switches.	On panel 430VU: - The two CTR TK PUMP P/BSW FAULT legends go off. - The two CTR TK PUMP P/BSW OFF legends remain off.

**ON A/C 001-100,

9. Not applicable.

10. Not applicable.

11. Not applicable.

ACTION	RESULT
**ON A/C 101-200,	
9. If ACT is fitted: On panel 430VU: - Push (in) the AUX TK AUTO P/BSW.	- The FWD legend comes on - The FAULT legend comes on momentarily, then goes off when the pump runs.
10. On panel 101VU: - Open safety and tag circuit breaker 1QH (GEN1/A02).	- The AUX TK AUTO P/BSW FAULT legend comes on when the pump stops - The FWD legend remains on.
11. On panel 430VU: - Release (out) the AUX TK AUTO P/BSW.	- The FWD legend goes off - The FAULT legend goes off.
**ON A/C 101-200,	
Post SB 28-2105 For A/C 101-200,	
R Post SB 28-2126 For A/C 104-104,	
9. If the ACT(s) is (are) fitted: On panel 430VU: - Push (in) the ACT AUTO P/BSW.	- The FWD legend comes on - The FAULT legend comes on momentarily, then goes off when the pump runs.
10. On panel 101VU: - Open safety and tag circuit breaker 1QH (GEN1/A02).	- ACT AUTO P/BSW FAULT legend comes on when the pump stops. - The FWD legend remains on.
11. On panel 430VU: - Release (out) the ACT AUTO P/BSW.	- The FWD legend goes off - The FAULT legend goes off.
**ON A/C 001-100,	
12. On panel 22VU and 132VU:	On panel 430VU:

ACTION	RESULT
- Remove the safety clips and tags and close circuit breakers **61QA, 68QA, 67QA, 62QA, 69QA, 59QA, 60QA, 70QA, 63QA** and **64QA.**	- All the **OUTR, INR** and **CTR TK** pump **P/BSW OFF** legends come on.
****ON A/C 101-200,**	
12.On panel 22VU: - Remove the safety clips and tags and close circuit breakers **61QA (201/J15), 68QA (201/J18).**	
13.On panel 101VU: - Remove the safety clips and tags and close circuit breaker **1QH (GEN1/A02).**	
14.On panel 132VU: - Remove the safety clips and tags and close circuit breakers **67QA(322/N56), 62QA(323/M57), 69QA(322/N60), 59QA(323/M61), 60QA(322/N62), 70QA(323/M63), 63QA(322/N58), 64QA(323/M59).**	On panel **430VU:** - All the **OUTR, INR** and **CTR TK PUMP P/BSW OFF** legends come on.
****ON A/C ALL**	

(3)Close-Up
(a)On panel **430VU,** push (in) the **TRIM TK ISOL VALVE P/BSW** to select **AUTO.**
(b)On the flight compartment center-pedestal, turn the **ECAM LEFT** and **RIGHT DISPLAY** rotary switches to **OFF.**
(c)Release (out) the **ECAM SGU 1** and **2 P/BSW's.**
(d)De-energize the aircraft electrical network (Ref. 24-41-00, P. Block 301).
(e)Make sure that the working area is clean and clear of tools and miscellaneous items of equipment.

1.A. Functional Test - Fuel-Pump Autofeed System

A. Reason for the Job
(1)To test the fuel-pump autofeed system.

R This Functional Test is optional. You can do this test before the
R Operational Test of Center and Inner-Tank-Pumps Automatic Control
R (Ref. Para. 2). This Functional Test will show any faults in the system
R and may save you time when you do the Operational Test.

B. Equipment and Materials

ITEM	DESIGNATION
A.	Circuit Breaker Safety Clips and Tags.
B.	Stopwatch.
**ON A/C 001-005,	
C. 31-324-100	Test Set
or alternative	
D. 31-324-203	Test Set
E. 31-324-111	Adapter Lead
**ON A/C 006-200,	
C. 31-324-100	Test Set
or alternative	
D. 31-324-200	Test Set
or alternative	
E. 31-324-203	Test Set
F. 31-324-112	Adapter Lead
**ON A/C ALL	

Referenced Procedures

- 12-11-28, P. Block 301	Replenishing of Fuel Tanks
- 12-31-28, P. Block 201	Cold Weather Maintenance - Fuel
- 24-41-00, P. Block 301	AC External Power Control
- 28-00-00, P. Block 301	Fuel - General
- 28-42-38, P. Block 401	Fuel Quantity Computer 15QT
- 28-46-23, P. Block 401	Fuel Level Amplifier

CAUTION : WHEN YOU MUST OPERATE THE FQI SYSTEM OR THE REFUEL/DEFUEL PANEL 110VU, IN AMBIENT TEMPERATURES BELOW -40 DEG. C. (-40 DEG. F.), REFER TO THE PROCEDURES FOR THE PREPARATION FOR OPERATION OF THE:
- FUEL QUANTITY INDICATOR SYSTEM (FQIS)
- REFUEL/DEFUEL PANEL 110VU,
(REF. 12-31-28, P. BLOCK 201).

C. Procedure

(1)Job Set-Up

(a)Check on the FUEL QTY indicator, on pilot's overhead panel 430VU, that the inner and center tanks contain at least 500 kg (1100 lb) of fuel. If necessary, refuel the tanks, (Ref. 12-11-28, P. Block 301).

(b)Open, safety and tag the circuit breakers that follow:

PANEL	SERVICE	IDENT.	LOCATION
22VU	FUEL/TK LO LVL AND CAL/L OUTR & R INR & CTR R	1QJ	208/B26
22VU	FUEL/TK LO LVL AND CAL/R OUTR & L INR & CTR L	2QJ	208/B27
132VU	FUEL/FUELLING/OVERFLOW AND CAL	5QJ	321/P58
132VU	FUEL/FUELLING/HI LVL	6QJ	321/P57
132VU	FUEL/FQI/SUPPLY & IND	1QT	321/P59
132VU	FUEL/FQI/CHAN SUPPLY 1	3QT	321/P60
132VU	FUEL/FQI/CHAN SUPPLY 2	4QT	321/P61

**ON A/C 001-005,

(c)Remove the fuel quantity computer 15QT (Ref. 28-42-38, P. Block 401).
(d)Remove the fuel level amplifier 8QJ (Ref. 28-46-23, P. Block 401).
(e)Connect the adapter lead 31-324-111 to the fuel-level amplifier connector 8QJ-A.
(f)Position the test set 31-324-100 or 31-324-203 in the flight compartment. Open the access door 211PZ in the floor of the flight compartment and position the leads of the test set through the access door into the avionics bay.
(g)Connect the lead of the test set to the fuel-quantity computer connector 3QT-A.
(h)Connect the adapter lead 31-324-111 to the lead of the test set 31-324-100 or 31-324-203.
(j)Energize the aircraft electrical network (Ref. 24-41-00, P. Block 301).

**ON A/C 006-200,

(c)Remove the fuel quantity computer 15QT (Ref. 28-42-38, P. Block 401).
(d)Remove the fuel level amplifier 8QJ (Ref. 28-46-23, P. Block 401).
(e)Connect the adapter lead 31-324-112 to the fuel level amplifier connector 8QJ-A.
(f)Position the test set 31-324-100, or 31-324-200, or 31-324-203 in the flight compartment. Open the access door 211PZ in the floor of the flight-compartment and position the leads of the test set through the access door into the avionics bay.
(g)Connect the lead of the test set to the fuel quantity computer connector 3QT-A.
(h)Connect the adapter lead 31-324-112 to the lead of the test set 31-324-100, or 31-324-200, or 31-324-203.
(j)Energize the aircraft electrical network (Ref. 24-41-00, P. Block 301).

**ON A/C ALL

(k)Not applicable.
(l)Make sure that the refuel/defuel panel door 144DR, is closed.
(m)Make sure that on panel 9VU, the ENG 1 and ENG 2 HP VALVES control levers are in the OFF position.
(n)Activate the ECAM display units (DU) as follows:
1 On the flight-compartment center pedestal, press (in) the ECAM SGU 1 and SGU 2 p/bsw's on the ECAM control panel.
2 Turn the LEFT and RIGHT DISPLAY rotary switches clockwise to switch on the display and adjust the brightness to the required level.
3 Push (in) the FUEL p/bsw to call up the fuel page.
4 Push (in) the RCL p/bsw.

NOTE : When you push (in) the RCL p/bsw, the AUTO FUEL FEED FAULT inhibit is removed.

5 Push (in) and release (out) the CLR p/bsw until the MEMO page shows on the LH ECAM DU.

NOTE : When you push (in) the CLR p/bsw, the ECAM messages (if there are some) will be erased.

(2)Test - System Normal Sequence
(a)During this test the indications on the ECAM displays (on the main instrument panel), and the indicator lights (on the panel 430VU), must show the correct result of the specified step. If the result is not as specified, the most possible cause of the failure is the component or it's wiring, (shown in parenthesis after the result).
Refer to the TSM 28-21 for the trouble-shooting procedures.

ACTION	RESULT
1. On the test set: - put all the switches in the up (WET) position.	
2. On the panel 132VU: - open the FUEL/AUTOFEED/CTL circuit breaker 65QA (line 323/M55).	
3. On the panel 430VU: - push (in) the L and R INR TK PUMP 1 and 2 and the CTR TK PUMP L and R P/BSW's.	On the panel 430VU: - The L and R INR TK PUMP 1 and 2 and the CTR TK PUMP L and R P/BSW OFF legends go off. - The FAULT legends come on momentarily and then go off as the pumps operate and the pressure increases.

ACTION	RESULT
	On the ECAM fuel page: - the L and R INR TK PUMP 1 and 2 and the CTR TK PUMP L and R show on.
4. On the panel 132VU: - close the circuit breaker 65QA.	On the ECAM fuel page: - the L and R INR TK PUMP 1 and 2 show off - the CTR TK PUMP L and R continue to show on. If failures are shown, examine the relay that follows: (133QA CENTER/INNER CHANGEOVER CTL).
5. On the test set: - put the CTR CAL switch in the down (DRY) position and start the stopwatch.	On the ECAM fuel page after 30 ± 3 seconds: - the L and R INR TK PUMP 1 and 2 show on - the CTR TK PUMP L and R show off. If failures are shown, examine the relays that follow: (91QA CTR TK L/LO LVL-TDC RELAY) (92QA CTR TK R/LO LVL-TDC RELAY) (107QA CTR TK L/BOOSTER PUMP/AUTO CTL RELAY) (108QA CTR TK R/BOOSTER PUMP/AUTO CTL RELAY) (154QA L OR R INNER TK LO LVL).
6. On the test set: - put the L INR TK EMPTY switch in the down (DRY) position.	
7. On the test set: - put the L INR TK LO LVL switch in the down (DRY) position and start the stopwatch.	
8. At least five seconds after you do step 7.: - on the test set put the CTR CAL switch in the up (WET) position.	No effect. If an effect is shown, examine the relays that follow: (163QA CENTER/INNER CHANGEOVER CTL). (165QA L INNER LO LVL). (154QA L OR R INNER TK LO LVL).
9. In less than three minutes after you do step 7.:	On the ECAM fuel page, 3 minutes ± 18 seconds after step 7.:

ACTION	RESULT
- on the test set put the CTR CAL switch in the down (DRY) position.	- the CTR TK PUMP L and R show on - the L and R INR TK PUMP 1 and 2 show off. If failures are shown, examine the relays that follow: (73QU AUTO MODE RESET RELAY) (89QA L INNER SCAVENGE) (140QA LO LVL FAULT L) (165QA L INNER LO LVL).
10. On the test set: - put the L INR LO LVL switch in the up (WET) position - put the L INR LO LVL switch in the down (DRY) position.	No effect. If failures are shown, examine the relays that follow: (89QA L INNER SCAVENGE) (165QA L INNER LO LVL).
11. On the test set: - put the two CTR LO LVL switches in the down (DRY) position and start the stopwatch.	On the ECAM fuel page after 30 ± 3 seconds: - the R INR TK PUMP 1 and 2 show on - the L INR TK PUMP 1 and 2 continue to show off - the CTR TK PUMP L and R show off. If failures are shown, examine the relays that follow: (91QA CTR TK L/LO LVL-TDC RELAY) (92QA CTR TK R/LO LVL-TDC RELAY) (154QA L OR R INNER TK LO LVL).
12. On the test set: - put the R INR TK EMPTY switch in the down (DRY) position.	
13. On the test set: - put the R INR TK LO LVL switch in the down (DRY) position and start the stopwatch.	
14. At least five seconds after you do step 13.: - on the test set put the CTR CAL switch in the up (WET) position.	No effect. If an effect is shown, examine the relays that follow: (163QA CENTER/INNER CHANGEOVER CTL) (164QA R INNER LO LVL). (154QA L OR R INNER TK LO LVL).

ACTION	RESULT
15. In less than three minutes after you do step 13.: - on the test set put the CTR CAL switch in the down (DRY) position.	On the ECAM fuel page, 3 minutes ± 18 seconds after you do step 13.: - the R INR TK PUMP 1 and 2 show off. If failures are shown, examine the relays that follow: (73QU AUTO MODE RESET RELAY) (90QA R INNER SCAVENGE) (141QA LO LVL FAULT R) (164QA R INNER LO LVL).
16. On the test set: - put the R INR LO LVL switch in the up (WET) position. - Put the R INR LO LVL switch in the down (DRY) position.	No effect. If an effect is shown, examine the relays that follow: (90QA R INNER SCAVENGE) (164QA R INNER LO LVL).
17. On the panel 430VU: - release (out) the L and R INR TK PUMP 1 and 2 and CTR TK PUMP L and R P/BSW's.	On the panel 430VU: - all the CTR TK PUMP and L and R INR TK PUMP OFF legends come on. On the ECAM fuel page: - the pump-off symbols come on.
18. On the panel 132VU: - open and close the circuit breaker 65QA.	
19. On the test set: - Put all the switches in the up (WET) position.	
20. On the panel 430VU: - push (in) the L and R INR TK PUMP 1 and 2 and the CTR TK PUMP L and R P/BSW's.	On the ECAM fuel page: - the CTR TK PUMP L and R show on. If failures are shown, examine the relay that follows: (133QA CENTER/INNER CHANGEOVER CTL).
21. On the test set: - put the CTR CAL switch in the down (DRY) position and start the stopwatch.	On the ECAM fuel page after 30 ± 3 seconds: - the L and R INR TK PUMP 1 and 2 show on - the CTR TK PUMP L and R show off. If failures are shown, examine

ACTION	RESULT
	the relays that follow: (91QA CTR TK L/LO LVL-TDC RELAY) (92QA CTR TK R/LO LVL-TDC RELAY) (154QA L OR R INNER TK LO LVL).
22.On the test set: - put the R INR TK EMPTY switch in the down (DRY) position, then put the R INR LO LVL switch in the down (DRY) position.	On the ECAM fuel page after 3 minutes ± 18 seconds: - the CTR TK PUMP L and R show on - the L and R INR TK PUMP 1 and 2 show off. If failures are shown, examine the relays that follow: (90QA R INNER SCAVENGE) (164QA R INNER LO LVL).
23.On the test set: - put the L CTR LO LVL switch in the down (DRY) position and start the stopwatch.	On the ECAM fuel page after 30 ± 3 seconds: - no effect. If an effect is shown, examine the relays that follow: (83QA PRESS SW L BOOSTER PUMP CTR TK RELAY) (92QA CTR TK R LO LVL-TDC RELAY).
24.On the test set: - Put the L CTR LO LVL switch in the up (WET) position and start the stopwatch - Put the R CTR LO LVL switch in the down (DRY) position.	On the ECAM fuel page after 30 ± 3 seconds: - no effect. If an effect is shown, examine the relays that follow: (84QA PRESS SW R BOOSTER PUMP CTR TK RELAY) (91QA L INR TK LO LVL-TDC RELAY).
25.On the panel 101VU: - open the FUEL/CTR TK/R PUMP SUPPLY circuit breaker. 100QA (line GEN 2/B17).	On the ECAM fuel page: - the L INR TK PUMP 1 and 2 show on - the CTR TK PUMP L and R show off. If failures are shown, examine the relay that follows: (84QA PRESS SW R BOOSTER PUMP CTR TK RELAY).
26.On the test set: - put the L INR TK EMPTY switch in the down (DRY) position, then put the L INR TK LO LVL switch in the down (DRY) position	On the ECAM fuel page after 3 minutes ± 18 seconds: - the L INR TK PUMP 1 and 2 show off. If failures are shown, examine the relays that follow:

ACTION	RESULT
and start the stopwatch.	(89QA L INNER SCAVENGE) (165QA L INNER LO LVL).
27. On the panel 430VU: - release (out) the L and R INR TK PUMP 1 and 2 and the CTR TK PUMP L and R P/BSW's.	On the panel 430VU: - the L and R INR TK PUMP 1 and 2 and the CTR TK PUMP L and R P/BSW OFF legends come on.
28. On the panel 101VU: - close the circuit breaker 100QA.	
29. On the panel 132VU: - open and close the circuit breaker 65QA.	
30. On the test set: - put all the switches in the up (WET) position.	
31. On the panel 430VU: - push (in) the L and R INR TK PUMP 1 and 2 and the CTR TK PUMP L and R P/BSW's.	On the ECAM fuel page: - the CTR TK PUMP L and R show on. If failures are shown, examine the relay that follows: (133QA CENTER/INNER CHANGEOVER CTL).
32. On the test set: - put the CTR CAL switch in the down (DRY) position and start the stopwatch.	On the ECAM fuel page after 30 ± 3 seconds: - the L and R INR TK PUMP 1 and 2 show on - the CTR TK PUMP L and R show off. If failures are shown, examine the relays that follow: (91QA CTR TK L/LO LVL-TDC RELAY) (92QA CTR TK R/LO LVL-TDC RELAY) (154QA L OR R INNER TK LO LVL).
33. On the test set: - put the R INR TK EMPTY switch in the down (DRY) position, then put the R INR LO LVL switch in the down (DRY) position and start the stopwatch.	On the ECAM fuel page after 3 minutes ± 18 seconds: - the CTR TK PUMP L and R show on - the L and R INR TK PUMP 1 and 2 show off. If failures are shown, examine the relays that follow: (90QA R INNER SCAVENGE) (164QA R INNER LO LVL).

ACTION	RESULT
34. On the test set: - put the L CTR LO LVL switch in the down (DRY) position and start the stopwatch.	On the ECAM fuel page after 30 ± 3 seconds: - no effect. If failures are shown, examine the relays that follow: (83QA PRESS SW L BOOSTER PUMP CTR TK RELAY) (92QA CTR TK R LO LVL-TDC RELAY.
35. On the panel 101VU: - open the FUEL/CTR TK/L SUPPLY circuit breaker 99QA (line ESS/B04).	On the ECAM fuel page: - the L INR TK PUMP 1 and 2 show on - the CTR TK PUMP L and R show off. If failures are shown, examine the relay that follows: (83QA PRESS SW L BOOSTER PUMP CTR TK RELAY).
36. On the test set: - put the L INR TK EMPTY switch in the down (DRY) position, then put the L INR LO LVL switch in the down (DRY) position and start the stopwatch.	On the ECAM fuel page after 3 minutes ± 18 seconds: - the L INR TK PUMP 1 and 2 show off. If failures are shown, examine the relays that follow: (89QA L INNER SCAVENGE) (90QA R INNER SCAVENGE) (165QA L INNER LO LVL).
37. On the test set: - put the L and R INR LO LVL switches in the up (WET) position.	No effect. If an effect is shown, examine the relays that follow: (89QA L INNER SCAVENGE) (90QA R INNER SCAVENGE) (164QA R INNER LO LVL) (165QA L INNER LO LVL).
38. On the center pedestal panel 417VU: - push (in) the RCL P/BSW on the ECAM control NOTE : When you push (in) the RCL P/BSW, the AUTO FUEL FEED FAULT inhibit is removed. - push (in) and release (out) the CLR P/BSW until the MEMO page shows on the LH ECAM DU. NOTE : When you push (in) the CLR P/BSW, the ECAM messages (if there are	

ACTION	RESULT
some) will be erased.	
39.On the test set: - Put the L and R INR TK EMPTY switches in the up (WET) position	On the ECAM fuel page after approximately three seconds: - the AUTO FUEL FEED warning comes on. On the panel 430VU: - the CTR TK PUMP L and R P/BSW FAULT legends come on. If no CTR TK PUMP fault legends come on, examine the relays that follow: (139QA AUTO FUEL FEED LATCH) (140QA LO LVL FAULT L) (141QA LO LVL FAULT R) (131QA CTR TK FAULT) (133QA CENTER/INNER CHANGEOVER CTL).
- Put the L and R INR TK EMPTY switches in the down (DRY) position.	
40.On the panel 132VU, open and close the FUEL/AUTO FEED/ WARN circuit breaker 66QA (line 322/N55).	On the left ECAM DU: - the AUTO FUEL FEED FAULT message goes off - the CTR TK FAULT legends go off.
41.Open the access door 144DR.	- The refuel/defuel panel 110VU, is energised. On the ECAM fuel page: - the L and R INR TK PUMP 1 and 2 show on.
42.On the panel 110VU, raise the guard and put the MODE SELECT/SELECTOR switch 3QU in the REFUEL position	If failures are shown, examine the relay that follows: (73QU AUTO MODE RESET RELAY).
- Put the MODE SELECT/ SELECTOR switch 3QU in the OFF and guarded position. - Close the access door 144DR	On the ECAM fuel page: - The L and R INR TK PUMP 1 and 2 show on. - The Refuel/defuel panel 110VU, is de-energised.
43.On the panel 101VU: - close the circuit breaker 99QA.	

(3)Diagnostic Test - System with Simulated Failures
(a)During this test the indications on the ECAM displays on the main

instrument panel and the indicator lights on panel 430VU, must show the correct result of the specified action. If the result is not as specified, the most likely cause of the failure is the component, or associated wiring, shown in parenthesis after the result. Refer to the TSM 28-21 for detailed trouble-shooting procedures.

ACTION	RESULT
1. On the panel 430VU: - make sure the L and R INR TK PUMP 1 and 2 and the CTR TK PUMP L and R P/BSW's are released (out).	On the ECAM fuel page: - the L and R INR TK PUMP 1 and 2 and the CTR TK PUMP L and R show off.
2. On the panel 132VU: - open and close the FUEL/AUTOFEED/CTL circuit breaker 65QA (line 323/M55).	
3. On the test set: - put all the switches in the up (WET) position.	
4. On the panel 430VU: - push (in) the L and R INR TK PUMP 1 and 2 and the CTR TK PUMP L and R P/BSW's.	On the ECAM fuel page: - the CTR TK PUMP L and R show on. If failures are shown, examine the relay that follows: (133QA CENTER/INNER CHANGEOVER CTL).
5. On the panel 132VU: - Open the FUEL/CTR TK/L PUMP/CTL circuit breaker 63QA (line 322/N58). - Open the FUEL/CTR TK/R PUMP/CTL circuit breaker 64QA (line 323/M59).	On the panel 430VU: - the CTR TK PUMP L and R P/BSW FAULT legends come on. After three seconds on the LH ECAM DU: - the AUTO FUEL FEED FAULT warning comes on - the L and R INR TK PUMP 1 and 2 FAULT legends come on. If failures are shown, examine: the relays that follow: (109QA CTR TK L BOOSTER PUMP SUPPLY RELAY) (110QA CTR TK R BOOSTER PUMP SUPPLY RELAY)

ACTION	RESULT
	(132QA INR TK FAULT RELAY) (133QA CENTER/INNER CHANGEOVER CTL) (136QA CTR TK OFF SIGNAL RELAY).
6. On the panel 132VU: - close the circuit breakers 63QA and 64QA.	On the panel 430VU: - the CTR TK PUMP L and R P/BSW FAULT legends go off - the L and R INR TK PUMP 1 and 2 FAULT legends stay on - the AUTO FUEL FEED FAULT warning stays on. If failures are shown, examine the relay that follows: (132QA INR TK FAULT RELAY).
7. On the panel 132VU: - open and close the FUEL/AUTOFEED/WARN circuit breaker 66QA (line 323/N55).	On the left ECAM display unit: - the AUTO FUEL FEED FAULT warning goes off. On the panel 430VU: - the L and R INR TK PUMP 1 and 2 FAULT legends go off. If failures are shown, examine the relay that follows: (132QA INR TK FAULT RELAY).
8. On the center pedestal panel 417VU: - press in the T.O. CONFIG TEST button for at least three seconds and then release the button.	On the left ECAM display unit: - the AUTO FUEL FEED FAULT warning comes on. On the panel 430VU: - the CTR TK L and R P/BSW FAULT legends come on. If failures are shown, examine: the relays that follow: (109QA CTR TK L BOOSTER PUMP SUPPLY RELAY) (110QA CTR TK R BOOSTER PUMP SUPPLY RELAY) (25WW P/B SW T O CONFIG TEST) (131QA CTR TK FAULT RELAY).
9. On the panel 132VU: - open and close the circuit breaker 66QA.	On the left ECAM display unit: - the AUTO FUEL FEED FAULT warning goes off. On the panel 430VU: - the CTR TK PUMP L and R FAULT legends go off.
10. On the test set: - put the CTR CAL switch	On the ECAM fuel page after 30 ± 3 seconds:

ACTION	RESULT
in the down (DRY) position and start the stopwatch.	- the L and R INR TK PUMP 1 and 2 show on - the CTR TK PUMP L and R show off.
11.On the panel 430VU: - release (out) the L and R INR TK PUMP 1 and 2 and the CTR TK PUMP L and R P/BSW's.	On panel 430VU: - the L and R INR TK PUMP 1 and 2 and the CTR TK PUMP L and R P/BSW OFF legends come on. On the ECAM fuel page: - the L and R INR TK PUMP 1 and 2 and the CTR TK PUMP L and R show off.
12.On the panel 132VU: - open and close the circuit breaker 65QA.	
13.On the test set: - put the CTR CAL switch in the up (WET) position.	
14.On the panel 430VU: - push (in) the L and R INR TK PUMP 1 and 2 and CTR TK PUMP L and R P/BSW's.	On panel 430VU: - the L and R INR TK PUMP 1 and 2 and the CTR TK L and R PUMP P/BSW OFF legends go off. On the ECAM fuel page: - the CTR TK PUMP L and R show on - the L and R INR TK PUMP 1 and 2 show off.
15.On the test set: - put the CTR CAL switch in the down (DRY) position and start the stopwatch.	On the ECAM fuel page after 30 ± 3 seconds: - the L and R INR TK PUMP 1 and 2 show on - the CTR TK PUMP L and R show off.
16.On the test set: - put the L INR TK EMPTY switch in the down (DRY) position.	
17.On the test set: - put the L INR TK LO LVL switch in the down (DRY) position and start the stopwatch.	On the ECAM fuel page after 3 minutes ± 18 seconds: - the L and R INR TK PUMP 1 and 2 show off - the CTR TK PUMP L and R show on.

ACTION	RESULT
18. On the test set: - put the two CTR LO LVL switches in the down (DRY) position and start the stopwatch.	On the ECAM fuel page after 30 ± 3 seconds: - the R INR TK PUMP 1 and 2 show on - the CTR TK PUMP L and R show off.
19. On the test set: - put the R INR TK LO LVL switch in the down (DRY) position and start the stopwatch.	On the ECAM fuel page after 3 minutes ± 18 seconds: - the R INR TK PUMP 1 and 2 show off. On the left ECAM display unit: - the AUTO FUEL FEED FAULT warning comes on. On the panel 430VU: - the CTR TK PUMP L and R P/BSW FAULT legends come on. If failures are shown, examine the relays that follow: (90QA R INNER SCAVENGE) (141QA LO LVL FAULT R RELAY) (131QA CTR TK FAULT RELAY).
20. On the test set: - put the R INR TK EMPTY switch in the down (DRY) position.	The warning and FAULT legends in step. 19. remain on.
21. On the panel 132VU: - open and close the circuit breaker 66QA.	On the left ECAM display unit: - the AUTO FUEL FEED FAULT warning goes off. On the panel 430VU: - the CTR TK PUMP L and R FAULT legends go off.
22. On the panel 430VU: - release (out) the L and R INR TK PUMP 1 and 2 and the CTR TK PUMP L and R P/BSW's.	On the ECAM fuel page: - the L and R INR TK PUMP 1 and 2 and the CTR TK PUMP L and R show off. On the panel 430VU: - The L and R INR TK PUMP 1 and 2 and the CTR TK PUMP L and R P/BSW OFF legends come on.
23. On the panel 132VU: - open and close the circuit breaker 65QA.	
24. On the test set:	

ACTION	RESULT
- put all the switches in the up (WET) position.	
25. On the panel 430VU: - push (in) the L and R INR TK PUMP 1 and 2 and CTR TK PUMP L and R P/BSW's.	On the ECAM fuel page: - the CTR TK PUMP L and R show on - the L and R INR TK PUMP 1 and 2 show off. On panel 430VU: - the L and R INR TK PUMP 1 and 2 and the CTR TK PUMP L and R P/BSW OFF legends go off.
26. On the test set: - put the CTR CAL switch in the down (DRY) position and start the stopwatch.	On the ECAM fuel page after 30 ± 3 seconds: - the L and R INR TK PUMP 1 and 2 show on - the CTR TK PUMP L and R show off.
27. On the test set: - put the R INR TK EMPTY switch in the down (DRY) position.	
28. On the test set: - put the R INR TK LO LVL switch in the down (DRY) position and start the stopwatch.	On the ECAM fuel page after 3 minutes ± 18 seconds: - the L and R INR TK PUMP 1 and 2 show off - the CTR TK PUMP L and R show on.
29. On the test set: - put the two CTR LO LVL switches in the down (DRY) position and start the stopwatch.	On the ECAM fuel page after 30 ± 3 seconds: - the L INR TK PUMP 1 and 2 show on - the CTR TK PUMP L and R show off.
30. On the test set: - put the L INR TK LO LVL switch in the down (DRY) position and start the stopwatch.	On the ECAM fuel page after 3 minutes ± 18 seconds: - the L INR TK PUMP 1 and 2 show off. On the left ECAM display unit: - the AUTO FUEL FEED FAULT warning comes on. On the panel 430VU: - the CTR TK PUMP L and R FAULT legends come on. If failures are shown, examine the relays that follow: (89QA L INNER SCAVENGE)

ACTION	RESULT
	(140QA LO LVL FAULT L RELAY) (131QA CTR TK FAULT RELAY).
31.On the test set: - put the L INR TK EMPTY switch in the down (DRY) position.	The warning and FAULT legends in step. 30. remain on.
32.On the panel 132VU: - open and close the circuit breaker 66QA.	On the left ECAM display unit: - the AUTO FUEL FEED FAULT warning goes off. On the panel 430VU: - the CTR TK PUMP L and R FAULT legends go off.
33.On the panel 430VU: - release (out) the L and R INR TK PUMP 1 and 2 and the CTR TK PUMP L and R P/BSW's.	On the ECAM fuel page: - the L and R INR TK PUMP 1 and 2 and the CTR TK PUMP L and R show off. On the panel 430VU: - the L and R INR TK PUMP 1 and 2 and the CTR TK PUMP L and R

**ON A/C 001-005,

C. Close-Up
(1) Remove the safety clips and tags and close circuit breakers 1QJ, 2QJ, 5QJ, 6QJ, 1QT, 3QT and 4QT.
(2) On the flight-compartment center pedestal, turn the ECAM LEFT and RIGHT DISPLAY rotary switches to OFF.
(3) Release (out) the ECAM SGU 1 and SGU 2 P/BSW's.
(4) De-energize the aircraft electrical network (Ref. 24-41-00, P. Block 301).
(5) Disconnect the adapter lead 31-324-111 from the lead of the test set 31-324-100 or 31-324-203.
(6) Disconnect the lead of the test set from the fuel-quantity computer connector 3QT-A in the avionics bay. Pull the leads of the test set into the flight-compartment through the access door 211PZ.
(7) Close the access door 211PZ.
(8) Remove the test set 31-324-100 or 31-324-203 and the leads from the flight compartment.
(9) Disconnect the adapter lead 31-324-111 from the fuel-level amplifier connector 8QJ-A and remove the lead from the avionics bay.
(10) Install the fuel quantity computer 15QT (Ref. 28-42-38, P. Block 401).
(11) Install the fuel level amplifier 8QJ (Ref. 28-46-23, P. Block 401).
(12) Make sure that working area is clean and clear of tools and miscellaneous items of equipment.

**ON A/C 006-200,

C. Close-Up
(1) Remove the safety clips and tags and close circuit breakers 1QJ, 2QJ, 5QJ, 6QJ, 1QT, 3QT and 4QT.
(2) On the flight-compartment center pedestal, turn the ECAM LEFT and RIGHT DISPLAY rotary switches to OFF.
(3) Release (out) the ECAM SGU 1 and SGU 2 P/BSW's.
(4) De-energize the aircraft electrical network (Ref. 24-41-00, P. Block 301).
(5) Disconnect the adapter lead 31-324-112 from the lead of the test set 31-324-100, or 31-324-200, or 31-324-203.
(6) Disconnect the lead of the test set from the fuel-quantity computer connector 3QT-A in the avionics bay. Pull the leads of the test set into the flight-compartment through the access door 211PZ.
(7) Close the access door 211PZ.
(8) Remove the test set 31-324-100, or 31-324-200, or 31-324-203 and the leads from the flight compartment.
(9) Disconnect the adapter lead 31-324-112 from the fuel-level amplifier connector 8QJ-A and remove the lead from the avionics bay.
(10) Install the fuel quantity computer 15QT (Ref. 28-42-38, P. Block 401).
(11) Install the fuel level amplifier 8QJ (Ref. 28-46-23, P. Block 401).
(12) Make sure that working area is clean and clear of tools and miscellaneous items of equipment.

**ON A/C ALL

R 2. Operational Test of Center and Inner Tank Pumps Automatic Control
R and Associated Warnings

A. Reason for the Job

(1)To prove the automatic sequence of the center and inner tank pumps.

R We recommend that you do the Functional Test - Fuel-Pump Autofeed System
R (Ref. Para.1.A.) before you do this Operational Test. The Functional
R Test will show any faults in the system. If you do the Functional Test
R first, it may save you time when you do this Operational Test.

R NOTE : Before you do the test that follows, make sure when you use the
R clinometers in the main-landing-gear bay (Ref. 28-43-00,
R P. Block 1) that the aircraft pitch and roll axes are set at zero
R degrees ± 1/2 degree.

B. Equipment and Materials

ITEM	DESIGNATION
A.	Stopwatch
B.	Not applicable.
C.	Warning Notices Prohibiting Operation of Slat System
D.	Circuit Breaker Safety Clips and Tags
Referenced Procedures	
- 12-11-28, P. Block 301	Replenishing of Fuel Tanks
- 12-31-28, P. Block 201	Cold Weather Maintenance - Fuel
- 24-41-00, P. Block 301	AC External Power Control
- 27-80-00, P. Block 301	Lift Augmentation (Slats and Krueger Flaps)
- 28-00-00, P. Block 301	Fuel - General
- 28-25-00, P. Block 301	Refuel/Defuel System
- 28-43-00, P. Block 1	Quantity-indicating Magnetic-Level-Indicators

CAUTION : WHEN YOU MUST OPERATE THE FQI SYSTEM OR THE REFUEL/DEFUEL PANEL 110VU, IN AMBIENT TEMPERATURES BELOW -40 DEG. C. (-40 DEG. F.), REFER TO THE PROCEDURES FOR THE PREPARATION FOR OPERATION OF THE:
- FUEL QUANTITY INDICATOR SYSTEM (FQIS)
- REFUEL/DEFUEL PANEL 110VU,
(REF. 12-31-28, P. BLOCK 201).

C. Procedure

(1)Job Set-Up

(a)Energize the aircraft electrical network (Ref. 24-41-00, P. Block 301).

NOTE: The center tank must contain enough fuel to keep the calibration

sensor wet during the test procedure.

NOTE: Each inner tank must contain enough fuel to keep the low level sensors wet during the test procedure.

(b)Refuel, defuel or transfer fuel (Ref. 12-11-28 or 28-25-00, P. Block 301) to get these fuel states:

**ON A/C 001-100,

	L OUTR TK	L INR TK	CTR TK	R INR TK	R OUTR TK	TRIM TK
min	0 kg	400 kg	1400 kg	400 kg	0 kg	0 kg
max	2000 kg	FULL	FULL	FULL	2000 kg	0 kg

**ON A/C 101-200,

	L OUTR TK	L INR TK	CTR TK	ACT	R INR TK	R OUTR TK	TRIM TK
min	0 lb	900 lb	3100 lb	0 lb	900 lb	0 lb	0 lb
max	4400 lb	FULL	FULL	0 LB	Full	4400 lb	0 lb

**ON A/C 101-200,

Post SB 28-2105 For A/C 101-200,

R Post SB 28-2126 For A/C 104-104,

	L OUTR TK	L INR TK	CTR TK	ACT 1 ACT 2	R INR TK	R OUTR TK	TRIM TK
min	0 kg	400 kg	1400 kg	0 kg	400 kg	0 kg	0 kg
max	2000 kg	FULL	FULL	0 kg	FULL	2000 kg	0 kg

**ON A/C ALL

(c)Make sure that the following circuit breakers are closed:

PANEL	SERVICE	IDENT.	LOCATION
21VU	ECAM CTL PNL LT	12WT	108/B01
21VU	ECAM DISPLAY UNIT L	7WT	108/B02
21VU	ECAM DISPLAY UNIT R	8WT	108/B03
21VU	ECAM SGU 1	11WT1	108/B04
21VU	ECAM SGU 2	11WT2	108/B05
21VU	ECAM - FLT WARN MONITOR	4WW	108/B06

PANEL	SERVICE	IDENT.	LOCATION
21VU	ECAM FWC 1	7WW	108/B08
21VU	ECAM FLT WARN MONITOR	24WW	108/B07
22VU	FUEL/TK LO LVL & CAL/L OUTR & R INR & CTR R	1QJ	208/B26
22VU	FUEL/TK LO LVL & CAL/R OUTR & L INR & CTR L	2QJ	208/B27
132VU	FUEL/CTR TK L PUMP CTL	63QA	322/N58
132VU	FUEL/CTR TK R PUMP WARN	102QA	322/N59
132VU	FUEL/CTR TK R PUMP CTL	64QA	323/M59
132VU	FUEL/CTR TK L PUMP WARN	101QA	323/M58
132VU	FUEL/AUTO FEED WARN	66QA	323/N55
132VU	FUEL/AUTO FEED CTL	65QA	323/M55
132VU	FUEL/L INR TK PUMP 1 CTL	69QA	322/N60
132VU	FUEL/L INR TK PUMP 2 WARN	11QA	322/N61
132VU	FUEL/L INR TK PUMP 1 WARN	17QA	323/M60
132VU	FUEL/L INR TK PUMP 2 CTL	59QA	323/M61
132VU	FUEL/R INR TK PUMP 1 CTL	60QA	322/N62
132VU	FUEL/R INR TK PUMP 2 WARN	18QA	322/N63
132VU	FUEL/R INR TK PUMP 1 WARN	12QA	323/M62
132VU	FUEL/R INR TK PUMP 2 CTL	70QA	323/M63
132VU	FUEL/FQI SUPPLY & IND	1QT	321/P59
132VU	FUEL/FQI CHAN SUPPLY 1	3QT	321/P60
132VU	FUEL/FQI CHAN SUPPLY 2	4QT	321/P61
132VU	FUEL/TRIM TANK/FWR XFR MAIN VALVE	1QL	325/K53

(d)Open, safety and tag the following circuit breakers:

PANEL	SERVICE	IDENT.	LOCATION
22VU	FIRE EXTING/ENG 1 & 2/SQUIB B/BTL 1	5WE	207/C19
22VU	FIRE EXTING/ENG 1 & 2/SQUIB B/BTL 2	7WE	207/C20
133VU	FLT CTL/FLAPS/SYS 1/26 VAC	1CV	335/R61
133VU	FLT CTL/FLAPS/SYS 2/26 VAC	2CV	334/S62
133VU	FLT CTL/SFCC/NORM SUPPLY/FLAPS/SYS 1	5CV	332/U61
133VU	FLT CTL/SFCC/NORM SUPPLY/FLAPS/SYS 2	6CV	331/V61
133VU	FLT CTL/SFCC/LAND RECOVERY SUPPLY/ FLAPS/SYS 1	10CV	335/R67
133VU	ENGINES/ENG 1 & 2/FIRE EXTING/SQUIB A/ BTL 1	1WE	335/R71
133VU	ENGINES/ENG 1 & 2/FIRE EXTING/SQUIB A/ BTL 2	3WE	335/R72
101VU	FUEL/L INNER TK/PUMP 2/SUPPLY	1QA	ESS/B01
101VU	FUEL/R INNER TK/PUMP 1/SUPPLY	2QA	ESS/A01
101VU	FUEL/L INNER TK/PUMP 1/SUPPLY	7QA	GEN 2/A23
101VU	FUEL/R INNER TK/PUMP 2/SUPPLY	8QA	GEN 2/A20
101VU	FUEL/CTR TK/L PUMP/SUPPLY	99QA	ESS/B04
101VU	FUEL/CTR TK/R PUMP/SUPPLY	100QA	GEN 2/B17

(e)Make sure that the slats are fully retracted (Ref. 27-80-00, P. Block 301).
(f)Put the warning notices in the cockpit on the slat control lever prohibiting unauthorized movement of the slats.
(g)On panel 430VU:
1 Make sure that the TRIM TK ISOL VALVE and TRIM TK PUMP pushbutton switches (P/BSW) are released (out).
2 Make sure that all the OUTR, INR and CTR TK PUMP P/BSW's are released (out).
(h)Start the ECAM display units (DU's) as follows:
1 On the flight-compartment center pedestal, press in the ECAM SGU 1 & 2 P/BSW's.
2 Turn the LEFT and RIGHT DISPLAY rotary switches clockwise to switch on the display and adjust the brightness to the required level.
3 Push (in) the FUEL P/BSW to call up the fuel page.
(j)On panel 9VU, make sure that the ENG 1 and ENG 2 HP VALVE controls are in the OFF position.
(k)Open the access door 144DR to the refuel/defuel panel 110VU.

(2)Test

ACTION	RESULT
1. On panel 430VU: - Push (in) the two CTR and all four INR TK PUMP P/BSW's.	On panel 430VU: - The two CTR TK PUMP P/BSW FAULT legends come on On the right ECAM DU: - All the INNER tank pump OFF symbols are on (green) - Fuel feed from the CTR tank is displayed.
2. On panel 110VU: - Raise the guard and put the MODE SELECTOR/SELECT switch first to the REFUEL position and then to the OFF position. - Lower the guard. - Close the access door 144DR.	
3. On panel 9VU: - Put the ENG 1 HP VALVE control lever in the ON position.	On panel 430VU: - After three minutes delay ± 18 seconds, the two CTR TK PUMP P/BSW FAULT legends go off. - All four INR TK PUMP P/BSW FAULT legends come on.

ACTION	RESULT
	On the right ECAM DU: - the CTR tank pump OFF symbols come on (green) - fuel feed from the INNER tanks is displayed.
- Put the ENG 1 HP VALVE control lever in the OFF position.	On panel 430VU: - all four INR TK PUMP pushbutton switch FAULT legends go off - the two CTR TK PUMP pushbutton switch FAULT legends come on. On the right ECAM DU: - the INNER tank pump OFF symbols come on (green) - fuel feed from the CTR tank is displayed.
4. On panel 133VU: - Open the L/G PROX DET & RELAYS SYS 2/FLT/GND circuit breaker 1GB (line 331/V52).	
5. On panel 9VU: - Put the ENG 2 HP VALVE control in the ON position.	
6. Fully extend the slats (Ref. 27-80-00, P. Block 301).	On panel 430VU: - After 3 min delay ± 18 seconds. The CTR TK PUMP P/BSW FAULT legends go off. - The INR TK PUMP P/BSW FAULT legends come on. On the right ECAM DU: - the CTR tank pump OFF symbols come on (green) - fuel feed from the INNER tanks is displayed.
7. Fully retract the slats (Ref. 27-80-00, P. Block 301).	On panel 430VU: - the CTR TK PUMP P/BSW FAULT legends come on - the INR TK PUMP P/BSW FAULT legends go off. On the right ECAM DU: - the INNER tank pump OFF

ACTION	RESULT
	symbols come on - fuel feed from the CTR tank is displayed.
8. On the ECAM control panel on the center pedestal: - Push (in) the RCL P/BSW. NOTE : When you push (in) the RCL P/BSW, the AUTO FUEL FEED FAULT inhibit is removed. - Push (in) and release (out) the CLR P/BSW until the MEMO page shows on the LH ECAM DU. NOTE : When you push (in) the CLR P/BSW, the ECAM messages (if there are some) will be erased.	
9. On the center pedestal, panel 417VU: - Push (in) the T.O CONFIG TEST button for at least 3 seconds. NOTE : By pressing the T.O CONFIG TEST button when the aircraft is simulated in flight will cause the AUTO FUEL FEED FAULT message to come on because the CTR TK PUMPS are feeding and the INR TK PUMPS are latched off. If the INR TK PUMPS were feeding the AUTO FUEL FEED FAULT message would not come on.	On the left ECAM DU: - The AUTO FUEL FEED FAULT message comes on.
10. Release (out) the T.O CONFIG TEST button and put the ENG 2 HP VALVE control in the OFF position.	
11. On panel 132VU: - Open and close FUEL/AUTO FEED/WARN circuit breaker 66QA (line 322/N55).	On the left ECAM DU: - The AUTO FUEL FEED FAULT message goes off.
12. On panel 430VU: - Release (out) the CTR and INR TK PUMP P/BSW's.	On panel 430VU: - the CTR TK PUMP P/BSW FAULT legends go off - the CTR and INR TK PUMP P/BSW OFF legends come on.
13. On panel 133VU: - Close the circuit breaker 1GB (line 331/V52).	

NOTE: After test steps 1. thru 13., do the procedure that follows to prepare the aircraft for further automatic sequence-control

testing.

(a)On panel 20VU, make sure that the ENG 1 and ENG 2 LP controls are in the OPEN position (FIRE handles pushed in).
(b)Remove the safety clips and tags and close the following circuit breakers:

PANEL	SERVICE	IDENT.	LOCATION
22VU	FIRE EXTING/ENG 1 & 2 SQUIB B/BTL 1	5WE	207/C19
22VU	FIRE EXTING/ENG 1 & 2 SQUIB B/BTL 2	7WE	207/C20
133VU	FLT CTL/FLAPS/SYS 1/26 VAC	1CV	335/R61
133VU	FLT CTL/FLAPS/SYS 2/26 VAC	2CV	334/S62
133VU	FLT CTL/SFCC/NORM SUPPLY FLAPS/SYS 1	5CV	332/U61
133VU	FLT CTL/SFCC/NORM SUPPLY FLAPS/SYS 2	6CV	331/V61
133VU	FLT CTL/SFCC/LAND RECOVERY SUPPLY/ FLAPS/SYS 1	10CV	335/R67
133VU	ENGINES/ENG 1 AND 2/FIRE EXTING/SQUIB A/BTL 1	1WE	335/R71
133VU	ENGINES/ENG 1 AND 2/FIRE EXTING/SQUIB A/BTL 2	3WE	335/R72

(c)On panel 430VU, push (in) the TRIM TK ISOL VALVE P/BSW to select AUTO.
(d)Defuel the aircraft (Ref. 28-25-00 P. Block 301) to get these fuel states:

NOTE: Inner and center tank fuel quantities greater than the minimum figures quoted will increase the time taken for the test procedure.

**ON A/C 001-100,

	L OUTR TK	L INR TK	CTR TK	R INR TK	R OUTR TK	TRIM TK
Min	0 KG	400 KG	600 KG	0 KG	0 KG	0 KG
Max	2000 KG	FULL	900 KG	0 KG	2000 KG	0 KG

**ON A/C 101-200,

	L OUTR TK	L INR TK	CTR TK	ACT	R INR TK	R OUTR TK	TRIM TK
Min	0 LB	900 LB	1300 LB	0 LB	0 LB	0 LB	0 LB
Max	4400 LB	FULL	1900 LB	0 LB	0 LB	4400 LB	0 LB

**ON A/C 101-200,

Post SB 28-2105 For A/C 101-200,

R Post SB 28-2126 For A/C 104-104,

	L OUTR TK	L INR TK	CTR TK	ACT 1	ACT 2	R INR TK	R OUTR TK	TRIM TK
Min	0 KG	400 KG	600 KG	0 KG	0 KG	0 KG	0 KG	0 KG
Max	2000 KG	FULL	900 KG	0 KG	0 KG	0 KG	2000 KG	0 KG

**ON A/C ALL

NOTE: When defueling the R INR TK allow the two pumps to run for 1 minute after the pump FAULT legends, on panel 430VU, come on steady. This will make sure that the low level sensor is completely dry.

(e)Open, safety and tag the circuit breakers that follow:

PANEL	SERVICE	IDENT.	LOCATION
132VU	FUEL/FQI SUPPLY & IND	1QT	321/P59
132VU	FUEL/FQI CHAN SUPPLY 1	3QT	321/P60
132VU	FUEL/FQI CHAN SUPPLY 2	4QT	321/P61

(f)Open the access door 144DR.

NOTE : Do not close the access door 144DR until the Operational Test is completed.

(g)On panel 110VU, make sure that the MODE SELECTOR/SELECT switch is in the OFF and guarded position.

(3)Test

ACTION	RESULT
1. Do the steps that follow: - On panel 430VU, push (in) all the CTR and INR TK PUMP P/BSW's then, immediately on circuit breaker panel 132VU, open and close the FUEL/AUTO FEED CTL circuit breaker 65QA (line 323/M55).	On panel 430VU, make sure that: - the CTR TK PUMP P/BSW FAULT legends are on and the L and R INR TK PUMP P/BSW FAULT legends are off.

ACTION	RESULT
NOTE : The Center-tank calibration sensor now controls the pump sequence.	
2. 30 ± 3 seconds after step 1.	- the CTR TK PUMP P/BSW FAULT legends go off - the L and R INR TK PUMP P/BSW FAULT legends come on.
NOTE : The right inner-tank pumps now do a 3 minute scavenge. The left inner-tank pumps run normally. The center-tank low-level sensors will then control the pump sequence.	
3. 3 min ± 18 seconds after step 2.	- the L and R INR TK PUMP P/BSW FAULT legends go off - the CTR TK PUMP P/BSW FAULT legends come on.
4. On circuit breaker panel 132VU: - Open circuit breaker 65QA (line 323/M55).	- the CTR TK PUMP P/BSW FAULT legends remain on - the L and R INR TK PUMP P/BSW FAULT legends come on.
- On circuit breaker panel 101VU: close circuit breakers 1QA (ESS/B01) and 7QA (GEN 2/A23).	- the L INR TK PUMP P/BSW FAULT legends go off and the pumps run.
- On circuit breaker panel 132VU: remove the safety clips and tags and close circuit breakers 1QT (321/P59) 3QT (321/P60) 4QT (321/P61).	
5. Transfer all the fuel from the L INR TK to the R INR TK (Ref. 28-25-00, P. Block 301 Fuel Transfer Wing and Center Tanks).	
NOTE: When transferring all the fuel from the L INR TK, allow the two pumps to run for 1 minute after the pump FAULT legends on panel 430VU, come on steady. This will make sure that the low level sensor is completely dry.	
6. On circuit breaker panel 132VU: - open safety and tag circuit breakers	

ACTION	RESULT
1QT (321/P59) 3QT (321/P60) 4QT (321/P61).	
7. On panel 430VU: - Push (in) all the CTR and INR TK PUMP P/BSW's.	
8. On circuit breaker panel 101VU: - Open, safety and tag circuit breakers 1QA (ESS/B01) and 7QA (GEN 2/A23).	- the L INR TK PUMP P/BSW FAULT legends come on and the pumps stop - the CTR TK PUMP P/BSW FAULT legends remain on.
9. On circuit breaker panel 132VU: - Close circuit breaker 65QA (line 323/M55).	- The L and R INR TK PUMP P/BSW FAULT legends go off.
NOTE: The center-tank calibration sensor now controls the pump sequence.	
10. 30 ± 3 seconds after performing step 9.	- the CTR TK PUMP P/BSW FAULT legends go off - the L and R INR TK PUMP P/BSW FAULT legends come on.
NOTE: The left inner-tank pumps now perform a 3 minute scavenge. The right inner tank pumps run normally. The center tank low level sensors will then control the pump sequence.	
11. 3 min ± 18 seconds after step 10.	- the L and R INR TK PUMP P/BSW FAULT legends go off - the CTR TK PUMP P/BSW FAULT legends come on.
NOTE: The left inner-tank pumps are now permanently latched out of the system.	
12. On circuit breaker panel 22VU: - Open circuit breaker 1QJ (line 208/B26).	
13. On circuit breaker panel 101VU: - Close circuit breakers 99QA (ESS/B04) and 100QA (GEN 2/B17).	- The CTR TK PUMP P/BSW FAULT legends go off - The center tank pumps run.
14. On circuit breaker panel 132VU: - remove the safety clips and	

ACTION	RESULT
tags and close circuit breakers 1QT (321/P59) 3QT (321/P60) 4QT (321/P61).	
CAUTION : WITH THE MODE SEL/MODE SELECTOR/MODE SELECT SWITCH IN THE DEFUEL POSITION THE HIGH LEVEL SENSORS ARE INHIBITED. MAKE SURE THAT THE CAPACITY OF THE TANK(S) RECEIVING FUEL IS SUFFICIENT.	
(a)On panel 110VU: 1 Raise the guard and place the MODE SELECTOR/SELECT switch in the DEFUEL position. 2 Raise the guards on all the REFUEL-DEFUEL-VALVES switches. Place the L and R OUTER TK REFUEL-DEFUEL-VALVES switches in the OPEN position. Put all the other REFUEL-DEFUEL-VALVES switches in the SHUT position. 3 Raise the guard and put the TRANSF. VALVE switch in the OPEN position. Make sure that the OPEN indicator light comes on. (b)Start transferring the fuel from the center tank to the outer tanks and continue with the test.	
(4)Test	

ACTION	RESULT
1. 30 ± 3 seconds after the left-center-tank-low-level-sensor becomes dry and the L CTR TK PUMP goes low pressure.	On panel 430VU: - The center tank PUMPS stop - The right INR TK PUMP P/BSW FAULT legend comes on.
2. On circuit breaker panel 101VU: - Open circuit breakers 99QA (ESS/B04) and 100QA (GEN 2/B17).	
3. On circuit breaker panel 22VU: - Close circuit breaker 1QJ (line 208/B26).	- The CTR & L INR TK PUMP P/BSW FAULT legends remain off.
4. On panel 110VU: - Put the L and R OUTER TK REFUEL-DEFUEL-VALVES switches in the SHUT position. - Put the CTR TK REFUEL-DEFUEL VALVES switch in the OPEN position.	

ACTION	RESULT
5. On panel 430VU: - Push (in) all the OUTR TK PUMP P/BSW's and start transferring fuel from the outer tanks into the center tank. - When the CTR TK PUMP P/BSW FAULT legends come on, release (out) all the OUTR TK PUMP P/BSW's.	- The CTR TK PUMP P/BSW FAULT legends come on when the two low level sensors are wet.
6. On panel 110VU: - Put the CTR TK REFUEL-DEFUEL-VALVES switch in the SHUT position.	
7. On circuit breaker panel 22VU: - Open circuit breaker 2QJ (line 208/B27).	
8. On circuit breaker panel 101VU: - Close circuit breakers 99QA (ESS/B04) and 100QA (GEN 2/B17).	- the CTR TK PUMP P/BSW FAULT legends go off - the center tank pumps run.

CAUTION: WITH THE MODE SELECTOR/SELECT SWITCH IN THE DEFUEL POSITION THE HIGH LEVEL SENSORS ARE INHIBITED. MAKE SURE THAT THE CAPACITY OF THE TANK(S) RECEIVING FUEL IS SUFFCIENT.

(a) On panel 110VU:
1 Make sure that the MODE SELECTOR/SELECT switch is in the DEFUEL position.
2 Put the L and R OUTER TK REFUEL-DEFUEL-VALVES switches in the OPEN position. Make sure that all the other REFUEL-DEFUEL-VALVES switches are in the SHUT position.
3 Make sure that the TRANSF. VALVE switch is in the OPEN position and the OPEN indicator light is on.

(b) Start transferring the fuel from the center tank to the outer tanks and continue with the test.

(5) Test

ACTION	RESULT
1. On panel 430VU: - 30 ± 3 seconds after the right-center-tank low-level-sensor becomes dry the R CTR	On panel 430VU: - the center tank pumps stop - the R INR TK PUMP P/BSW FAULT legends come on.

ACTION	RESULT
TK PUMP goes low pressure.	
2. On circuit breaker panel 101VU: - Close circuit breakers: 1QA (ESS/B01), 2QA (ESS/A01), 7QA (GEN 2/A23), 8QA (GEN 2/A20).	
3. On circuit breaker panel 22VU: - Close circuit breaker 2QJ (line 208/B27).	- The CTR TK & L INR TK PUMP P/BSW FAULT legends remain off.
4. On panel 110VU: - Put the L and R OUTER TK REFUEL-DEFUEL-VALVES switches in the SHUT position. - Put the L INNER TK REFUEL-DEFUEL-VALVES switch in the OPEN position.	
5. On panel 430VU: - Push (in) the two left OUTR TK PUMP P/BSW's.	- The two left outer-tank pumps run.
6. Transfer at least 400 KG (900 LB) of fuel from the left outer tank into the left inner tank.	
7. On panel 430VU: - release (out) the two left OUTR TK PUMP P/BSW's.	- The two left outer-tank pumps stop.
8. On panel 110VU: - Put the L INNER TK REFUEL-DEFUEL-VALVES switch in the SHUT position and the L and R OUTER TK REFUEL-DEFUEL-VALVES switches in the OPEN position. - Put the MODE SELECTOR switch in the REFUEL	On the main instrument panel: - Make sure that the ECAM DU

ACTION	RESULT
position.	shows the left and right INNER tank pumps are supplying fuel.

(6)Close-Up
(a)On panel 430VU:
1 Release (out) all the INR and CTR TK PUMP P/BSW's.
(b)On panel 110VU:
1 Put the MODE SELECTOR/SELECT switch in the OFF position and guarded.
2 Put the TRANSF. VALVE switch in the closed position and guarded. Make sure that the OPEN indicator light goes off.
3 Put all the REFUEL-DEFUEL-VALVES switches in the NORM position and guarded.
(c)Not applicable.
(d)Refuel or defuel the aircraft to the required fuel load (Ref. 12-11-28 or 28-25-00, P. Block 301).
(e)Close the access door 144DR.
(f)On the flight-compartment center pedestal, turn the ECAM LEFT and RIGHT DISPLAY rotary switches to OFF.
(g)Release (out) the ECAM SGU 1 and 2 P/BSW's.
(h)De-energize the aircraft electrical network (Ref. 24-41-00, P. Block 301).
(j)Remove the warning notices
(k)Make sure that the work area is clean and clear of tools and miscellaneous items of equipment.

3. Operational Test - Outer Tank Fuel Flow

A. Reason for the Job
(1)To confirm fuel flow from the outer tank.

B. Equipment and Materials

ITEM	DESIGNATION
Referenced Procedures	
- 12-11-28, P. Block 301	Replenishing of Fuel Tanks
- 12-31-28, P. Block 201	Cold Weather Maintenance - Fuel
- 24-41-00, P. Block 301	AC External Power Control
- 28-00-00, P. Block 301	Fuel General
- 28-25-00, P. Block 301	Refuel/Defuel System

CAUTION : WHEN YOU MUST OPERATE THE FQI SYSTEM OR THE REFUEL/DEFUEL PANEL 110VU, IN AMBIENT TEMPERATURES BELOW -40 DEG. C. (-40 DEG. F.), REFER TO THE PROCEDURES FOR THE PREPARATION FOR OPERATION OF THE:
- FUEL QUANTITY INDICATOR SYSTEM (FQIS)
- REFUEL/DEFUEL PANEL 110VU,
(REF. 12-31-28, P. BLOCK 201).

C. Procedure
(1)Job Set-Up
(a)Energize the aircraft electrical network (Ref. 24-41-00, P. Block 301).
(b)Make sure that the following circuit breakers are closed:

PANEL	SERVICE	IDENT.	LOCATION
133VU	ENGINES/ENG 1/FUEL HP VALVE/CTL	3KC	333/T69
133VU	ENGINES/ENG 1/FUEL HP VALVE/WARN	1KC	333/T68
133VU	ENGINES/ENG 2/FUEL HP VALVE/WARN	2KC	335/R73
133VU	ENGINES/ENG 2/FUEL HP VALVE/CTL	4KC	333/T70
132VU	FUEL/L OUTR TK/PUMP 1/CTL	67QA	322/N56
132VU	FUEL/L OUTR TK/PUMP 1/WARN	15QA	323/M56
132VU	FUEL/R OUTR TK/PUMP 1/WARN	14QA	322/N57
132VU	FUEL/R OUTR TK/PUMP 1/CTL	62QA	323/M57
132VU	FUEL/X FEED VALVE/POS ANN	3QE	324/L59
132VU	FUEL/X FEED VALVE/MOTOR 1	2QE	324/L60
132VU	FUEL/X FEED VALVE/MOTOR 2	1QE	324/L61
132VU	FUEL/FUELLING/XFR VALVE	2QU	321/P55
132VU	FUEL/FUELLING/CTL AND REFUEL VALVE	1QU	321/P56
132VU	FUEL/FQI/SUPPLY AND IND	1QT	321/P59
132VU	FUEL/FQI/CHAN SUPPLY 1	3QT	321/P60
132VU	FUEL/FQI/CHAN SUPPLY 2	4QT	321/P61
101VU	FUEL/L OUTER TK/PUMP 2/SUPPLY	3QA	GEN1/A20
101VU	FUEL/R OUTER TK/PUMP 1/SUPPLY	4QA	GEN1/A14
101VU	FUEL/L OUTER TK/PUMP 1/SUPPLY	5QA	GEN2/A17
101VU	FUEL/R OUTER TK/PUMP 2/SUPPLY	6QA	GEN2/B02

CAUTION: DO NOT CLOSE THE ACCESS DOOR 144DR OR OPERATE THE ACCESS DOOR MICROSWITCH UNTIL COMPLETION OF STEP 3. C. (2) 4.

(c)Open the access door 144DR.
(d)Refuel, defuel or transfer fuel, to get the following fuel state (Ref. 12-11-28 or 28-25-00, P. Block 301):
- Each outer tank, at least 1000 KG (2200 LB).
- Each inner tank, less than 8000 KG (17600 LB).
- Trim tank, completely empty.

(e)On panel 110VU:
1 Make sure that the MODE SELECTOR/SELECT switch is in the OFF position and guarded.
(f)On the flight-compartment center pedestal make sure that the ENG 1 and ENG 2 HP VALVES are in the OFF position (HP valves closed).

(2)Test

ACTION	RESULT
1. On panel 430VU: - Make sure that all the pump **P/BSW**'s are released (out)	On panel 430VU: - All the pump **P/BSW OFF** legends are on.
- Push (in) the left **OUTR TK PUMP 1** pushbutton switch.	On panel 430VU: - the left **OUTR TK PUMP 1 P/BSW OFF** legend goes off - the left outer tank pump 1 runs - the **LO PR** legend comes on momentarily, then goes off.
- Push (in) the **X FEED** pushbutton switch.	- the cross-line flowbar goes off - the in-line flowbar comes on - the crossfeed valve opens.
2. On panel 110VU: - Raise the guards and place all the **REFUEL-DEFUEL-VALVES** switches in the **SHUT** position.	
- Raise the guard and place the **MODE SELECTOR/SELECT** switch in the **REFUEL** position.	
- Put the L **INNER TK REFUEL-DEFUEL-VALVES** switch in the **OPEN** position.	- The left-inner-tank refuel/defuel valve opens.
- Raise the guard and put the **TRANS. VALVE** switch in the **OPEN** position.	- The transfer valve opens. On panel 110VU: - The **TRANSF. VALVE OPEN** indicator light comes on. - Fuel transfers from the left outer tank into the left inner tank.
- Examine the **FUEL QTY** indicator and confirm that the fuel transfer is taking place.	
- Put the **TRANSF. VALVE** switch in the **CLOSED** position and guarded.	- The transfer valve closes On panel 110VU: - the **TRANSF. VALVE OPEN**

ACTION	RESULT
	indicator light goes off - the fuel transfer stops.
- Put the L INNER TK REFUEL-DEFUEL-VALVES switch in the SHUT position.	- The Left-inner-tank refuel/defuel valve closes.
3. On panel 430VU: - Release (out) the left OUTR TK PUMP 1 P/BSW.	On panel 430VU: - the left OUTR TK PUMP 1 P/BSW OFF legend comes on - the left outer-tank pump 1 stops.
- Release (out) the X FEED P/BSW.	- the in-line flowbar goes off - the cross-line flowbar comes on - the crossfeed valve closes.
- Push (in) the right OUTR TK PUMP 1 P/BSW.	- the right OUTR TK PUMP 1 P/BSW OFF legend goes off - the right outer-tank pump 1 runs - the LO PR legend comes on momentarily, then goes off.
4. On panel 110VU: - Put the R INNER TK REFUEL-DEFUEL-VALVES switch in the OPEN position	- The right-inner-tank refuel/defuel valve opens.
- Raise the guard and put the TRANSF. VALVE switch in the OPEN position.	- The transfer valve opens. On panel 110VU: - the TRANSF. VALVE OPEN indicator light comes on - fuel transfers from the right outer tank into the right inner tank.
- Examine the FUEL QTY indicator and confirm that the fuel transfer is taking place.	
- Put the TRANSF. VALVE switch in the CLOSED position and guarded.	- The transfer valve closes. On panel 110VU: - the TRANSF. VALVE OPEN indicator light goes off - the fuel transfer stops.
- Put the R INNER TK REFUEL-DEFUEL-	- The right-inner-tank refuel/

ACTION	RESULT
VALVES switch in the SHUT position. - Put the MODE SELECTOR/SELECT switch in the OFF position and guarded. - Put all the REFUEL-DEFUEL-VALVES switches in the NORM position and guarded. - Close the access door 144DR. On panel 430VU: - Release (out) the right OUTR TK PUMP 1 P/BSW.	defuel valve closes. On panel 430VU: - the right OUTR TK PUMP 1 P/BSW OFF legend comes on - the right outer-tank pump 1 stops.

(3)Close-Up
(a)Refuel or defuel the aircraft to the required fuel load (Ref. 12-11-28 or 28-25-00, P. Block 301).
(b)De-energize the aircraft electrical network (Ref. 24-41-00, P. Block 301).
(c)Make sure that the work area is clean and clear of tools and miscellaneous items of equipment.

4. Functional Test

A. Reason for the Job
(1)To test the pumps by fuel transfer from one tank to another.

NOTE: This procedure is suitable for all the pumps.

B. Equipment and Materials

ITEM	DESIGNATION
Referenced Procedures	
- 12-11-28, P. Block 301	Replenishing of Fuel Tanks
- 12-31-28, P. Block 201	Cold Weather Maintenance - Fuel
- 24-41-00, P. Block 301	AC External Power Control
- 28-00-00, P. Block 301	Fuel - General
- 28-25-00, P. Block 301	Refuel/Defuel System

CAUTION : WHEN YOU MUST OPERATE THE FQI SYSTEM OR THE REFUEL/DEFUEL PANEL 110VU, IN AMBIENT TEMPERATURES BELOW -40 DEG. C. (-40 DEG. F.), REFER TO THE PROCEDURES FOR THE PREPARATION FOR OPERATION OF THE:
- FUEL QUANTITY INDICATOR SYSTEM (FQIS)
- REFUEL/DEFUEL PANEL 110VU,
(REF. 12-31-28, P. BLOCK 201).

C. Procedure

(1)Job Set-Up

(a)Make sure that the following circuit breakers are closed:

PANEL	SERVICE	IDENT.	LOCATION
22VU	FUEL/OUTER TK PUMP 2/L TK/CTL	61QA	201/J15
22VU	FUEL/OUTER TK PUMP 2/L TK/WARN	13QA	201/J16
22VU	FUEL/OUTER TK PUMP 2/R TK/WARN	16QA	201/J17
22VU	FUEL/OUTER TK PUMP 2/R TK/CTL	68QA	201/J18
101VU	FUEL/L INNER TK/PUMP 2/SUPPLY	1QA	ESS/B01
101VU	FUEL/R INNER TK/PUMP 1/SUPPLY	2QA	ESS/A01
101VU	FUEL/L OUTER TK/PUMP 2/SUPPLY	3QA	GEN1/A20
101VU	FUEL/R OUTER TK/PUMP 1/SUPPLY	4QA	GEN2/A14
101VU	FUEL/L OUTER TK/PUMP 1/SUPPLY	5QA	GEN2/A17
101VU	FUEL/R OUTER TK/PUMP 2/SUPPLY	6QA	GEN2/B02
101VU	FUEL/L INNER TK/PUMP 1/SUPPLY	7QA	GEN2/A23
101VU	FUEL/R INNER TK/PUMP 2/SUPPLY	8QA	GEN2/A20

PANEL	SERVICE	IDENT.	LOCATION
132VU	FUEL/CTR TK/L PUMP/CTL	63QA	322/N58
132VU	FUEL/CTR TK/R PUMP/WARN	102QA	322/N59
132VU	FUEL/CTR TK/L PUMP/WARN	101QA	323/M58
132VU	FUEL/CTR TK/R PUMP/CTL	64QA	323/M59
132VU	FUEL/L INR TK/PUMP 1/CTL	69QA	322/N60
132VU	FUEL/L INR TK/PUMP 2/WARN	11QA	322/N61
132VU	FUEL/L INR TK/PUMP1/WARN	17QA	323/M60
132VU	FUEL/L INR TK/PUMP 2/CTL	59QA	323/M61
132VU	FUEL/R INR TK/PUMP 1/CTL	60QA	322/N62
132VU	FUEL/R INR TK/PUMP 2/WARN	18QA	322/N63
132VU	FUEL/R INR TK/PUMP 1/WARN	12QA	323/M62
132VU	FUEL/R INR TK/PUMP 2/CTL	70QA	323/M63
132VU	FUEL/L OUTR TK/PUMP 1/CTL	67QA	322/N56
132VU	FUEL/L OUTR TK/PUMP 1/WARN	15QA	323/M56
132VU	FUEL/R OUTR TK/PUMP 1/WARN	14QA	322/N57
132VU	FUEL/R OUTR TK/PUMP 1/CTL	62QA	323/M57
132VU	FUEL/X FEED VALVE/POS ANN	3QE	324/L59
132VU	FUEL/X FEED VALVE/MOTOR 1	2QE	324/L60
132VU	FUEL/X FEED VALVE/MOTOR 2	1QE	324/L61
132VU	FUEL/FUELLING/XFR VALVE	2QU	321/P55
132VU	FUEL/FUELLING/CTL AND REFUEL VALVE	1QU	321/P56
132VU	FUEL/FUELLING/HI LVL	6QJ	321/P57
132VU	FUEL/FUELLING/OVERFLOW	5QJ	321/P58
132VU	FUEL/FQI/SUPPLY AND IND	1QT	321/P59

PANEL	SERVICE	IDENT.	LOCATION
132VU	FUEL/FQI/CHAN SUPPLY 1	3QT	321/P60
132VU	FUEL/FQI/CHAN SUPPLY 2	4QT	321/P61
132VU	FUEL/ISOL VALVES L OUTR TK SUPPLY	1QB	324/L53
132VU	FUEL/ISOL VALVES R OUTR TK SUPPLY	2QB	324/L58
132VU	FUEL/ISOL VALVES L INR TK SUPPLY	3QB	324/L55
132VU	FUEL/ISOL VALVES R INR TK SUPPLY	4QB	324/L56

(b)Make sure that the tank in which the pump is installed contains 1000 KG (2200 LB) of fuel for the test. If necessary, refuel the tank (Ref. 12-11-28, P. Block 301). Make sure that the adjacent tanks have room to receive the transferred fuel.
(c)Make sure that the ENG 1 and ENG 2 HP VALVE FUEL levers are in the OFF position.
(d)Energize the aircraft electrical network (Ref. 24-41-00, P. Block 301).

CAUTION: DO NOT CLOSE THE ACCESS DOOR 144DR OR OPERATE THE ACCESS DOOR MICROSWITCH UNTIL COMPLETION OF STEP 4. C. (2) 4.

(e)Open the access door 144DR.
(f)On panel 430VU, make sure that the TRIM TK ISOL VALVE P/BSW is released (out).

(2)Functional test of the pump fuel flow.

ACTION	RESULT
1. On panel 110VU:	
- Raise the guard and put the TRANSF. VALVE switch in the OPEN position.	- The transfer valve opens. On panel 110VU: - The transfer valve OPEN indicator light comes on.
- Raise the guards and put all the REFUEL-DEFUEL-VALVES switches in the SHUT position.	- All the refuel/defuel valves remain closed.
- Put the REFUEL-DEFUEL-VALVES switch for the tank to receive fuel in the OPEN position.	- The related tank refuel/defuel valve opens.
- Raise the guard and put the MODE SELECT/SELECTOR switch in the REFUEL position.	
**ON A/C 001-100,	
2. On panel 430VU:	On panel 430VU:

ACTION	RESULT
- Make sure that all the PUMP P/BSW's are released (out).	- All the PUMP P/BSW OFF legends are on.
- If fuel is to be transferred from a left wing tank or the center tank using the left pump, push (in) the X FEED valve P/BSW.	- the crossline flowbar goes off - the crossfeed valve opens - the in-line flowbar comes on.
- Make sure that all the wing tank ISOL VALVES P/BSW are pressed (in).	- all the wing tank ISOL VALVES OFF legends are off - all the in-line flowbars are on.
- Push (in) only the pump P/BSW of the pump to be tested.	- the related pump P/BSW OFF legend goes off - the FAULT legend comes on momentarily, then goes off as the pump runs.

**ON A/C 101-200,

2. On panel 430VU:	On panel 430VU:
- Make sure that all the pump P/BSW's are released (out)	- All the PUMP P/BSW OFF legends are on.
- If fuel is to be transferred from a left wing tank or the center tank using the left pump, push (in) the X FEED valve P/BSW.	- the crossline flowbar goes off - the crossfeed valve opens - the in-line flowbar comes on.
- Make sure that the wing tank ISOL VALVES P/BSW's are pushed (in).	- the ISOL VALVES OFF legends are off - the flowbars are on.
- Push (in) the PUMP P/BSW for the pump to be tested.	- The related pump P/BSW OFF legend goes off
- When testing the ACT PUMP (if ACT(s) fitted), push (in) the ACT (AUX TK) AUTO P/BSW.	- The FWD legend comes on

**ON A/C ALL

3. Examine the FUEL QTY indicator to make sure that the pump is	On the FUEL QTY indicator: - the donor tank fuel quantity

ACTION	RESULT
delivering fuel into the applicable tank.	decreases - the receptive tank fuel quantity increases.
4. On panel 430VU: - Release (out) the pump P/BSW of the pump under test.	On panel 430VU: - the related pump P/BSW OFF legend comes on - the associated pump stops.
- If applicable, release (out) the X-FEED valve P/BSW.	- the in-line flowbar goes off - the crossfeed valve closes - the crossline flowbar comes on.
5. On panel 110VU: - Put all the REFUEL-DEFUEL-VALVE switches in the NORMAL position and guarded.	- The refuel/defuel valve for the receptive tank closes. - All the other refuel/defuel valves remain closed.
- Put the TRANSF. VALVE switch in the CLOSED position and guarded	On panel 110VU: - The TRANSF. VALVE OPEN indicator light goes off.
- Put the MODE SELECTOR/SELECT switch in the OFF position and guarded.	
6. Close the access door 144DR.	

(3)Close-Up
(a)On panel 430VU, press (in) the TRIM TK ISOL VALVE P/BSW to select AUTO.
(b)De-energize the aircraft electrical network (Ref. 24-41-00, P. Block 301).
(c)Make sure that the work area is clean and clear of tools and miscellaneous items of equipment.
(d)Refuel or defuel the aircraft to the required fuel load (Ref. 12-11-28 or 28-25-00, P. Block 301).

5. Leak Test - Engine-Feed-System Pipeline

A. Reason for the Job

R (1)To leak test the engine feed system pipeline after the installation of
R pipes/connectors.

B. Equipment and Materials

ITEM		DESIGNATION
R	A.	Access Platform(s) 5.5 m (18 ft.)
R	B.	Circuit Breaker Safety Clips and Tags.
R	C.	Inspection Lamp - Spark Proof
R	D.	Lint Free Cotton-Cloths
R	E.	Stop Watch
	Referenced Procedures	
	- 12-11-28, P. Block 301	Replenishing of Fuel Tanks
	- 12-31-28, P. Block 201	Cold Weather Maintenance - Fuel
	- 24-41-00, P. Block 301	AC External Power Control
	- 28-00-00, P. Block 301	Fuel - General
	- 28-00-00, P. Block 401	Fuel - General
R	- 28-11-22, P. Block 401	Cover - Manhole, Wing Tanks
R	- 28-11-24, P. Block 401	Cover - Manhole, Booster Pump (Wing Tank)
R	- 28-11-29, P. Block 401	Cover - Manhole, Center Tank
R	- 28-12-21, P. Block 401	Naca Intake and Vent Protector
	- 28-25-00, P. Block 301	Refuel/Defuel System

CAUTION : WHEN YOU MUST OPERATE THE FQI SYSTEM OR THE REFUEL/DEFUEL PANEL 110VU, IN AMBIENT TEMPERATURES BELOW -40 DEG. C. (-40 DEG. F.), REFER TO THE PROCEDURES FOR THE PREPARATION FOR OPERATION OF THE:
- FUEL QUANTITY INDICATOR SYSTEM (FQIS)
- REFUEL/DEFUEL PANEL 110VU,
(REF. 12-31-28, P. BLOCK 201).

R C. Procedure for pipes/connectors in the fuel tank(s)
(Ref. Fig. 501)
(Ref. Fig. 502)

(1) Job Set-Up

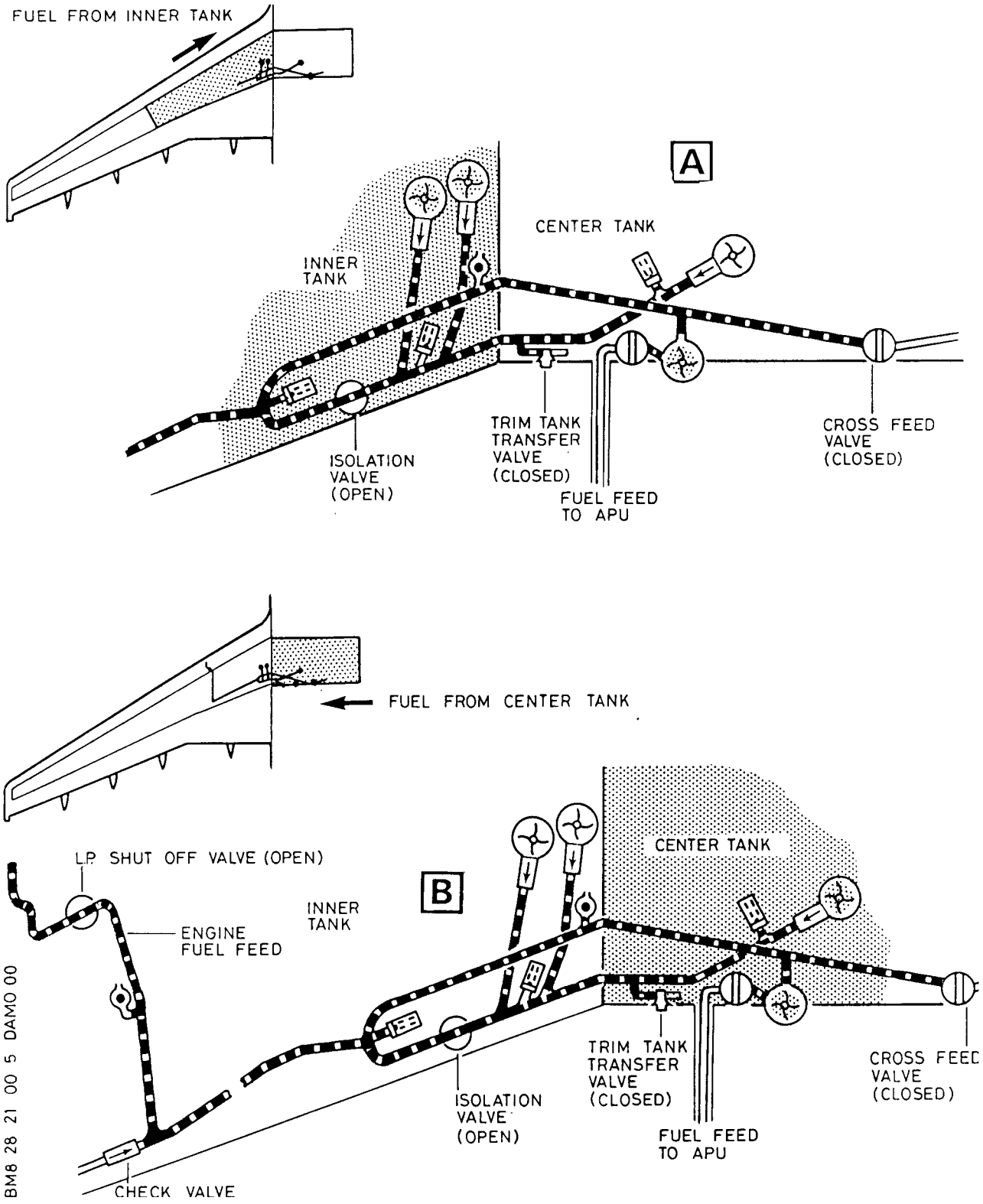
R (a) Use clean lint-free cotton cloths to fully dry the bottom of the tank below the fuel pipes/connectors that are to be tested.

NOTE : If the bottom of the tank is clean and dry, it will be easier to find any fuel that leaks from the pipes/connectors that you have installed.

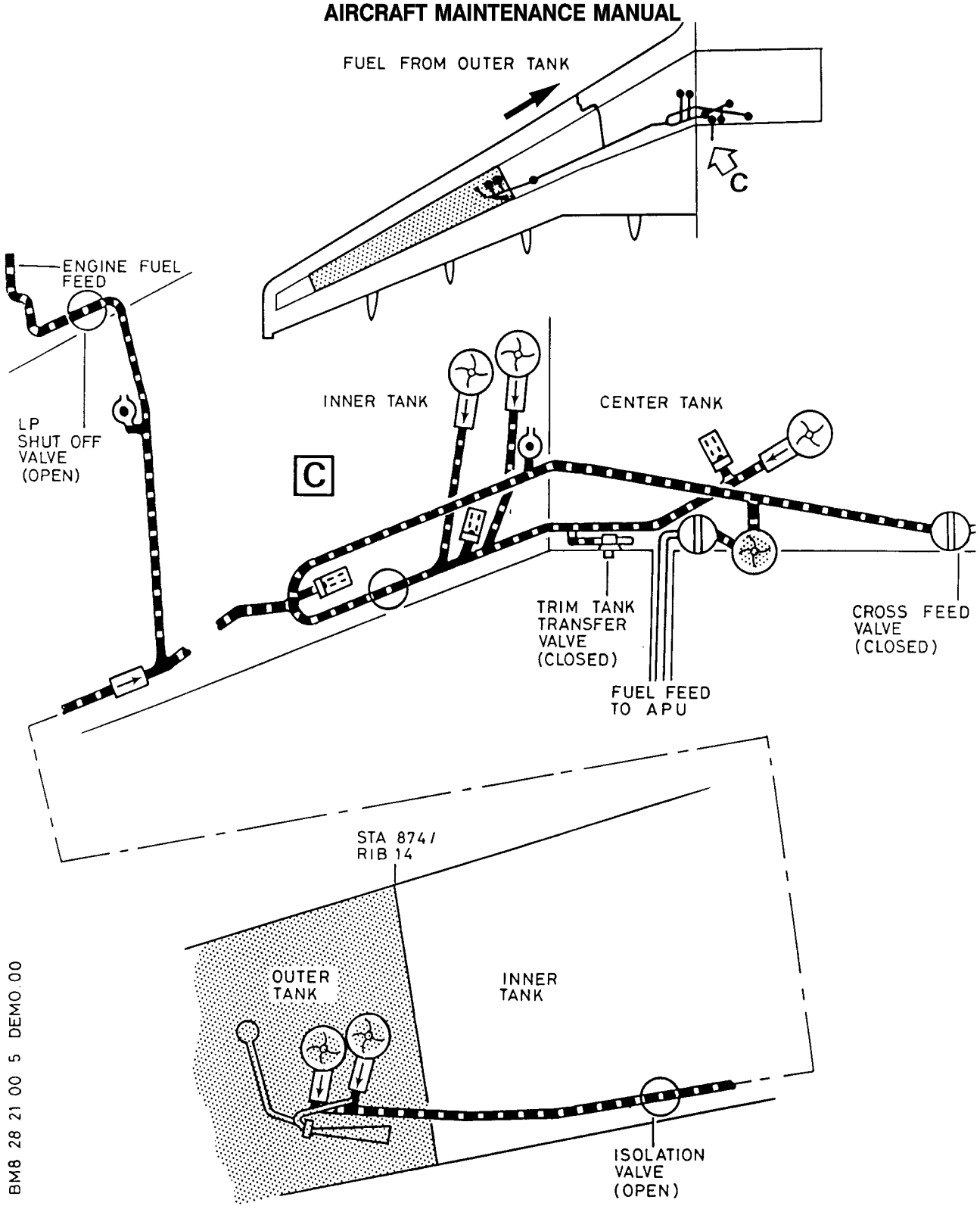
R (b) Install the manhole covers in the area(s) you have been working and make sure that all the manhole covers are installed on all the fuel tanks:

1 For the wing tanks:
- (Ref. 28-11-22, P. Block 401)
- (Ref. 28-11-24, P. Block 401)
- (Ref. 28-21-12, P. Block 401).

2 For center tank:
- (Ref. 28-11-29, P. Block 401).



Testing Pipeline Section Using Fuel From Inner and Center Tank
Figure 501



Testing Pipeline Section Using Fuel From Outer Tank
Figure 502

R WARNING : ALWAYS MAKE SURE THAT THE FUEL TANK MANHOLE COVERS ARE
R INSTALLED WHEN THE AIRCRAFT ELECTRICAL SYSTEM IS ENERGIZED.
R FUEL FUMES ARE FLAMMABLE AND ELECTRICAL SPARKS CAN CAUSE FIRES.
R
R (c)Energize the aircraft electrical network (Ref. 24-41-00,
R P. Block 301).
R (d)Make sure that the circuit breakers that follow are closed:

PANEL	SERVICE	IDENT.	LOCATION
101VU	FUEL/L INNER TK/PUMP 2 SUPPLY	1QA	ESS/B01
101VU	FUEL/R INNER TK/PUMP 1 SUPPLY	2QA	ESS/A01
101VU	FUEL/L OUTER TK/PUMP 1 SUPPLY	3QA	GEN1/A20
101VU	FUEL/R OUTER TK/PUMP 1 SUPPLY	4QA	GEN1/A14
101VU	FUEL/L OUTER TK/PUMP 1 SUPPLY	5QA	GEN2/A17
101VU	FUEL/R OUTER TK/PUMP 2 SUPPLY	6QA	GEN2/B02
101VU	FUEL/L INNER TK/PUMP 1 SUPPLY	7QA	GEN2/A23
101VU	FUEL/R INNER TK/PUMP 2 SUPPLY	8QA	GEN2/A20
101VU	FUEL/CTR TK/L PUMP SUPPLY	99QA	ESS/B04
101VU	FUEL/CTR TK/R PUMP SUPPLY	100QA	GEN2/B17
132VU	FUEL/FQI/SUPPLY AND IND	1QT	321/P59
132VU	FUEL/FQI/CHAN SUPPLY 1	3QT	321/P60
132VU	FUEL/FQI/CHAN SUPPLY 2	4QT	321/P61
132VU	FUEL/ISOL VALVE/L INR TK/SUPPLY	3QB	324/L55
132VU	FUEL/ISOL VALVE/R INR TK/SUPPLY	4QB	324/L56
132VU	FUEL/X FEED VALVE/POS ANN	3QE	324/L59
132VU	FUEL/X FEED VALVE/MOTOR 1	2QE	324/L60
132VU	FUEL/X FEED VALVE/MOTOR 2	1QE	324/L61
132VU	FUEL/ISOL VALVES L OUTR TK SUPPLY	1QB	324/L53
132VU	FUEL/ISOL VALVES R OUTR TK SUPPLY	2QB	324/L58
133VU	ENGINES/ENG 1/FUEL HP VALVE/CTL	3KC	333/T69
133VU	ENGINES/ENG 1/FUEL HP VALVE/WARN	1KC	333/T68
133VU	ENGINES/ENG 2/FUEL HP VALVE/WARN	2KC	335/R73
133VU	ENGINES/ENG 2/FUEL HP VALVE/CTL	4KC	333/T70
	- for testing pipes in center tank left:		
132VU	FUEL/L INR TK/PUMP 1/CTL	69QA	322/N60
132VU	FUEL/L INR TK/PUMP 2/WARN	11QA	322/N61
132VU	FUEL/L INR TK/PUMP 1/WARN	17QA	323/M60
132VU	FUEL/L INR TK/PUMP 2/CTL	59QA	323/M61
	- for testing pipes in center tank right:		
132VU	FUEL/R INR TL/PUMP 1/CTL	60QA	322/N62
132VU	FUEL/R INR TK/PUMP 2/WARN	18QA	322/N63
132VU	FUEL/R INR TK/PUMP 1/WARN	12QA	323/M62
132VU	FUEL/R INR TK/PUMP 2/CTL	70QA	323/M63
	- for testing pipes in left inner and center tank left:		
22VU	FUEL/OUTR TK PUMP 2/L TK/CTL	61QA	201/J15
22VU	FUEL/OUTR TK PUMP 2/L TK/WARN	13QA	201/J16
132VU	FUEL/L OUTR TK/PUMP 1/CTL	67QA	322/N56
132VU	FUEL/L OUTR TK PUMP 1/WARN	15QA	323/M56

PANEL	SERVICE	IDENT.	LOCATION
	- for testing pipes in right inner and center tank right:		
22VU	FUEL/OUTR TK PUMP 2/R TK/WARN	16QA	201/J17
22VU	FUEL/OUTR TK PUMP 2/R TK/CTL	68QA	201/J18
132VU	FUEL/R OUTR TK/PUMP 1/WARN	14QA	322/N57
132VU	FUEL/R OUTR TK/PUMP 1/CTL	62QA	323/M57
	- for testing pipes in left and right inner tank:		
132VU	FUEL/CTR TK/L PUMP/CTL	63QA	322/N58
132VU	FUEL/CTR TK/R PUMP/WARN	102QA	322/N59
132VU	FUEL/CTR TK/L PUMP/WARN	101QA	323/M58
132VU	FUEL/CTR TK/R PUMP/CTL	64QA	323/M59

R (e)Make sure that the adjacent tank contains at least 1000 kg (2200 lb) of fuel to do the test. If necessary, transfer fuel or defuel or refuel the aircraft (Ref. 28-25-00 or 12-11-28, P. Block 301).
R (f)In the flight compartment:
R 1 On the center pedestal:
R - make sure that the ENG 1 and ENG 2 FUEL levers are set to OFF.
R 2 On panel 430VU:
R - make sure that the X FEED valve is closed (crossline flowbar on)
R - if the outer or inner tank pumps are used to pressurize the engine feed system pipeline, make sure that the related ISOL VALVE flowbar is on (valve open)
R - if the center tank pumps are used to pressurize the engine feed system pipeline, make sure that the inner tank ISOL VALVE flowbar is on (valve open).

(2)Test

ACTION	RESULT
1. On panel 430VU:	On panel 430VU:
R - make sure that all the PUMP P/BSW's are released (out)	- all the OFF legends in the PUMP P/BSW's, are on
R - push (in) the applicable PUMP P/BSW.	- the OFF legend in the related PUMP P/BSW, will go off R - the related pump will run R - the engine feed system pipeline will be pressurized up to the HP valve.
R 2. Let the related pump run for five minutes.	
3. On panel 430VU:	On panel 430VU:
R - release (out) the related PUMP P/BSW.	- the OFF legend in the related PUMP P/BSW, will come on R - the related pump will stop.

ACTION	RESULT
R 4. Open the access door 144DR to get access to the refuel/defuel panel 110VU.	In the belly fairing, the refuel/defuel panel 110VU, is energized.
R 5. On panel 110VU: R - lift the guard and put the TRANSF. VALVE switch in the OPEN position	On panel 110VU: - the OPEN indicator light for the TRANSF. VALVE, will come on In the center tank, the transfer valve will open
R NOTE : The fuel pressure in the engine feed system pipeline, will be released into the refuel/defuel gallery.	
R - wait one minute and then put the TRANSF. VALVE switch in the CLOSED and guarded position.	On panel 110VU: - the OPEN indicator light for the TRANSF. VALVE, will go off. In the center tank, the transfer valve will close.
R 6. Close the access door 144DR.	The refuel/defuel panel 110VU, is de-energized.

R (a)De-energize the aircraft electrical network (Ref. 24-41-00, P. Block 301).

R WARNING : ALWAYS MAKE SURE THAT THE AIRCRAFT ELECTRICAL SYSTEM IS DE-ENERGIZED WHEN THE FUEL TANK MANHOLE COVERS ARE REMOVED. FUEL FUMES ARE FLAMMABLE AND ELECTRICAL SPARKS CAN CAUSE FIRES.

R (b)Remove the applicable manhole covers to get access to the pipes/connectors (of the engine feed system pipeline) that you have tested:
R 1 For the wing tanks:
R - (Ref. 28-11-22, P. Block 401)
R - (Ref. 28-11-24, P. Block 401)
R - (Ref. 28-21-12, P. Block 401).
R 2 For the center tank:
R - (Ref. 28-11-29, P. Block 401).

R WARNING : OBEY THE SAFETY PRECAUTIONS IN 28-00-00, P. BLOCK 301 AND 28-10-00, P. BLOCK 301.

R (c)Put a 5.5 m (18 ft) access platform in position and get access to the fuel pipes/connectors (in the engine feed system pipeline) that you have tested.
R (d)Use an inspection lamp to inspect the areas that follow for signs of

R fuel leaks:
R - the bottom of the tank below the pipes/connectors
R - the fuel pipes
R - the connectors
R No fuel leaks permitted.

R 1 If there are no fuel leaks then, continue with the Close-Up procedure
R Ref. Para. 5.C.(3).
R 2 If you do find fuel leaks then:
R - use clean lint-free cotton cloths to fully remove any spilled fuel
R and fully dry the area
R - examine the pipe/connector joints adjacent to the leak area for
R possible cause of the leak(s)
R - if necessary, disconnect the joints you think have caused the
R leaks(s) and inspect them for damage. Reconnect the joints with
R new O-rings (Ref. 28-00-00, P. Block 401).
R 3 Do the test again until there are no leaks.

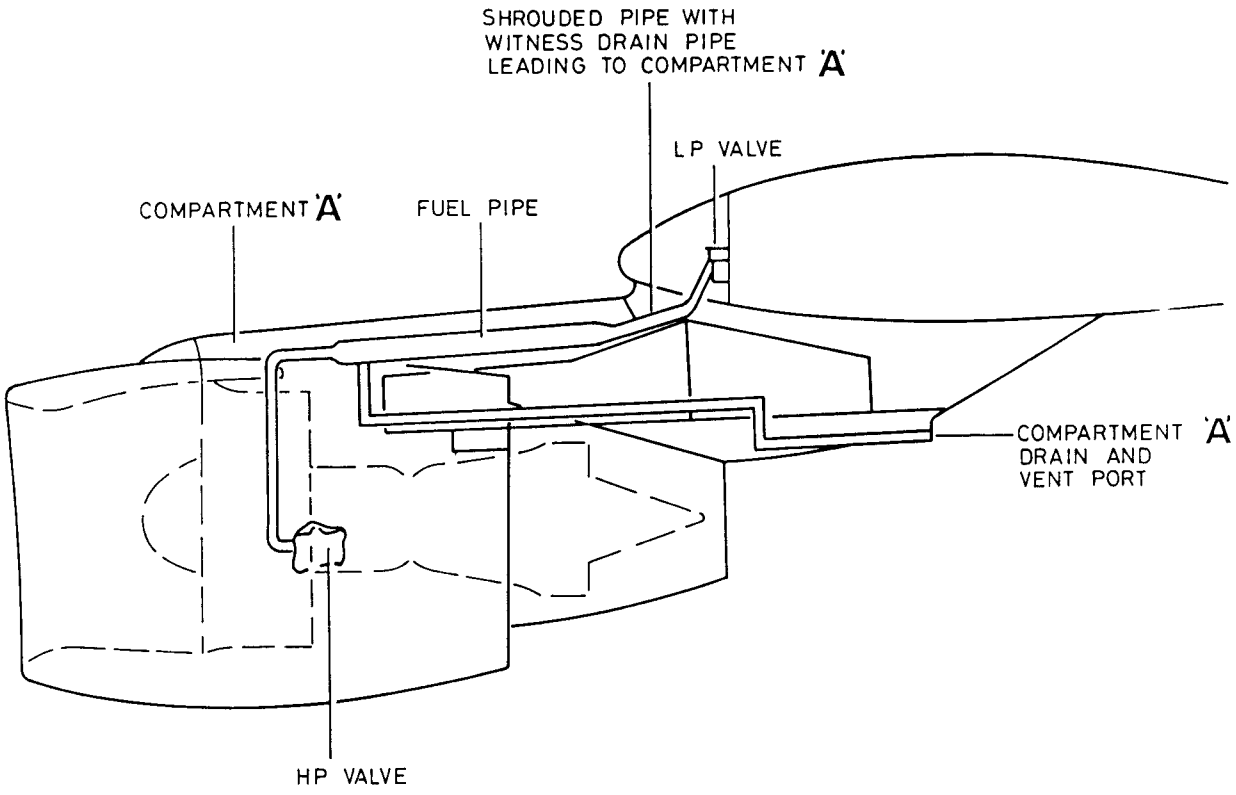
(3)Close-Up
(a)Complete the close-up as instructed in the removal/installation procedure (Ref. 28-00-00, P. Block 401).
R
R

D. Procedure for Pipes in Pylon
(Ref. Fig. 503)

(1)Job Set-Up
(a)Make sure that the following circuit breakers are closed:
- for engine 1 pylon pipeline:

PANEL	SERVICE	IDENT.	LOCATION
132VU	FUEL/FQI/SUPPLY & IND	1QT	321/P59
132VU	FUEL/FQI/CHAN SUPPLY 1	3QT	321/P60
132VU	FUEL/FQI/CHAN SUPPLY 2	4QT	321/P61
132VU	FUEL/L INR TK PUMP 1 CTL	69QA	322/N60
132VU	FUEL/L INR TK PUMP 2 WARN	11QA	322/N61
132VU	FUEL/L INR TK PUMP 1 WARN	17QA	323/M60
132VU	FUEL/L INR TK PUMP 2 CTL	59QA	323/M61
132VU	FUEL/AUTO FEED WARN	66QA	322/N55
132VU	FUEL/AUTO FEED CTL	65QA	323/M55
132VU	FUEL/LP VALVES ENG 1 POS ANN	5QG	322/N53
132VU	FUEL/LP VALVES ENG 1 MOTOR 1	1QG	323/M53
132VU	FUEL/ISOL VALVES/L INR TK/SUPPLY	3QB	324/L55
133VU	ENGINES/ENG 1/FUEL HP VALVE/CTL	3KC	333/T69
133VU	ENGINES/ENG 1/FUEL HP VALVE/WARN	1KC	333/T68

- for engine 2 pylon pipeline



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Testing Pipeline Sections in Pylon
Figure 503

PANEL	SERVICE	IDENT.	LOCATION
132VU	FUEL/R INR TK PUMP 1 CTL	60QA	322/N62
132VU	FUEL/R INR TK PUMP 2 WARN	18QA	322/N63
132VU	FUEL/R INR TK PUMP 1 WARN	12QA	323/M62
132VU	FUEL/R INR TK PUMP 2 CTL	70QA	323/M63
132VU	FUEL/FQI/SUPPLY & IND	1QT	321/P59
132VU	FUEL/FQI/CHAN SUPPLY 1	3QT	321/P60
132VU	FUEL/FQI/CHAN SUPPLY 2	4QT	321/P61
132VU	FUEL/AUTO FEED WARN	66QA	322/N55
132VU	FUEL/AUTO FEED CTL	65QA	323/M55
132VU	FUEL/LP VALVES ENG 2 MOTOR 1	2QG	322/N54
132VU	FUEL/LP VALVES ENG 2 POS ANN	6QG	323/M54
132VU	FUEL/ISOL VALVES/R INR TK/SUPPLY	4QB	324/L56
133VU	ENGINES/ENG 2/FUEL HP VALVE/WARN	2KC	335/R73
133VU	ENGINES/ENG 2/FUEL HP VALVE/CTL	4KC	333/T70

(b)Energize the aircraft electrical network (Ref. 24-41-00, P. Block 301).

R (c)Make sure that the inner tank(s) contain(s) at least 1000 kg (2200 lb)
R of fuel to do the test. If necessary, transfer fuel or defuel or
R refuel the aircraft (Ref. 28-25-00 or 12-11-28, P. Block 301).

(d)On panel 430VU:
- Make sure that the associated LP VALVE is open (flowbar on).
- Make sure that the associated inner tank ISOL VALVE is open (flowbar on).
- Make sure that the TRIM TK ISOL VALVE P/BSW is released (out) (valve shut).

(e)On the flight-compartment center pedestal, make sure that the associated HP VALVE is in the OFF position (HP VALVE closed).

(2)Test

ACTION	RESULT
1. On panel 430VU: - Make sure that all the PUMP P/BSW's are released (out)	On panel 430VU: - All the pump P/BSW OFF legends are on.
- Push (in) the related INR TK PUMP P/BSW's.	- The related inner tank pump P/BSW OFF legends go off. - The related inner tank pumps run. - The engine feed line up to the HP valve is pressurized.
2. At the pylon: - Examine, at the witness drain pipe in compartment A, that there is no leakage from the line between the LP valve and compartment A, over a period	

ACTION	RESULT
of one minute after receiving fuel. - Examine, at the witness drain pipe at the bottom rear of the pylon, that there is no leakage the line in compartment A, over a period of one minute after receiving fuel.	
3. On panel 430VU: - Release (out) the related INR TK PUMP P/BSW's.	On panel 430VU: - the related INR TK PUMP P/BSW OFF legends come on - the related inner tank pumps stop.

(3)Close-Up
(a)On panel 430VU, press (in) the TRIM TK ISOL VALVE P/BSW.
(b)Refuel or defuel the aircraft to the required fuel load (Ref. 12-11-28 or 28-25-00, P. Block 301).
(c)De-energize the aircraft electrical network (Ref. (Ref. 24-41-00, P. Block 301).
(d)Complete the Close-Up as instructed in the Removal/Installation procedure (Ref. 28-00-00, P. Block 401).

6. Not applicable.

7. Not applicable.

8. Operational Test - Check Valves in Engine Feed System

A. Reason for the Job
(1)To make sure the check valves in the engine feed system prevent the reverse flow of fuel. This test is for the:
- integral check valve in each booster pump canister of the left and right inner tanks and the center tank
- check valve in the engine feed line from each outer tank.

B. Equipment and Materials

ITEM	DESIGNATION
Referenced Procedures	
- 12-11-28, P. Block 301	Replenishing of Fuel Tanks
- 12-31-28, P. Block 201	Cold Weather Maintenance - Fuel
- 24-41-00, P. Block 301	AC External Power Control
- 28-21-13, P. Block 401	Canister (Inner Tanks)
- 28-21-37, P. Block 401	Center Tank Booster Pump Canister
- 28-21-15, P. Block 401	Check Valve (2 in)

ITEM	DESIGNATION
- 28-25-00, P. Block 301	Refuel/Defuel System

CAUTION : WHEN YOU MUST OPERATE THE FQI SYSTEM OR THE REFUEL/DEFUEL PANEL 110VU, IN AMBIENT TEMPERATURES BELOW -40 DEG. C. (-40 DEG. F.), REFER TO THE PROCEDURES FOR THE PREPARATION FOR OPERATION OF THE:
- FUEL QUANTITY INDICATOR SYSTEM (FQIS)
- REFUEL/DEFUEL PANEL 110VU,
(REF. 12-31-28, P. BLOCK 201).

C. Procedure
(1)Job Set-Up
(a)Energize the aircraft electrical network (Ref. 24-41-00, P. Block 301).
(b)Make sure that the circuit breakers that follow are closed:

PANEL	SERVICE	IDENT	LOCATION
22VU	FUEL/OUTR TK ISOL VALVE L	1QB	201/J21
22VU	FUEL/OUTR TK ISOL VALVE R	2QB	201/J22
101VU	FUEL/L INNER TK/PUMP 2 SUPPLY	1QA	ESS/B01
101VU	FUEL/R INNER TK/PUMP 1 SUPPLY	2QA	ESS/A01
101VU	FUEL/L INNER TK/PUMP 1 SUPPLY	7QA	GEN 2/A23
101VU	FUEL/R INNER TK/PUMP 2 SUPPLY	8QA	GEN 2/A20
132VU	FUEL/L INR TK/PUMP 2/WARN	11QA	322/N61
132VU	FUEL/R INR TK/PUMP 1/WARN	12QA	323/M62
132VU	FUEL/L INR TK/PUMP 1/ WARN	17QA	323/M60
132VU	FUEL/R INR TK/PUMP 2/WARN	18QA	322/N63
101VU	FUEL/CTR TK/L PUMP SUPPLY	99QA	ESS/B04
101VU	FUEL/CTR TK/R PUMP SUPPLY	100QA	GEN2/B17
132VU	FUEL/ISOL VALVES L INR TK SUPPLY	3QB	324/L55
132VU	FUEL/ISOL VALVES R INR TK SUPPLY	4QB	324/L56
132VU	FUEL/X FEED VALVE/POS ANN	3QE	324/L59
132VU	FUEL/X FEED VALVE/MOTOR 1	2QE	324/L60
132VU	FUEL/X FEED VALVE/MOTOR 2	1QE	324/L61
132VU	FUEL/LP VALVES ENG 1 MOTOR 1	1QG	323/M53
132VU	FUEL/LP VALVES ENG 2 POS ANN	6QG	323/M54
132VU	FUEL/CTR TK/L PUMP/WARN	101QA	323/M58
132VU	FUEL/CTR TK/R PUMP/CTL	64QA	323/M59
132VU	FUEL/LP VALVES ENG 1 POS ANN	5QG	322/N53
132VU	FUEL/LP VALVES ENG 2 MOTOR 1	2QG	322/N54
132VU	FUEL/CTR TK/L PUMP/CTL	63QA	322/N58
132VU	FUEL/CTR TK/R PUMP/WARN	102QA	322/N59
132VU	FUEL/FQI/SUPPLY AND IND	1QT	321/P59
132VU	FUEL/FQI/CHAN SUPPLY 1	3QT	321/P60
132VU	FUEL/FQI/CHAN SUPPLY 2	4QT	321/P61
132VU	FUEL/ISOL VALVES L OUTR TK SUPPLY	1QB	324/L53
132VU	FUEL/ISOL VALVES R OUTR TK SUPPLY	2QB	324/L58

(c)Refuel, defuel or transfer fuel (Ref. 12-11-28 or 28-25-00, P. Block 301), as necessary, to get a fuel load of:
- 1000 kg (minimum) in the center tank
- between 5000 and 8000 kg in each inner tank
- between 1000 and 2000 kg in each outer tank.

(d)Open the access door 144DR.

(e)On the panel 110VU, make sure that the TRANSF. VALVE switch is in the CLOSED and guarded position.

(f)Close the access door 144DR.

(g)In the flight compartment, on the overhead panel 430VU, make sure that the:
- X FEED P/BSW is released (out) and the cross-line flowbar is on
- inner and outer tank ISOL VALVES P/BSW's are pushed (in) and their (in-line) flowbars are on
- all the PUMP P/BSW's are released (out) and their OFF legends are on.

(h)From the FUEL QTY indicator, record the quantity of fuel in the:
- center tank
- left and right inner tanks
- left and right outer tanks.

(j)Operate the water drain valve in the vent surge tank of the left and right outer tanks (Ref. 28-25-00, P. Block 301). Make sure that the vent surge tanks are empty.

(2)Do the test

ACTION	RESULT
1. On panel 430VU: - push (in) the L and R CTR TK PUMP P/BSW's and record the time.	On panel 430VU: - the two CTR TK PUMP P/BSW OFF legends go off - the two CTR TK PUMP P/BSW FAULT legends come on momentarily, then go off as the pumps run.
2. During the 15 minutes that follow, monitor the center-tank FQI indicator and if the fuel quantity decreases 1000 kg or more: - Immediately stop the pumps. - Examine the check valves as given below.	
3. After 15 minutes, on panel 430VU, release (out) the L and R CTR TK PUMP P/BSW's.	The two CTR TK PUMP P/BSW OFF legends come on when the pumps stop.
4. From the FUEL QTY indicators, record the quantity of fuel in the: - left and right inner tanks - left and right outer tanks.	For each inner and outer tank, the quantity must be the same as that recorded before the test ± 200 kg. If there is an increase of more than

ACTION	RESULT
	200 kg in an inner tank: - Examine the check valve in each of the two booster pump canisters for damage and correct operation and if necessary, replace the check valve(s) (Ref.28-21-13, P. Block 401) - Do the test again. If there is an increase of more than 200 kg in an outer tank: - Replace the check valve in the engine feed line from the outer tank (Ref. 28-21-15, P. Block 401) - Do the test again.
5. Operate the water drain valve in the vent surge tank of the left and right outer tanks (Ref. 28-25-00, P. Block 301).	There must be no fuel in the vent surge tanks.
6. On panel 430VU: - push (in) the L and R INR TK PUMP 1 and PUMP 2 P/BSW's and record the time.	On panel 430VU: - the L and R INR TK PUMP 1 and 2 legends go off - the L and R INR TK PUMP 1 and 2 FAULT legends come on momentarily, then go off as the pumps run.
7. After 15 minutes, release (out) the L and R INR TK PUMP P/BSW'S.	The L and R INR TK PUMP P/BSW OFF legends come on when the pumps stop.
8. On the FUEL QTY indicator, record the quantity of fuel in the: center tank	For the center tank, the quantity must be the same as that recorded before the test - ± 200 kg. If there is an increase of more than 200 kg in the center tank: - Examine the check valve of the two booster pump canisters for damage and correct operation. If necessary, replace the check valve(s) (Ref.28-21-37, P. Block 401) - Do the test again. If there is an increase of more than

ACTION	RESULT
	200 kg in an outer tank: - Replace the check valve in the engine feed line from the outer tank (Ref. 28-21-15, P. Block 401) - Do the test again.
9. Operate the water drain valve in the vent surge tank of the left and right outer tanks (Ref. 28-25-00, P. Block 301).	There must be no fuel in the vent surge tanks.

(3)Close-Up
(a)Refuel, defuel or transfer the fuel as necessary (Ref. 12-11-28 or 28-25-00, P. Block 301).
(b)De-energize the aircraft electrical network (Ref. 24-41-00, P. Block 301).
(c)Make sure the work area is clean and clear of all tools and other items.

FUEL PUMP SYSTEM - DEACTIVATION/REACTIVATION

Ref. MMEL Sect.01-28 Item 11

WARNING : LANDING GEAR - MAKE SURE THAT THE GROUND SAFETIES AND CHOCKS ARE IN POSITION.

MAKE SURE THAT YOU ISOLATE THE ELECTRICAL CIRCUITS UPON WHICH WORK IS IN PROGRESS.

CAUTION : THIS PROCEDURE TO BE USED IN ACCORDANCE WITH THE REQUIREMENTS OF THE MMEL.

1. Deactivation

A. Reason for the Job
(1)To deactivate the automatic fuel feed system.

B. Equipment and Materials

ITEM	DESIGNATION
A.	Circuit Breaker Safety Clip and Tag
Referenced Procedures	
- 24-41-00, P. Block 301	AC External Power Control
- 28-21-00, P. Block 501	Fuel Pump System - Adjustment/Test

C. Procedure
(1)Job Set-up
(a)Energize the aircraft electrical network and make sure that the electronics racks are ventilated (Ref. 24-41-00, P. Block 301).

(2)Deactivation of the automatic fuel feed system
(a)Open, safety and tag the circuit breaker that follows:

PANEL	SERVICE	IDENT.	LOCATION
132VU	FUEL/AUTO FEED CTL	65QA	323/M55

(b)Display a warning notice in the flight compartment to warn the flight crew that the auto feed system has been deactivated.
(c)Make an entry in the aircraft technical log.

2. Reactivation

A. Reason for the Job
(1)To reactivate the automatic fuel feed system.

R

B. Equipment and Materials

ITEM	DESIGNATION
A.	Circuit Breaker Safety Clip and Tag
Referenced Procedures - 24-41-00, P. Block 301	AC External Power Control

C. Procedure

(1)Job Set-up

(a)Energise the aircraft electical network and make certain that the electronics racks are ventilated (Ref. 24-41-00, P. Block 301).

(2)Reactivation of the automatic fuel feed system.

(a)Remove the safety clip and close the circuit breaker that follows:

PANEL	SERVICE	IDENT.	LOCATION
132VU	FUEL/AUTO FEED CTL	65QA	323/M55

(b)Do a functional test of the fuel-pump autofeed system (Ref. 28-21-00, P. Block 501).

(3)Close-up

(a)De-energise the aircraft electrical network (Ref. 24-41-00, P. Block 301).

(b)Make sure that the working area is clear of tools and all other items of equipment.

(c)Remove the warning notices in the flight compartment.

(d)Make the appropriate entries in the aircraft technical log.

THERMAL EXPANSION VALVE - REMOVAL/INSTALLATION

WARNING : LANDING GEAR - MAKE CERTAIN GROUND SAFETIES AND CHOCKS ARE IN POSITION.

FLIGHT CONTROLS - MAKE CERTAIN GROUND SAFETIES AND NOTICES ARE IN POSITION.

OBSERVE THE SAFETY PRECAUTIONS IN 28-00-00, P. BLOCK 301. AND 28-11-00, P. BLOCK 301.

MAKE CERTAIN THAT FIRE FIGHTING EQUIPMENT IS AVAILABLE AND ADEQUATE.

1. Equipment and Materials

ITEM	DESIGNATION
A.	Access Platform 3m (10 ft)
B.	O-ring Seal (Pipeline)
C.	O-ring Seal (Valve)
D.	O-ring Seal (Adaptor)
E.	Container
F.	Circuit Breaker Safety Clips and Tags
G.	Lockwire, Corrosion Resistant Steel 0.8mm (0.032 in) dia.
H. Material No. 01-001	Fuels (Ref. 20-31-00)
J. Material No. 09-001	Sealants (Ref. 20-31-00)
K. Material No. 09-002	Sealants (Ref. 20-31-00)
L. Material No. 09-005	Sealants (Ref. 20-31-00)
Referenced Procedures	
- 28-00-00, P. Block 301	Fuel - General
- 28-10-00, P. Block 301	Storage
- 28-11-22, P. Block 401	Manhole Cover
- 28-21-00, P. Block 501	Fuel Pump System
- 28-25-00, P. Block 501	Refuel/Defuel System

2. Procedure

A. Job Set-Up
(1) Defuel left or right inner tank as appropriate (Ref. 28-25-00, P. Block 501).
(2) On panel 430VU. Check the following control settings.
- CROSSFEED VALVE - closed
- INNER AND OUTER TANK ISOLATION VALVES - closed
(3) Open, safety and tag the following circuit breakers:
- For Thermal expansion valves - left wing

PANEL	SERVICE	IDENT.	LOCATION
132VU	FUEL/L INR TK/PUMP 1/CTL	69QA	322/N60
132VU	FUEL/L INR TK/PUMP 2/CTL	59QA	323/M61
132VU	FUEL/CTR TK/L/PUMP/CTL	63QA	322/N58
132VU	FUEL-ISOL VALVES L OUTR AND INR TK FLASHER	51QB	324/L54
132VU	FUEL-ISOL VALVES L INR TK SUPPLY	3QB	324/L55
132VU	FUEL-ISOL VALVES L OUTR TK SUPPLY	1QB	324/L53
132VU	FUEL-X FEED VALVE MOTOR 1	2QE	324/L60
132VU	FUEL-X FEED VALVE MOTOR 2	1QE	324/L61

- For Thermal expansion valves - right wing

PANEL	SERVICE	IDENT.	LOCATION
132VU	FUEL/R INR TK/PUMP 1/CTL	60QA	322/N62
132VU	FUEL/R INR TK/PUMP 2/CTL	70QA	323/M63
132VU	FUEL/CTR TK/R/PUMP/CTL	64QA	323/M59
132VU	FUEL-ISOL VALVES R OUTR AND INR TK FLASHER	52QB	324/L57
132VU	FUEL-ISOL VALVES R INT TK SUPPLY	4QB	324/L56
132VU	FUEL-ISOL VALVES R OUTR TK SUPPLY	2QB	324/L58
132VU	FUEL-X FEED VALVE MOTOR 1	2QE	324/L60
132VU	FUEL-X FEED VALVE MOTOR 2	1QE	324/L61

(4)Position access platform.
(5)Remove manhole cover 540(640)AB (Ref. 28-11-23, P. Block 401).

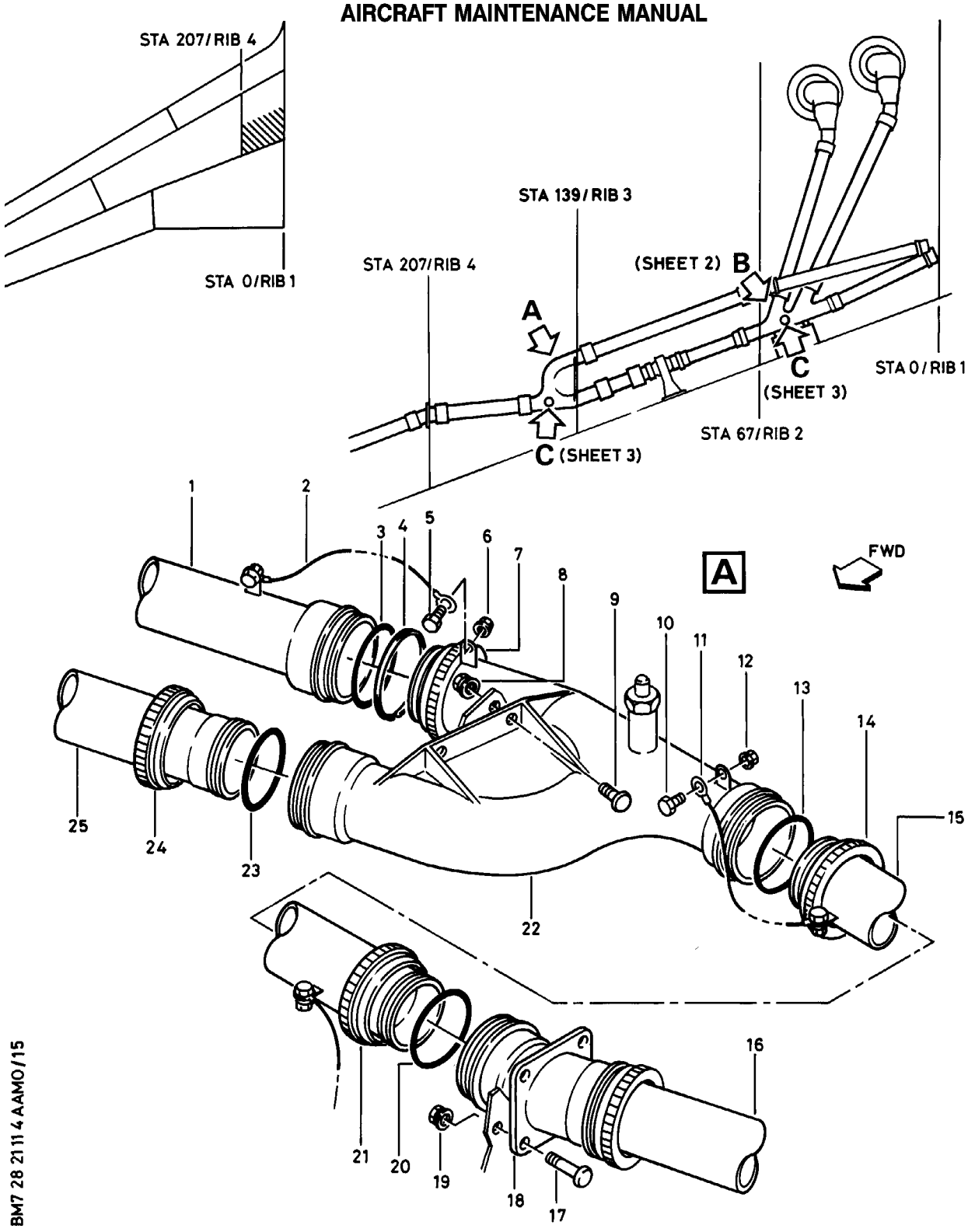
B. Removal
(Ref. Fig. 401)
(Ref. Fig. 402)

(Ref. Fig. 403)

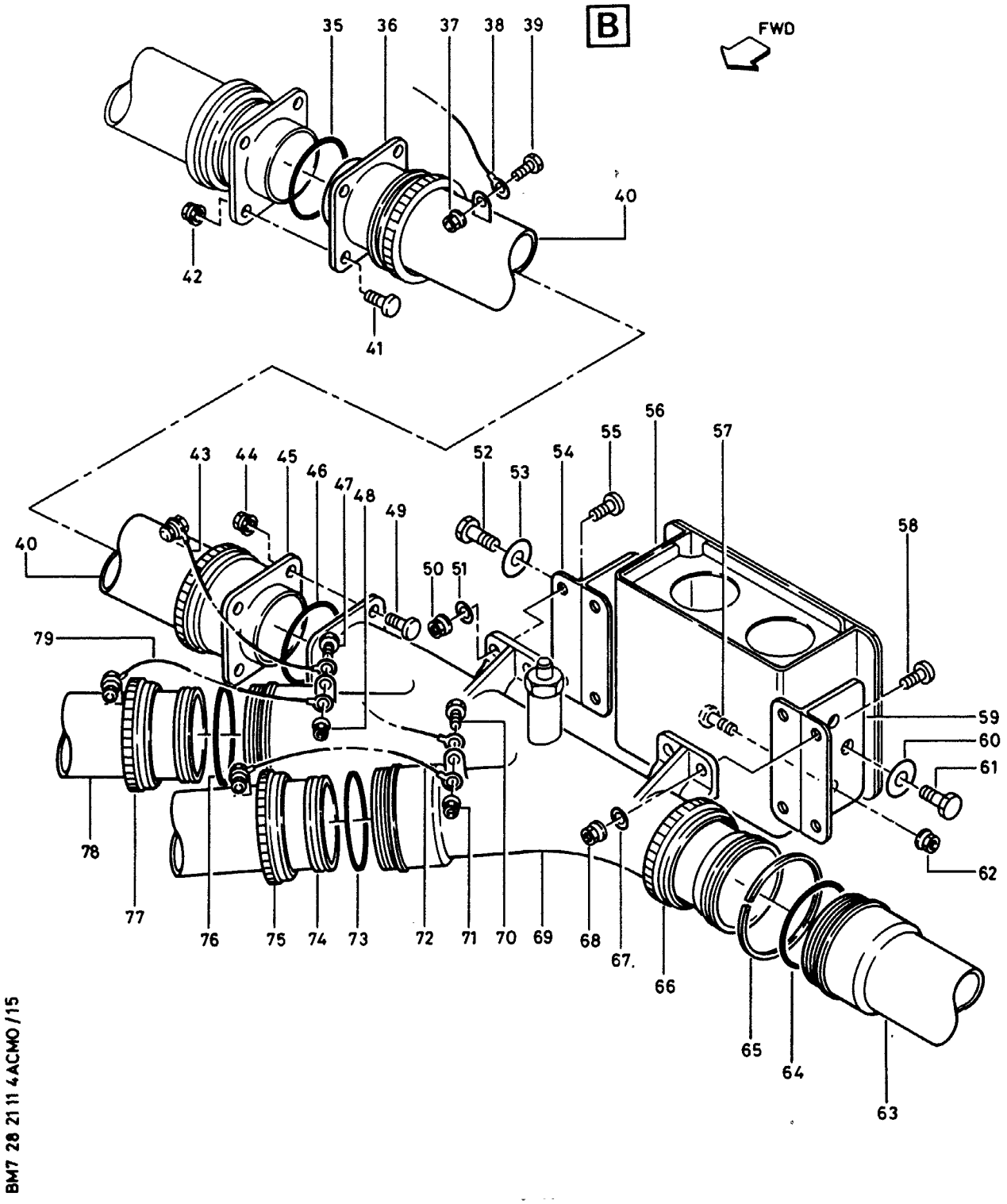
CAUTION: DO NOT CUT OR REMOVE LOCKWIRE INSIDE FUEL TANKS.

R NOTE: Remove connectors (22, 69) from tank to remove or install lockwire securing thermal expansion valve (90).

(1)Put the container below the applicable line connector.
(2)To remove connector (69) (between Ribs 1 and 2):
(a)Remove nuts (37,48,71), bolts (39,47,70) and disconnect bonding leads (38,43,72,79).
(b)Remove nuts (42,44) and bolts (41,49), move adaptors (36,45) to center of line (40) then remove line together with the adaptors.
(c)Unscrew nuts (75,77), move lines (74,78) forward against the internal stops in the connectors.
(d)Unscrew nut (66), then remove circlip (65) from the nut.
(e)Remove nuts (50,68), washers (51,67) and bolts (55,58).
(f)Remove nuts (62), bolts (52,57,61), washers (53,60) and brackets (54,59).
(g)Move line (63) outboard against the internal stops in the line.

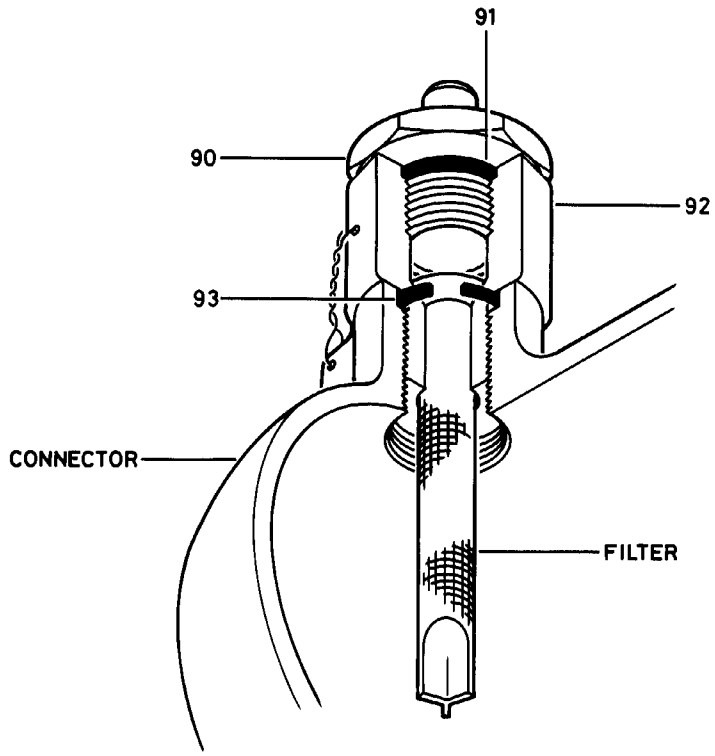


Connectors - Fuel Feed System - Installation
Figure 401



Connectors - Fuel Feed System - Installation
Figure 402

C TYPICAL



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Connectors - Fuel Feed System - Installation
Figure 403

(h)Move connector (69) outboard and to the rear to disconnect lines (74,78), then inboard to remove line (63). Collect circlip (65) and nut (66) and remove the connector.
(j)Remove connector (69) from the tank.
(k)Remove the O-ring seals (35,46,64,73,76) and discard them.
(3)To remove connector (22) (between Ribs 3 and 4):
(a)Remove nuts (6,12), bolts (5,10) and disconnect bonding leads (2,11).
(b)Unscrew nut (14).
(c)Remove nuts (19) and bolts (17). Hold up line (15) and move connectors (18) and line (16) outboard against the internal stops in connector. Remove line (15).
(d)Unscrew nuts (7,24), then remove circlip (4) from nut (7).
(e)Remove nuts (8) and bolts (9) then remove connector (22) from Rib 2. Collect circlip (4) and nut (7).
(f)Remove connector (22) from the tank.
(g)Remove O-ring seals (3,13,20,23) and discard them.
(4)Cut and remove lockwire from the thermal expansion valve.
(5)Unscrew and remove adaptor (92) together with thermal expansion valve (90) and the filter. Remove O-ring seal (93) and discard.
(6)Unscrew and remove thermal expansion valve (90) from adaptor (92). Remove O-ring seal (91) and discard.

C. Preparation of Replacement Component

NOTE: Make sure that thermal expansion valve is suitable before installation.

(1)Clean and make an inspection of the thermal expansion valve/connector interface.
(2)Clean and make an inspection of the filter.
(3)Apply Material No. 01-001 to the O-ring seal (91) and install the O-ring seal on thermal expansion valve (90). Screw the thermal expansion valve into adaptor (92).

D. Preparation for Installation
(1)Clean and make an inspection of line/connector connections.
(2)Connector (69) only: Apply Material No. 01-001 to O-ring seals (35,46,64,73,76) and install the O-ring seals on the line ends.
(3)Connector (22) only:Apply Material No. 01-001 to O-ring seals (3,13,20,23) and install the O-ring seals on the line ends.

E. Installation

CAUTION: SAFETY THE VALVE WITH LOCKWIRE BEFORE INSTALLING CONNECTORS IN TANK.

(1)Apply Material No. 01-001 to O-ring seal (93) and install O-ring seal on adaptor (92).
(2)Install adaptor (92) together with thermal expansion valve (90) into connectors (69,22). Tighten the thermal expansion valve assembly and

safety with lockwire.
(3)Bend the lockwire tail and put down flat to surface. Apply Material No. 09-001 around each tail to a thickness of 2.0mm (0.08 in).
(4)To install connector (69) in tank:
(a)Put connector (69) through Rib 2. Assemble nut (66) and circlip (65) onto the connector and install the circlip in the nut.
(b)Engage connector (69) in line (63). Move connector, together with line, inboard and forward to engage in lines (74,78).
(c)Install nuts (75,77) to connector (69), do not tighten the nuts at this stage.
(d)Apply Material No. 09-002 on the interfaces of brackets (54,59).
(e)Install brackets (54,59) on support (56). Install washers (53,60), bolts (52,57,61) and nuts (62).
(f)Put connector (69) into position with brackets (54,59) and install bolts (55,58), washers (51,67) and nuts (50,68).
(g)Put line (40), together with adaptors (36,45) into position with connector (69). Move adaptors (36,45) to engage in ends of the adjoining lines. Install bolts (41,49) and nuts (42,44).
(h)Make sure lines (40,63,74,78) are in center position. Tighten nuts (66,75,77).
(j)Put bonding leads (38,43,72,79) into position on lines and attach with bolts (39,47,70), nuts (37,48,71)(Ref. 20-28-11, P. Block 301).
(5)To install connector (22):
(a)Apply Material No. 09-005 to connector (22) interface.
(b)Put connector (22) into position with lines (1,25). Attach connector to rib with bolts (9), nuts (8).
(c)Tighten nuts (7,24).
(d)Apply Material No. 09-005 to Rib 4/connector (18) interface.
(e)Install line (15) on connector (22). Move connector (18) inboard to engage on opposite end of line (15). Tighten nut (14).
(f)Install bolts (17), nuts (19).
(g)Put bonding ,leads (2,11) into position on lines and attach with bolts (5,10), nuts (6,12)(Ref. 20-28-11, P. Block 301).

F. Test
(1)Do the leak test on the engine-feed-system-line (Ref. 28-21-00, P. Block 501).

G. Close-Up
(1)Remove any tools and equipment from the work area.
(2)Close manhole cover 540(640)AB (Ref. 28-11-23, P. Block 401).
(3)Remove access platform.
(4)Remove safety clips and tags and close the following circuit breakers:
- for thermal expansion valves - left wing 59QA,69QA.63QA,51QB,3QB,1QB, 2 QE and 1QE.
- for thermal expansion valves - right wing 60QA,70QA,64QA,52QB,4QB, 2QB, 2QE and 1QE.

PUMP - BOOSTER, INBOARD TANKS - REMOVAL/INSTALLATION

WARNING : LANDING GEAR - MAKE CERTAIN GROUND SAFETIES AND CHOCKS ARE IN POSITION.

FLIGHT CONTROLS - MAKE CERTAIN GROUND SAFETIES AND NOTICES ARE IN POSITION.

BEFORE POWER IS SUPPLIED TO THE AIRCRAFT MAKE CERTAIN THAT ELECTRICAL CIRCUITS UPON WHICH WORK IS IN PROGRESS ARE ISOLATED.

MAKE CERTAIN THAT FIRE FIGHTING EQUIPMENT IS AVAILABLE AND ADEQUATE.

OBSERVE THE SAFETY PRECAUTIONS IN 28-00-00, P. BLOCK 301.

1. Equipment and Materials

	ITEM	DESIGNATION
	A.	Access Platform 4 m (13 ft)
R	B.	Circuit Breaker Clips and Tags
R	C.	Container 1 Liter (0.26 US gals)
R	D. 98A28201003000	Tool - Fuel Pump Shroud
R	E.	Lockwire, Corrosion-Resistant Steel, Dia.
R		0.8 mm (0.032 in.)
R	F.	O-ring
R	G.	O-ring
R	H. Material No. 01-001	Fuels (Ref. 20-31-00)
	Referenced Procedures	
	- 12-11-28, P. Block 301	Replenishing of Fuel Tanks
	- 24-41-00, P. Block 301	AC External Power Control
	- 28-00-00, P. Block 301	Fuel - General
	- 28-21-12, P. Block 501	Pump-Booster-Inner Tanks
R	- 28-21-13, P. Block 401	Canister-Booster Pump - Inner Tanks
	- 28-25-00, P. Block 301	Refuel/Defuel System

R NOTE : Items (F) and (G) are only required if the pump is removed for any reason other than replacement.

2. Procedure

A. Job Set-Up

(Ref. Fig. 401)

(Ref. Fig. 402)

(1)Open, safety and tag the applicable circuit breakers:

PANEL	SERVICE	IDENT.	LOCATION
101VU	FUEL/L INNER TK/PUMP 2/SUPPLY	1QA	ESS/B01
101VU	FUEL/R INNER TK/PUMP 1/SUPPLY	2QA	ESS/A01

PANEL	SERVICE	IDENT.	LOCATION
101VU	FUEL/L INNER TK/PUMP 1/SUPPLY	7QA	GEN2/A23
101VU	FUEL/R INNER TK/PUMP 2/SUPPLY	8QA	GEN2/A17
132VU	FUEL/L INR TK/PUMP 2/CTL	59QA	323/M61
132VU	FUEL/R INR TK/PUMP 1/CTL	60QA	322/N62
132VU	FUEL/L INR TK/PUMP 1/CTL	69QA	322/N60
132VU	FUEL/R INR TK/PUMP 2/CTL	70QA	323/M63

(2)De-energize the aircraft electrical network (Ref. 24-41-00, P. Block 301).
(3)Put the access platform in position below zone 542 (642).
(4)Remove the nut (2) and the bolt (1) that holds the center fairing, and lower the fairing on the retaining cord.

B. Removal
(1)Disconnect the electrical plug (3) from the pump.
(2)Unscrew the five screws (5) and the screw (7) at the pump mounting flange.

NOTE : The screws (5) and (7) are captive.

(3)Attach the pump shroud tool PN 98A28201003000 to the pump:
- Screw the four screws of the tool into the tool attachment holes in the pump mounting flange.

(4)Pull the pump down onto the internal stop.

NOTE : This action automatically shuts off the fuel supply to the pump.

(5)Put the container in position below the pump. Remove and discard the lockwire, then unscrew the drain plug (4) until it is free but retained. Allow the residual fuel to completely drain from the pump and the canister.

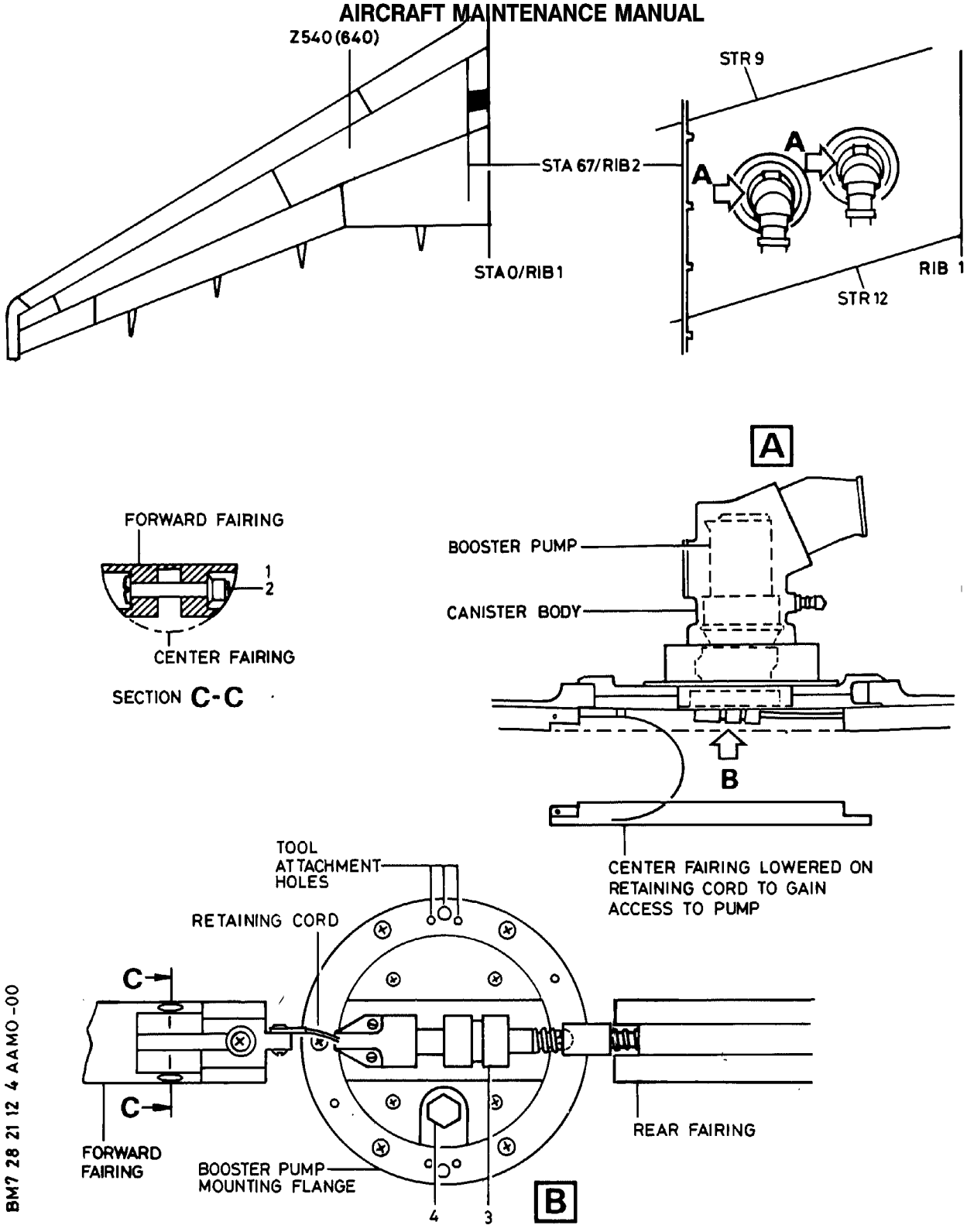
R **ON A/C 001-100,

NOTE : If more than approximately 1 liter (0.26 US gal) of fuel flows from the pump drain, the canister valve-sealing mechanism is not fully closed, in this case proceed with the next operation.

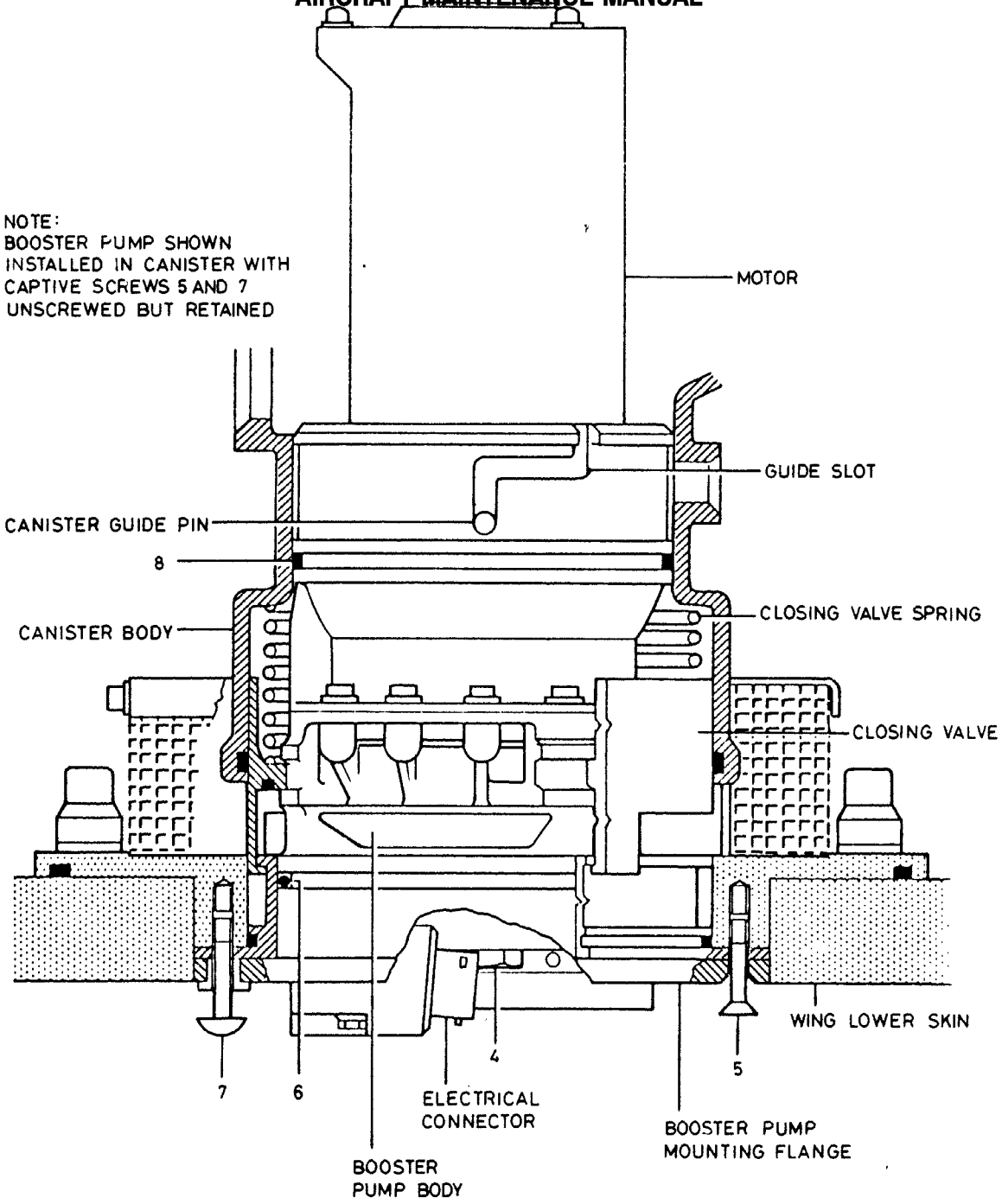
R **ON A/C 101-200,

R NOTE : If more than approximately 0.26 US gal (1 liter) of fuel flows
R from the pump drain, the canister valve-sealing mechanism is not
R fully closed, in this case proceed with the next operation.

R **ON A/C ALL



Inner Tank Booster Pump.
Figure 401



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Pump Installation - Sectional Details
Figure 402

(6)If the canister valve mechanism fails to shut off the fuel supply to the pump:
(a)Tighten the drain plug (4).
(b)Push the pump back into the canister.
(c)Repeat operations 2. B. (4) and (5).
If the condition continues, the canister valve mechanism is faulty:
(d)Tighten the drain plug (4).
(e)Push the pump back into the canister.
(f)Defuel the tank or transfer the fuel to another tank (Ref. 28-25-00, P. Block 301).

NOTE 1 : If the transfer method is to be adopted and the pump is unserviceable, the pump must be made electrically and mechanically safe and the associated circuit breakers referred to in paragraph 2. A. operation (1) must remain open, safetied and tagged.

NOTE 2 : If the transfer method is used and the pump is servicable, it can be used during transfer operations when it is installed to the requirements of paragraph 2.D. Installation, operations (4), (5) and (6). Otherwise it must be made safe, as in the case of an unserviceable pump.

(g)This operation is only required if the operations (d), (e) and (f) have been effected. If applicable, repeat the requirements of paragraph 2.A. operation (1) and paragraph 2. B. operations (1) thru (5), before you do the operations that follow. Subsequent to the pump removal, examine the canister for defects. If necessary, replace the canister (Ref. 28-21-13, P. Block 401).
(7)Turn the pump counterclockwise, up to the internal mechanical stop position, then pull down and withdraw the pump completely from the canister.
(8)Remove the pump shroud tool from the pump mounting flange.
(9)If a replacement pump is to be installed:
(a)Allow the removed pump to drain for approximately one hour before despatch to storage or overhaul. Tighten the drain plug (4).
If the removed pump is to be reinstalled:
(b)Tighten the drain plug (4) and safety with lockwire.
(c)Remove and discard the O-ring seals (6) and (8) from the pump body.
(d)Suitably protect the pump and blank the orifices.

C. Preparation of Replacement Component
(1)Depreserve the replacement pump and make sure that it is in good condition. Collect the individually supplied screws (5) and (7) and the new O-ring seals (6) and (8).
(2)Install the five screws (5) and the screw (7) in the pump mounting flange-holes.
(3)Make sure that the drain plug (4) is installed, tightened and safetied with lockwire.
(4)Attach the designated tool to the pump mounting flange.
(5)Lubricate with fuel (Material No. 01-001) the new O-ring seals (6) and

(8) and install them in the pump body.

D. Installation

(1)This step is only applicable if the removed pump is to be installed.
  (a)Remove the protective wrapping and the blanks from the pump.
  (b)Attach the designated tool to the pump mounting flange.
  (c)Lubricate with fuel (Material No. 01-001) the new O-ring seals (6) and (8) and install them in the pump body.
(2)Make sure that the pump, canister and interfaces are scrupulously clean and in good condition.
(3)Put the pump centrally in position below the canister so that, when it is turned for final installation, the pump electrical connector points rearwards. Then carefully insert the pump into the canister, make sure that the guide slots of the pump correctly engage with the guide pins of the canister. Turn the pump clockwise up to the internal stop/lock position, then push the pump fully into the canister.
(4)Attach the pump correctly by tightening in a diametrically opposite sequence the five screws (5) and the screw (7).
(5)Remove the pump shroud tool from the pump mounting flange.
(6)Connect the electrical plug (3) to the pump.
(7)If the tank has been defueled:
  (a)Refuel the tank (Ref. 12-11-28, P. Block 301).
  If the tank contents have been transferred:
  (b)Put back the tank contents previously transferred (Ref. 28-25-00, P. Block 301).
(8)Remove the safety clips and tags and close the relevant circuit breakers 1QA, 2QA, 7QA, 8QA, 59QA, 60QA, 69QA, 70QA.

E. Test

(1)Carry out the Operational Test on the pump (Ref. 28-21-12, P. Block 501).
(2)Following a satisfactory test, check that there is no external leakage from the pump.

F. Close-Up

(1)Locate the center fairing in position then install and tighten the bolt (1) and the nut (2).
(2)Make sure that the work area is clean and clear of tools and other items of equipment.
(3)Remove the access platform.

WARNING : LANDING GEAR - MAKE SURE THAT THE GROUND SAFTIES AND CHOCKS ARE IN POSITION.

MAKE SURE THAT THE FIRE FIGHTING EQUIPMENT IS AVAILABLE AND ADEQUATE.

MAKE SURE THAT YOU ISOLATE THE ELECTRICAL CIRCUITS UPON WHICH WORK IS IN PROGRESS.

DO NOT OPERATE THE MICROPHONE BUTTONS ON THE HF TRANSMISSION DURING REFUELING/DEFUELING OR GROUND MAINTENANCE-FUEL TRANSFER OPERATIONS.

1. Reason for the Job

Operational Test, to make sure that the booster pumps operate correctly.

R **ON A/C 001-100,

2. Equipment and Materials

ITEM	DESIGNATION
Referenced Procedures	
- 12-11-28, P. Block 301	Replenishing of Fuel Tanks
- 24-41-00, P. Block 301	AC External Power Control
- 28-25-00, P. Block 301	Refuel/Defuel System

3. Procedure

A. Job Set-Up
(1)Energize the aircraft electrical network (Ref. 24-41-00, P. Block 301).
(2)Make certain that the relevant tank contains at least 500 kg (1102 lb) of fuel. If necessary refuel or transfer fuel as required (Ref. 12-11-28 or 28-25-00, P. Block 301).

R **ON A/C 101-200,

2. Equipment and Materials

ITEM	DESIGNATION
Referenced Procedures	
- 12-11-28, P. Block 301	Replenishing of Fuel Tanks
- 24-41-00, P. Block 301	AC External Power Control
- 28-25-00, P. Block 301	Refuel/Defuel System

3. Procedure

A. Job Set-Up

(1)Energize the aircraft electrical network (Ref. 24-41-00, P. Block 301).

R (2)Make certain that the relevant tank contains at least 1100 lb (500 kg) of fuel. If necessary refuel or transfer fuel as required (Ref. 12-11-28 or 28-25-00, P. Block 301).

R **ON A/C ALL

(3)Make sure that these circuit breakers are closed:

- for left inner tank, Pump 1

PANEL	SERVICE	IDENT.	LOCATION
101VU	FUEL/L INNER TK/PUMP 1 SUPPLY	7QA	GEN 2/A23
132VU	FUEL/L INR TK/PUMP 1/WARN	17QA	323/M60
132VU	FUEL/L INR TK/PUMP 1/CTL	69QA	322/N60

- for left inner tank, Pump 2

PANEL	SERVICE	IDENT.	LOCATION
101VU	FUEL/L INNER TK/PUMP 2 SUPPLY	1QA	ESS/B01
132VU	FUEL/L INR TK/PUMP 2/WARN	11QA	322/N61
132VU	FUEL/L INR TK/PUMP 2/CTL	59QA	323/M61

- for right inner tank, Pump 1

PANEL	SERVICE	IDENT.	LOCATION
101VU	FUEL/R INNER TK/PUMP 1 SUPPLY	2QA	ESS/A01
132VU	FUEL/R INR TK/PUMP 1/WARN	12QA	323/M62
132VU	FUEL/R INR TK/PUMP 1/CTL	60QA	322/N62

- for right inner tank, Pump 2

PANEL	SERVICE	IDENT.	LOCATION
101VU	FUEL/R INNER TK/PUMP 2 SUPPLY	8QA	GEN 2/A20
132VU	FUEL/R INR TK/PUMP 2/WARN	18QA	322/N63
132VU	FUEL/R INR TK/PUMP 2/CTL	70QA	323/M63

WARNING : ACCIDENTAL REARWARD FUEL TRANSFER CAN MOVE THE C OF G AFT OF SAFE LIMIT. MAKE SURE THAT ALL THE TRIM TANK VALVES ARE SHUT.

B. Test

ACTION	RESULT
1. On panel 430VU: -check that relevant fuel pump pushbutton switch OFF legends are on	Fuel pumps in manual control
2. On panel 430VU: -press relevant fuel pump pushbutton switch	-pump runs On panel 430VU: -OFF legend goes off -FAULT legend comes on momentarily then goes off
3. On panel 430VU: -release relevant fuel pump pushbutton switch	-pump stops On panel 430VU: -OFF legend comes on

C. Close-Up

(1)Defuel or transfer the fuel as required (Ref. 28-25-00, P. Block 301).
(2)De-energize the aircraft electrical network (Ref. 24-41-00, P. Block 301).

R **WARNING** : THIS PROCEDURE USES A FUEL SYSTEM ITEM THAT IS IN A CATEGORY
R KNOWN AS A CRITICAL DESIGN CONFIGURATION CONTROL LIMITATION
R (CDCCL). CDCCL IDENTIFIES AN ITEM THAT CAN BE THE SOURCE OF A
R POSSIBLE FUEL TANK IGNITION. YOU MUST KEEP ALL CDCCL ITEMS IN THE
R APPROVED CONFIGURATION. DAMAGE, WEAR OR CHANGES TO A CDCCL ITEM
R CAN CAUSE A POSSIBLE FUEL TANK EXPLOSION.

LANDING GEAR - MAKE SURE THAT GROUND SAFETIES AND CHOCKS ARE IN POSITION.

FLIGHT CONTROLS - MAKE SURE THAT GROUND SAFETIES AND NOTICES ARE IN POSITION.

OBSERVE THE SAFETY PRECAUTIONS IN 28-00-00, P. BLOCK 301 AND 28-10-00, P. BLOCK 301.

MAKE SURE THAT THE FIRE FIGHTING EQUIPMENT IS AVAILABLE AND ADEQUATE.

1. Reason for the Job

A. In-situ removal of non-return valve (para. 2)

B. Removal of Canister (para. 3)

2. Non-return Valve In-situ Removal

A. Equipment and Materials

ITEM	DESIGNATION
A.	Container (20 liters (4.4 US gal) capacity)
B.	O-Ring
C. Material No. 01-001	Fuels (Ref. 20-31-00)
Referenced Procedures	
- 12-11-28, P. Block 301	Replenishment of Fuel Tanks
- 24-41-00, P. Block 301	External Power
- 28-00-00, P. Block 301	Fuel - General
- 28-10-00, P. Block 301	Storage
- 28-11-22, P. Block 401	Manhole Cover
- 28-21-12, P. Block 401	Pump-Booster, Inboard Tanks
- 28-25-00, P. Block 301	Refuel/Defuel System

B. Procedure

(1)Job Set-Up.

(a)Energize the aircraft electrical network (Ref. 24-41-00, P. Block 301).

(b)On panel 430VU, make sure that the inner and outer tank ISOL VALVES

pushbutton switches (P/BSW) are pressed (in) and the in-line flow-bars are on.

(c)Defuel the center and the inner tanks (Ref. 28-25-00, P. Block 301).

(d)On panel 430VU, release (out) the inner and outer tank ISOL VALVE P/BSW's and make sure that the in-line flow bars go off.

(e)On panel 430VU, make sure that the X FEED valve P/BSW is released (out) and that the crossline flow bar is on.

(f)De-energize the aircraft electrical network (Ref. 24-41-00, P. Block 301).

(g)Remove the applicable booster pump (Ref. 28-21-12, P. Block 401).

(2)Removal
(Ref. Fig. 401)

**ON A/C 001-100,

(a)Put the container in position below the canister.

WARNING: UP TO APPROXIMATELY 15 LITERS (3.3 US GAL) OF RESIDUAL FUEL MAY SUDDENLY FLOW FROM THE FUEL FEED PIPELINE WHEN YOU OPEN THE NON-RETURN VALVE (4).

YOU MUST OPEN THE NON-RETURN VALVE (4) FROM A SAFE DISTANCE AND USE A SUITABLE DEVICE WHICH WILL NOT DAMAGE THE NON-RETURN VALVE (4).

**ON A/C 101-200,

(a)Put the container in position below the canister.

WARNING: UP TO APPROXIMATELY 3.3 US GAL (15 LITERS) OF RESIDUAL FUEL MAY SUDDENLY FLOW FROM THE FUEL FEED PIPELINE WHEN YOU OPEN THE NON-RETURN VALVE (4).

YOU MUST OPEN THE NON-RETURN VALVE (4) FROM A SAFE DISTANCE USE A SUITABLE DEVICE WHICH WILL NOT DAMAGE THE NON-RETURN VALVE (4).

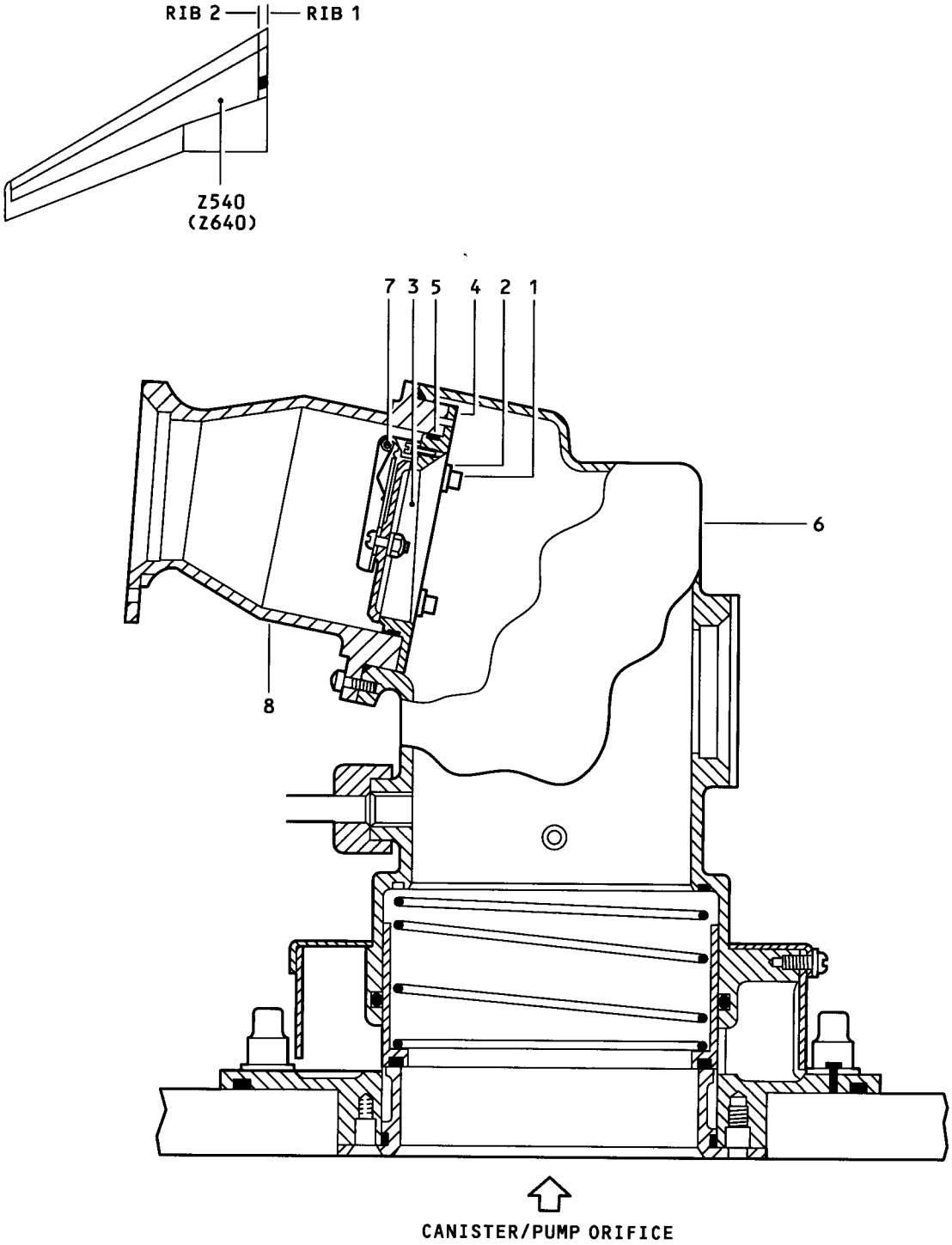
**ON A/C ALL

(b)Carefully open the non-return valve (4) and drain the residual fuel into the container.

(c)Get access through the canister or pump orifice and remove the screws (1) and the washers (2).

(d)Push your fingers through the flap (3) then pull and remove the non-return valve (4).

NOTE : The O-ring (5) compression can resist the removal.



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Canister - Non-return Valve
Figure 401

R

(e)Get access through the canister or pump orifice and remove and discard the O-ring (5).

(3)Examination.
(a)Examine the non-return valve (4) for defects. If defective, install a new non-return valve (4) (Ref. para. (4) and (5)). If serviceable, examine the canister (6) for defects. If the canister (6) is defective, install a new canister (6) (Ref. para. 3).

(4)Preparation of replacement component.
(a)Apply fuel (Material No. 01-001) to the new O-ring (5) then install the O-ring (5) on the non-return valve (4).

(5)Installation.
(a)With the hinge (7) to the top, install the non-return valve (4) through the orifice of the canister (6).
(b)Engage the valve locating pin with the applicable locating hole in the valve body (8). Make sure that the mating faces of non-return valve (4) and valve body (8) are in contact.
(c)Install the screws (1) and the washers (2). Tighten the screws (1) progressively.

NOTE : The screws (1) are secured by self-locking inserts.

(d)Make sure that the non-return valve (4) is properly installed.
(e)Make sure that the flap (3) opens freely and closes correctly.

(6)Test.
(a)Fill the center tank to the cut-off level of the high level sensor by the refuel procedure (Ref. 12-11-28, P. Block 301). This will force fuel against the inner tank non-return valve via the fuel feed line.

WARNING : MOVEMENT OF FLAP (3) CAN CAUSE UNCONTROLLED FUEL LEAKAGE.

(b)During workstep (a), monitor the canister (6) and the non-return valve (4) for signs of fuel leakage.
(c)Put an empty container in position below the canister (6) to catch any fuel leakage.
(d)After 10 minutes, measure the quantity of leaked fuel. The quantity must not exceed 0.2 liters (0.05 US gal).
(e)Energize the aircraft electrical network (Ref. 24-41-00, P. Block 301).
(f)If the non-return valve(s) (4) of the LH inner-tank pump check valves(s) is (are) to be tested do the test that follows:
1 On panel 430VU, press (in) the L CTR TK pump P/BSW:
- the OFF legend goes off
- the FAULT legend comes on momentarily then goes off as pumps runs.

NOTE : If the non-return valve(s) (4) of the RH inner tank pump is (are) to be tested then run the RH center tank pump.

2 Do a check of the leak rate. The leak rate should not exceed

0.3 liters (0.07 US gal)/min. If the leak rate is exceeded, replace the canister (6) (Ref. Para. 3.).

(7)Close-Up.
(a)On panel 430VU, release (out) the LH/RH center tank pump P/BSW:
- the pump stops
- the OFF legend comes on.
(b)On panel 430VU, press (in) the outer tank ISOL VALVE P/BSW's and make sure that the in-line flowbars are on.
(c)De-energize the aircraft electrical network (Ref. 24-41-00, P. Block 301).
(d)Install the applicable booster pump (Ref. 28-21-12, P. Block 401).
(e)Make sure that the work area is clean and clear of tools and miscellaneous items of equipment.
(f)Refuel or defuel the aircraft as required (Ref. 12-11-28 or 28-25-00, P. Block 301).

3. Canister (Complete)

A. Equipment and Materials

ITEM	DESIGNATION
A.	Access Platform 4 m (13 ft)
B.	Blanking Caps
C.	Container (20 liters (4.4 US gal) capicity)
D.	O-ring Seal (Adapter Plate - Outer Canister)
E.	O-ring Seal (Blanking Plate - Inner Canister)
F.	O-ring Seal (Canister Mounting Flange)
G.	O-ring (Pressure Switch Line)
H.	O-ring Seal (Servo Line)
J. Material No. 01-001	Fuels (Ref. 20-31-00)
K. Material No. 07-001C	Paints for detail
Referenced Procedures	
- 20-28-11, P. Block 1	Electrical Bonding
- 24-41-00, P. Block 301	External Power
- 28-00-00, P. Block 301	Fuel - General
- 28-10-00, P. Block 301	Storage
- 28-11-22, P. Block 401	Manhole Covers Wings
- 28-21-12, P. Block 401	Pump - Booster - Inner Tanks
- 28-21-12, P. Block 501	Pump - Booster
- 28-25-00, P. Block 301	Refuel/Defuel System

B. Procedure

(1)Job Set-Up

(a)Energize the aircraft electrical network (Ref. 24-41-00, P. Block 301).

(b)On panel 430VU, make sure that the inner and outer tank ISOL VALVES P/BSW(s) are pressed (in) and the in-line flowbars are on.

(c)Defuel the center and the inner tanks (Ref. 28-25-00, P. Block 301).

(d)On panel 430VU, release (out) the inner and outer tank ISOL VALVE P/BSW(s) and make sure that the in-line flow bars go off.

(e)On panel 430VU, make sure that the X FEED valve P/BSW is released (out) and that the crossline flowbar is on.

(f)De-energize the aircraft electrical network (Ref. 24-41-00, P. Block 301).

(g)Put the access platform in position below zone 540 (640).

(h)Remove the manhole cover 540(640)AB (Ref. 28-11-22, P. Block 401).

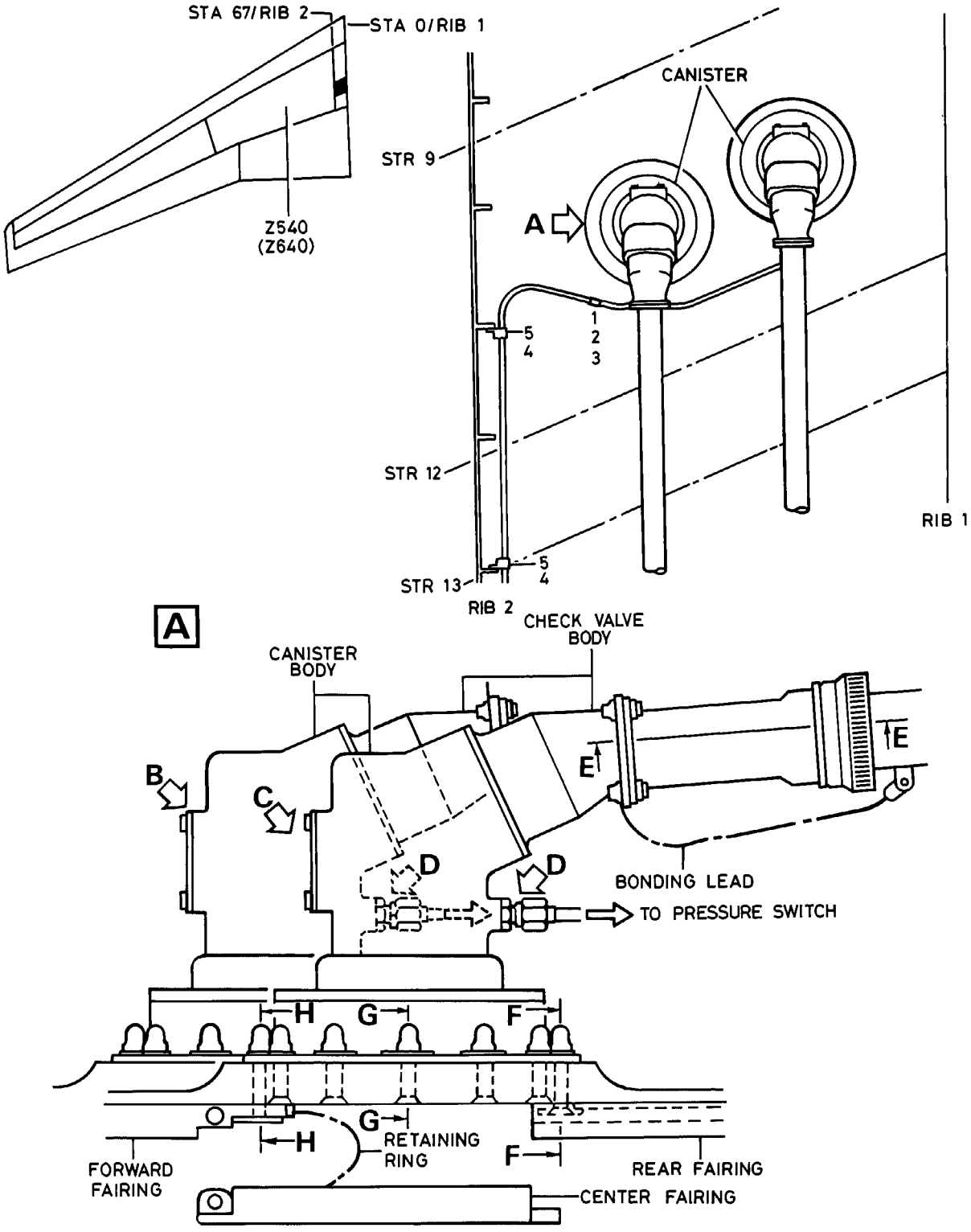
NOTE : It will be necessary to enter the tank to gain access to the canister (6).

(j)Remove the applicable fuel booster pump (Ref. 28-21-12, P. Block 401).

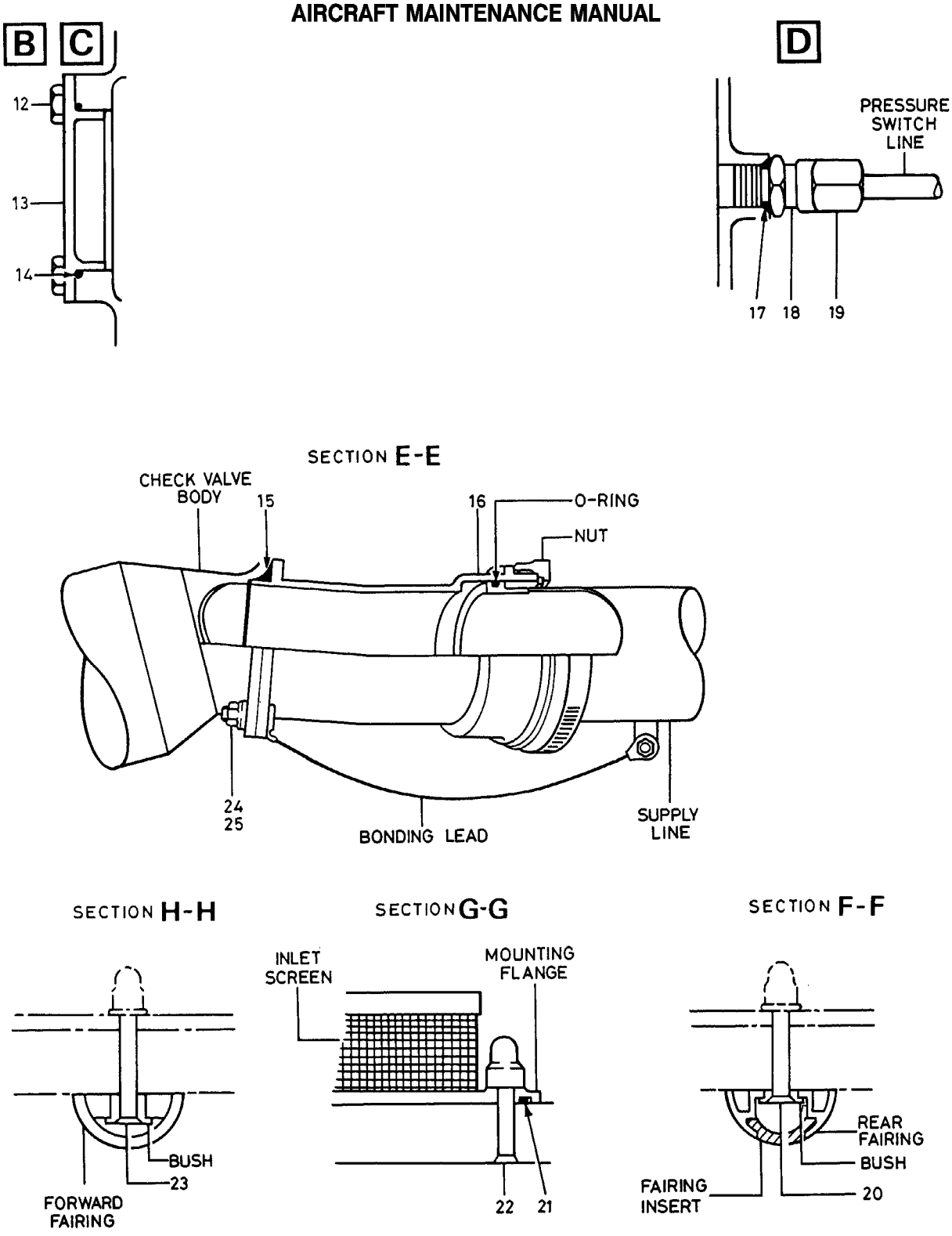
(2)Removal

(Ref. Fig. 402)

(Ref. Fig. 403)



Canister - Inner Tanks
Figure 402



Canister - Inner Tanks - Installation Details
Figure 403

R **ON A/C 001-100,

(a)Put the container in position below the canister (6).

WARNING : UP TO APPROXIMATELY 15 LITERS (3.3 US gal) OF RESIDUAL FUEL MAY SUDDENLY FLOW FROM THE FUEL FEED PIPELINE WHEN YOU OPEN THE NON-RETURN VALVE (4).

YOU MUST OPEN THE NON-RETURN VALVE (4) FROM A SAFE DISTANCE AND USE A SUITABLE DEVICE WHICH WILL NOT DAMAGE THE NON-RETURN VALVE (4).

(b)Carefully open the non-return valve (4) and drain the residual fuel into the container.
(c)Remove the nuts (24) and the bolts (25) and remove the bonding lead.
(d)Slide the connector (16) along the supply line clear of the body of non-return valve (4). Discard the O-ring seal (15).
(e)Unscrew the sleeve nut (19) and disconnect the pressure switch line from the canister union (18).
(f)Not applicable.

R **ON A/C 101-200,

(a)Put the container in position below the canister (6).

R WARNING : UP TO APPROXIMATELY 3.3 US GAL (15 LITERS) OF RESIDUAL FUEL MAY SUDDENLY FLOW FROM THE FUEL FEED PIPELINE WHEN YOU OPEN THE
R NON-RETURN VALVE (4).

R YOU MUST OPEN THE NON-RETURN VALVE (4) FROM A SAFE DISTANCE AND
R USE A SUITABLE DEVICE WHICH WILL NOT DAMAGE THE NON-RETURN
R VALVE (4).

R (b)Carefully open the non-return valve (4) and drain the residual fuel
R into the container.
(c)Remove the nuts (24) and the bolts (25) and remove the bonding lead.
(d)Slide the connector (16) along the supply line clear of the body of
R non-return valve (4). Discard the O-ring seal (15).
(e)Unscrew the sleeve nut (19) and disconnect the pressure switch line from the canister union (18).
(f)Not applicable.

R **ON A/C ALL

(g)Remove the nut (1) and the bolt (2), that secures the P-clip (3) on the pressure switch line, adjacent to the outer canister (6).
(h)Remove the bolts (4) from the P-clips (5) that secure the pressure switch lines to RIB 2.
(j)Outside the tank - slide the fairing insert clear of the rear fairing and then remove the bolts (20), (22) and (23) in diametrical sequence.

(k)Remove the canister (6) and discard the O-ring seal (21).
(l)Remove the canister union (18) and discard the O-ring seal (17).

(m)Remove the bolts (12) and the blanking plate (13). Discard the O-ring seal (14).
(n)Clean and inspect the component interface and the adjacent area. Examine for correct condition of the line end-fittings and fairings.
(p)Cap all open line ends and the orifices of the canister (6).
(q)Protect the removed component interface and the adjacent area.

(c)Place new O-ring seal (14) on blanking plate (13). Lubricate the O-ring seal with fuel (Material No.01-001) and install the blanking plate with bolts (12).

(4)Installation
(a)Lubricate new O-ring seal (21) with fuel (Material No.01-001) and position in groove of canister mounting flange.
(b)Lubricate new O-ring seal (15) with fuel (Material No.01-001) and place on flange of connector (16).
(c)Position canister in tank and loosely install bolts (20, 22, 23).

NOTE: The longest is bolt (23) and the next longest is bolt (20).

(d)Slide connector (16) along the supply line to engage with the non-return valve body. Attach the bonding lead (Ref. 20-28-11, P. Block 1) using bolt (25) and nut (24). Install remaining bolts (25) and nuts (24). Repaint bolt heads and tails, and nuts with paint (Material No.16-006).
(e)Tighten bolts (20, 22, 23) in diametrical sequence, then slide the fairing insert into position in the rear fairing.
(f)Connect the pressure switch line to union (18) and tighten sleeve nut (19).
(g)Not applicable.
(h)Install bolts (4) in P-clips (5) and secure pressure switch lines to RIB 2.
(j)Install P-clips (3), bolt (2) and nut (1) on pressure switch lines next to outer canister.
(k)Install the relevant fuel booster pump (Ref. 28-21-12, P. Block 401).
(l)Install manhole cover 540(640)AB (Ref. 28-11-22, P. Block 401).
(5)Test
(a)Carry out an Operational test on the booster pump (Ref. 28-21-12, P. Block 501).
(6)Close-Up
(a)On panel 430VU, press (in) the outer tank ISOL VALVE P/BSW's and make sure that the in-line flowbars are on.
(b)Make sure that the working area is clean and clear of tools and miscellaneous items of equipment.
(c)Remove the access platform.

AIR BLEED VALVE - REMOVAL/INSTALLATION

WARNING : LANDING GEAR - MAKE CERTAIN GROUND SAFETIES AND CHOCKS ARE IN POSITION.

FLIGHT CONTROLS - MAKE CERTAIN GROUND SAFETIES AND NOTICES ARE IN POSITION.

OBSERVE THE SAFETY PRECAUTIONS IN 28-00-00, P. BLOCK 301.

MAKE CERTAIN THAT FIRE FIGHTING EQUIPMENT IS AVAILABLE AND ADEQUATE.

BEFORE POWER IS SUPPLIED TO THE AIRCRAFT MAKE CERTAIN THAT ELECTRICAL CIRCUITS UPON WHICH WORK IS IN PROGRESS ARE ISOLATED.

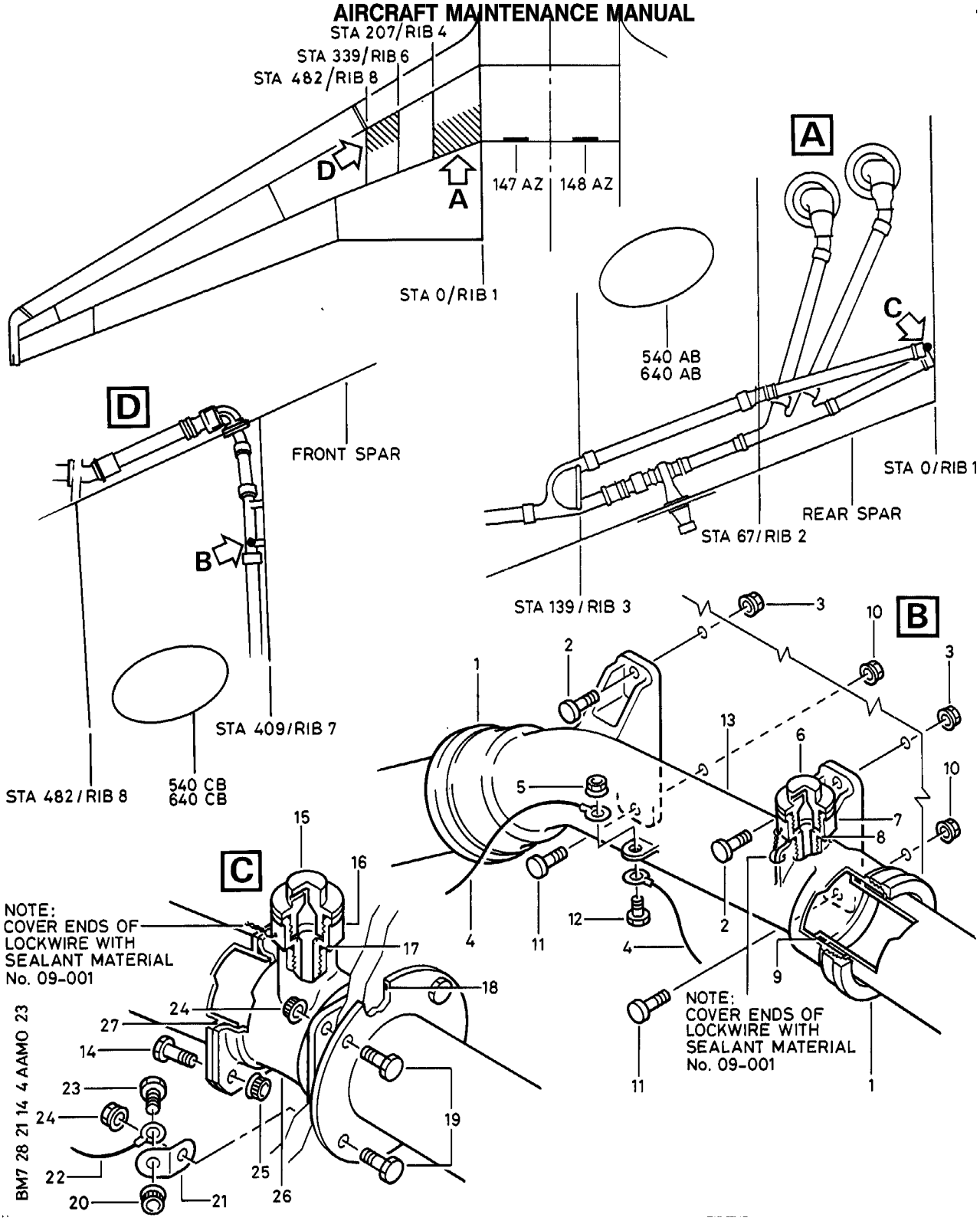
1. Equipment and Materials

ITEM	DESIGNATION
A.	Container
B.	Spark Proof Lamp
C.	O-Rings
D.	Lockwire, Corrosion Resistant Steel, Dia. 0.8 mm (0.032 in).
E.	Circuit Breaker Safety Clips and Tags
F.	Access Platform 2 m (6 ft)
G.	Access Platform 2.5 m (8.3 ft)
H. Material No. 01-001	Fuel (Ref. 20-31-00)
J. Material No. 09-001	Sealants (Ref. 20-31-00)
K. Material No. 16-006	Structural Paints (Ref. 20-31-00)
Referenced Procedures	
- 12-11-28, P. Block 301	Replenishing of Fuel Tanks
- 20-28-11, P. Block 1	Electrical Bonding
- 24-41-00, P. Block 301	AC External Power Control
- 28-00-00, P. Block 301	Fuel - General
- 28-11-22, P. Block 401	Manhole Covers - Wings
- 28-11-29, P. Block 401	Manhole Covers - Center Tanks
- 32-12-11, P. Block 301	Main Gear Main Doors

2. Procedure
(Ref. Fig. 401)

R **ON A/C 001-100,

A. Job Set-Up
(1)Open LH(RH) main landing gear door(s) (Ref. 32-12-11, P.Block 301).
(2)Position access platforms.
(3)Remove center tank manhole cover 147(148)AZ (Ref. 28-11-29, P. Block 401)



Air Bleed Valves - Installation
Figure 401

R **ON A/C 101-200,

A. Job Set-Up
(1)Open LH main landing gear door (Ref. 32-12-11, P. Block 301).
(2)Position access platforms.
(3)Remove center tank manhole cover 147AZ (Ref. 28-11-29, P. Block 401).

R **ON A/C ALL

(4)Remove manhole covers between STA 67 (Rib 2) and STA 139 (Rib3), STA 409 (Rib 7) and STA 482 (Rib 8) (Ref. 28-11-22, P. Block 401).
(5)Energize the aircraft electrical network and make certain that electronics racks are ventilated (Ref. 21-41-00, P. Block 301).
(6)On panel 430VU:
- make certain that the relevant outer tank ISOL VALVE is closed, push-button switch released (out), OFF legend on.
(7)Open safety and tag the following circuit breakers:

PANEL	SERVICE	IDENT.	LOCATION
132VU	FUEL ISOL VALVES/L INR TK/SUPPLY	3QB	324/L55
132VU	FUEL ISOL VALVES/L OUTR TK/SUPPLY	1QB	324/L53
132VU	FUEL ISOL VALVES/R INR TK/SUPPLY	4QB	324/L56
132VU	FUEL ISOL VALVES/R OUTR TK/SUPPLY	2QB	324/L58

B. Removal (Ref. Fig. 401)
(1)Air Bleed Valve (Rib 7)
(a)Place container under air bleed valve assembly.
(b)Remove nut (5) and bolt (12). Disconnect bonding leads (4).
(c)Unscrew retaining nuts (1) and slide lines clear of air bleed valve assembly.
(d)Remove nuts (3,10) and bolts (2,11) securing air bleed valve assembly to tank rib 7. Remove air bleed valve assembly from fuel tank. Discard O-rings (9).
(e)Cut and remove lockwire, then unscrew and remove air bleed valve (7) from line (13). Discard O-ring (8).
(2)Air Bleed Valve (Rib 1)
(a)Place container under air bleed valve assembly.
(b)Remove nut (20) and bolt (23). Disconnect bonding lead (22).
(c)Remove nuts (24,25), tag (21) and bolts (14,19) securing air bleed valve assembly to tank rib 1.
(d)Slide lines clear and remove air bleed valve assembly from the fuel tank. Discard O-rings (18,27).
(e)Cut and remove lockwire, then unscrew and remove air bleed valve (16) from line (26). Discard O-ring (17).

C. Preparation of Replacement Component (Ref. Fig. 401)

CAUTION : PERFORM ALL WIRE LOCKING OPERATIONS OUTSIDE THE TANKS.

(1)Lubricate O-rings (8,17) with Fuel (Material No. 01-001) and install O-rings on air bleed valves (7,16).
(2)Install air bleed valves on to lines (13,26).
Fully tighten the valves and safety with lockwire.

NOTE : If lockwire ends were covered on the removed components, cover the lockwire ends with Sealant (Material No. 09-001).

D. Installation (Ref. Fig. 401)
(1)Air Bleed Valve (Rib 7).
(a)Lubricate O-rings (9) with Fuel (Material No. 01-001) and install on air bleed valve assembly.
(b)Install valve assembly on to tank rib 7 and secure with bolts (2,11) and nuts (3,10). Tighten retaining nuts (1).
(c)Connect bonding leads (4) to the tag on the valve assembly and secure with bolt (12) and nut (5) (Ref. 20-28-11, P. Block 1).
(d)Return all disturbed pipelines to their mid-travel position.
(e)Apply Structural Paint (Material No. 16-006) to nuts and bolts heads/tails.
(2)Air Bleed Valve (Rib 1).
(a)Lubricate O-rings (18,27) with Fuel (Material No. 01-001) and install on air bleed valve assembly.
(b)Install valve assembly on to tank rib 1 and secure with bolts (14,19), tag (21) and nuts (24,25).
(c)Connect bonding lead (22) on to tag (21) and secure with bolt (23) and nut (20) (Ref. 20-28-11, P. Block 1).
(d)Return all disturbed pipelines to their mid-travel position.
(e)Apply Structural Paint (Material No. 16-006) to nuts and bolts heads/tails.

E. Tests

NOTE : As the fuel feed system is identical for both wings, the test is only described for the left-hand side.

(1)Make certain sufficient fuel is contained in the outer tanks to carry out the test. If necessary, refuel the outer tanks (Ref. 12-11-28, P. Block 301).
(2)Make certain that the following circuit breakers are closed:
- for left wing

PANEL	SERVICE	IDENT.	LOCATION
133VU	ENGINES/ENG 1/FUEL HP VALVE/CTL	3KC	333/T69
133VU	ENGINES/ENG 1/FUEL HP VALVE/WARN	1KC	333/T68
132VU	FUEL/L OUTR TK/PUMP 1/CTL	67QA	322/N56

- for right wing

PANEL	SERVICE	IDENT.	LOCATION
133VU	ENGINES/ENG 2/FUEL HP VALVE/WARN	2KC	335/R73
133VU	ENGINES/ENG 2/FUEL HP VALVE/CTL	4KC	333/T70
132VU	FUEL/R OUTR TK/PUMP 1/CTL	62QA	323/M57

(3)On panel 132VU remove safety clips and tags and close the following circuit breakers:
- for left wing: 1QB line 324
- for right wing: 2QB line 324

(4)Leak test (left wing).
Perform the following:

ACTION	RESULT
Make certain ENG 1 HP fuel shut-off valve is closed.	
On panel 430VU: - press left hand outer tank fuel ISOL VALVE pushbutton switch	- in-line flowbar comes on. Valve opens.
- press OUTR TK/L PUMP 1 pushbutton switch	- OFF legend goes off. Pump runs.
Make certain there is no fuel leakage around air bleed valve and that fuel is not leaking from valve caps (6,15).	
On panel 430VU: - press OUTR TK/L PUMP 1 pushbutton switch	- OFF legend comes on. Pump stops.

NOTE : Perform test on right wing air bleed valves using the method described for the left wing.

F. Close-Up
(1)Remove container from below air bleed valve.
(2)On panel 132VU, remove safety clips and tags and close circuit breakers:
- 3QB, 4QB line 324

(3)De-energize the aircraft electrical network (Ref. 24-41-00, P. Block 301).
(4)Make certain that work area is clean and clear of tools and miscellaneous items of equipment.

R **ON A/C 001-100,

(5)Install center tank manhole cover(s) 147(148)AZ (Ref. 28-11-29, P. Block 401).

R **ON A/C 101-200,

(5)Install center tank manhole cover 147AZ (Ref. 28-11-29, P. Block 401).

R **ON A/C ALL

(6)Close LH(RH) main landing gear door (Ref. 32-12-11, P. Block 301).
(7)Install manhole covers between STA67 (RIB2) and STA139 (RIB3), STA409 (RIB7) and STA482(RIB8) (Ref. 28-11-22, P. Block 401).
(8)Remove all ground handling and maintenance equipment, standard and special tools, all access equipment and miscellaneous items.

CHECK VALVE (2 IN) - REMOVAL/INSTALLATION

R **WARNING** : LANDING GEAR - MAKE SURE THAT THE GROUND SAFETIES AND CHOCKS ARE IN POSITION.

R FLIGHT CONTROLS - MAKE SURE THAT THE GROUND SAFETIES AND NOTICES ARE
R IN POSITION.

R OBSERVE THE SAFETY PRECAUTIONS IN 28-00-00, P. BLOCK 301 and
R 28-10-00, P. BLOCK 301.

R MAKE SURE THAT THE FIRE FIGHTING EQUIPMENT IS AVAILABLE AND ADEQUATE.

R BEFORE POWER IS SUPPLIED TO THE AIRCRAFT MAKE SURE THAT THE ELECTRICAL CIRCUITS UPON WHICH WORK IS IN PROGRESS ARE ISOLATED.

1. Equipment and Materials

ITEM	DESIGNATION
A.	Spark Proof Lamp
B.	Container
C.	O-rings
D.	Circuit Breaker Safety Clips and Tags
E. Material No. 01-001	Fuels (Ref. 20-31-00)
F. Material No. 16-006	Structure Paints (Ref. 20-31-00)
Referenced Procedures	
- 20-28-11, P. Block 1	Electrical Bonding
- 24-41-00, P. Block 301	AC External Power Control
R - 28-00-00, P. Block 301	Fuel - General
R - 28-10-00, P. Block 301	Storage
- 28-11-22, P. Block 401	Manhole Covers Wings

2. Procedure

A. Job Set-Up

R (1)Remove the manhole cover between STA409/RIB 7 and STA482/RIB 8
R (Ref. 28-11-22, P. Block 401).
R (2)Energize the aircraft electrical network (Ref. 24-41-00, P. Block 301).
R (3)On panel 430VU, make sure that:
R - the X FEED P/BSW is released (out) and the crossline flowbar is on
R (valve closed). If necessary, close the valve
R - the ISOL VALVES P/BSW's are released (out) and the OFF legends
R are on (valves closed). If necessary, close the valves.
R (4)De-energize the aircraft electrical network (Ref. 24-41-00,
R P. Block 301).
R (5)Open, safety and tag the circuit breakers that follow:
- For check valves - left wing

PANEL	SERVICE	IDENT.	LOCATION
132VU	FUEL/L/INR TK/ISOL VALVE	3QB	324/L55
132VU	FUEL/L/OUTR TK/ISOL VALVE	1QB	324/L53
132VU	FUEL/X FEED VALVE/MOTOR 1	2QE	324/L60
132VU	FUEL/X FEED VALVE/MOTOR 2	1QE	324/L61

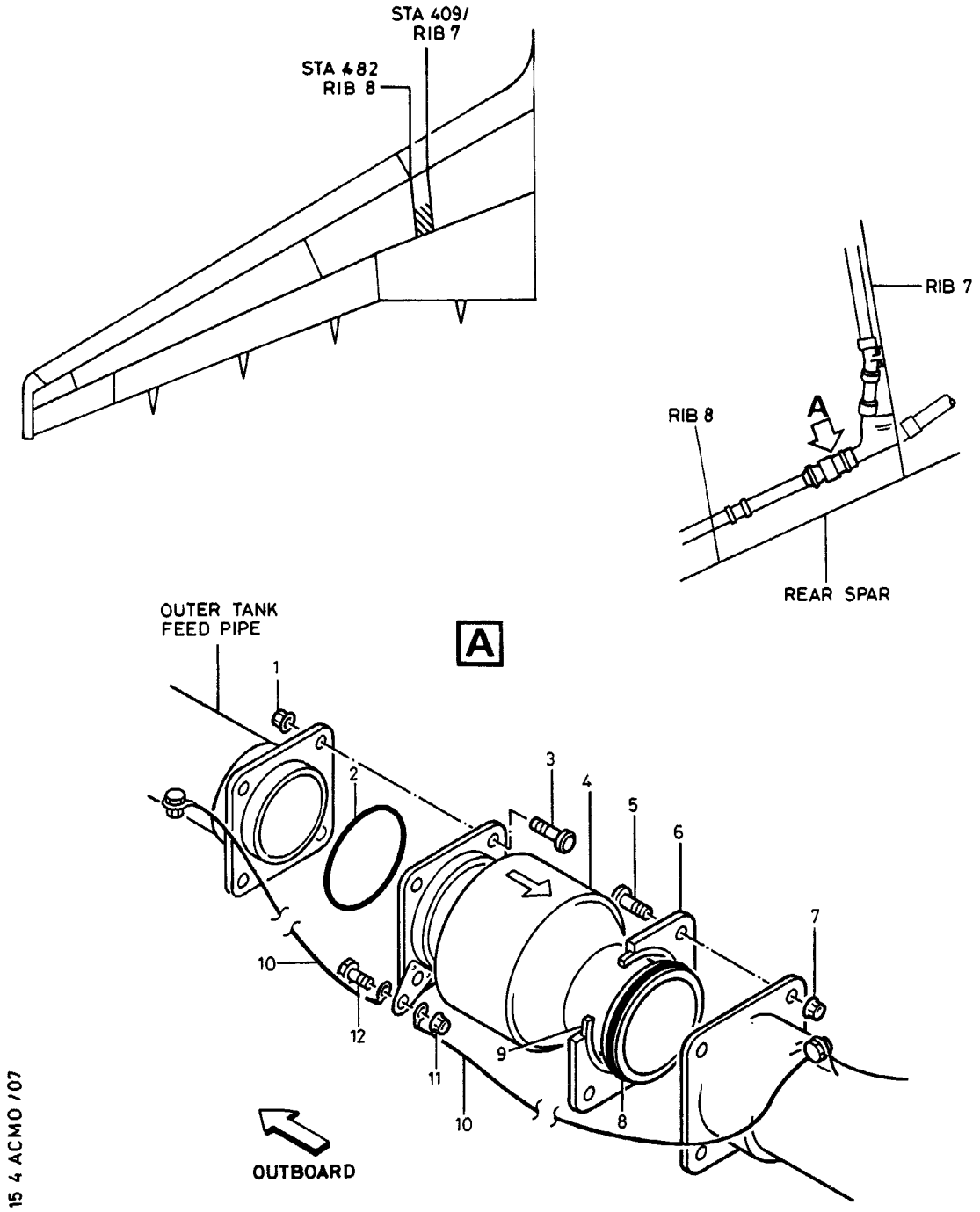
- For check valves - right wing

PANEL	SERVICE	IDENT.	LOCATION
132VU	FUEL/R/INR TK/ISOL VALVE	4QB	324/L56
132VU	FUEL/R/OUTR TK/ISOL VALVE	2QB	324/L58
132VU	FUEL/X FEED VALVE/MOTOR 1	2QE	324/L60
132VU	FUEL/X FEED VALVE/MOTOR 2	1QE	324/L61

B. Removal
(Ref. Fig. 401)
(1)Check valve (outer-tank feed pipe)
(a)Put the container in position below the check valve (4).
(b)Remove the nut (11) and the bolt (12) and disconnect the bonding straps (10).
R (c)Remove the nuts (7), the bolts (5) and the retainer (6) from the
R downstream end of the check valve (4).
R (d)Remove the nuts (1) and the bolts (3) that attach the check valve (4) to the outer-tank feed pipe.
(e)Slide the fuel lines clear of the check valve (4). Remove the check
R valve (4), remove and discard the O-ring seals (2) and (8). Cap the
R open line ends.
(f)If a new check valve (4) is to be installed, remove the circlip (9) and the retainer (6) and blank the check valve (4) inlet and outlet.

C. Preparation of the Replacement Component
(1)Remove the inlet and the outlet blanks from the check valve (4).
(2)Make sure that the check valve (4) is in the correct condition for operation.
(3)Install the retainer (6) and the circlip (9).
(4)Lubricate the new O-ring seal (8) with fuel (Material No. 01-001), and install the O-ring seal (8) on the check valve (4).

D. Installation
(1)Check valve (outer-tank feed pipe)
(a)Examine the line end-fittings for the correct condition.
(b)Lubricate the new O-ring seal (2), with fuel (Material No. 01-001), and install the O-ring seal (2) on the fuel feed line of the outer tank.
R (c)Install the check valve (4) with the arrow that indicates the direction
R of flow clearly visible. Attach the check valve (4) to the fuel feed line of the outer tank with the bolts (3) and the nuts (1).
R (d)Attach the downstream end of the check valve (4) with the bolts (5),



Check Valve - Installation
Figure 401

the retainer (6) and the nuts (7).

R (e)Connect the bonding straps (10), to the tag on the check valve (4),
R with the bolt (12) and the nut (11) (Ref. 20-28-11, P. Block 1).
R (2)Make sure that the outer-tank feed pipe, when correctly attached to the
R check valve (4), has an axial float of not less than 0.20 in (5.08 mm).
R (3)Make sure all the pipelines are put back to their mid-travel positions.
(4)Apply structure paint (Material No. 16-006) to the nuts and the bolts heads/tails.

E. Test

R NOTE : LH wing test procedures given, with RH wing references in
R parenthesis.

(1)Energize the aircraft electrical network (Ref. 24-41-00, P. Block 301).
R (2)Make sure that these circuit breakers are closed:

PANEL	SERVICE	IDENT.	LOCATION
123VU	ENG 1/FUEL HP VALVE/CTL	3KC	333/T69
123VU	ENG 1/FUEL HP VALVE/WARN	1KC	333/T68
123VU	ENG 2/FUEL HP VALVE/WARN	2KC	335/R73
123VU	ENG 2/FUEL HP VALVE/CTL	4KC	333/T70
132VU	FUEL/L INR TK/ISOL VALVE	3QB	324/L55
132VU	FUEL/R INR TK/ISOL VALVE	4QB	324/L56
132VU	FUEL/L OUTR TK/ISOL VALVE	1QB	324/L53
132VU	FUEL/L OUTR TK/PUMP 1/CTL	67QA	322/N56
132VU	FUEL/L OUTR TK/PUMP 1/WARN	15QA	323/M56
132VU	FUEL/R OUTR TK/PUMP 1/WARN	14QA	322/N57
132VU	FUEL/R OUTR TK/PUMP 1/CTL	62QA	323/M57
132VU	FUEL/R OUTR TK/ISOL VALVE	2QB	324/L58
132VU	FUEL/X FEED VALVE/MOTOR 1	2QE	324/L60
132VU	FUEL/X FEED VALVE/MOTOR 2	1QE	324/L61

(3)On panel 430VU, make sure that:
- the X FEED P/BSW is released (out) and the crossline flowbar is on (valve closed). If necessary, close the valve.
- the L (R) INNER TK ISOL VALVES P/BSW's are released (out) and the OFF legends are on (valves closed). If necessary, close the valves.
- the L (R) OUTER TK ISOL VALVES P/BSW's are pressed (in) and the OFF legends are off (valves open). If necessary, open the valves.

(4)On the center pedestal, make sure that:
- the ENG 1 FUEL lever is OFF (the HP shut-off valve closed).

(5)Perform the following:

ACTION	RESULT
1. On panel 430VU:	
- press (in) the L (R) OUTER TK PUMP 1 P/BSW	- the pump runs - the OFF legend goes off.
2. Inspect the applicable	

ACTION	RESULT
R check valve (4) for leaks.	
R 3. On panel 430VU:	
R - release (out) the L (R) OUTER TK PUMP 1 P/BSW.	- the pump stops - the OFF legend comes on.
R 4. On panel 430VU:	
R - press (in) the L (R) INNER TK ISOL VALVE P/BSW.	- the valve opens - the OFF legend goes off.

F. Close-Up

R (1) On panel 430VU, make sure that all the outer and inner tank ISOL VALVES P/BSW's are pressed (in) and the OFF legends are off (valves open).
R (2) De-energize the aircraft electrical network (Ref. 24-41-00, P. Block 301).
R (3) Remove the container from under the check valve (4).
R (4) Make sure that the work area is clean and clear of tools and other items of equipment.
R (5) Install the manhole cover (Ref. 28-11-22, P. Block 401).
R (6) Remove all the ground handling and maintenance equipment, standard and special tools, all access equipment and miscellaneous items.

BOOSTER PUMP OUTER TANKS - REMOVAL/INSTALLATION

WARNING : LANDING GEAR - MAKE CERTAIN GROUND SAFETIES AND CHOCKS ARE IN POSITION.

FLIGHT CONTROLS - MAKE CERTAIN GROUND SAFETIES AND NOTICES ARE IN POSITION.

BEFORE POWER IS SUPPLIED TO THE AIRCRAFT MAKE CERTAIN THAT ELECTRICAL CIRCUITS UPON WHICH WORK IS IN PROGRESS ARE ISOLATED.

MAKE CERTAIN THAT FIRE FIGHTING EQUIPMENT IS AVAILABLE AND ADEQUATE.

OBSERVE SAFETY PRECAUTIONS IN 28-00-00, P. BLOCK 301.

1. Equipment and Materials

ITEM	DESIGNATION
A.	Access Platform 4m (13 ft)
B.	Circuit Breaker Safety Clips and Tags
C.	Container, 1 Liter (0.26 US gals)
D. 98A28201003000	Tool - Fuel Pump Shroud
E.	Lockwire, Corrosion-Resistant Steel, Dia. 0.8 mm (0.032 in.)
F.	O-ring
G.	O-ring
H. Material No. 01-001	Fuels (Ref. 20-31-00)
Referenced Procedures	
- 12-11-28, P. Block 301	Replenishing of Fuel Tanks
- 20-28-11, P. Block 1	Electrical Bonding
- 24-41-00, P. Block 301	AC External Power Control
- 28-00-00, P. Block 301	Fuel
R - 28-21-19, P. Block 501	Pump - Booster - Outer Tanks
- 28-21-21, P. Block 401	Canister - Outer Tank
- 28-25-00, P. Block 301	Refuel/Defuel System

NOTE : Items F. and G. are only required if the pump is removed for any reason other than replacement.

2. Procedure

(Ref. Fig. 401)
(Ref. Fig. 402)

A. Job Set-Up

(1)Open, safety and tag the applicable circuit breakers:

PANEL	SERVICE	IDENT.	LOCATION
	- For left outer tank, Pump 1		
132VU	FUEL/L OUTR TK/PUMP 1/CTL	67QA	322/N56
101VU	FUEL/L OUTR TK/PUMP 1/SUPPLY	5QA	GEN2/A17

PANEL	SERVICE	IDENT.	LOCATION
	- For left outer tank, Pump 2		
22VU	FUEL/OUTR TK PUMP 2/L TK/CTL	61QA	201/J15
101VU	FUEL/L OUTR TK/PUMP 2/SUPPLY	3QA	GEN1/A20
	- For right outer tank, Pump 1		
132VU	FUEL/R OUTR TK/PUMP 1/CTL	62QA	323/M57
101VU	FUEL/R OUTR TK/PUMP 1/SUPPLY	4QA	GEN1/A14
	- For right outer tank, Pump 2		
22VU	FUEL/OUTR TK PUMP 2/R TK/CTL	68QA	201/J18
101VU	FUEL/R OUTR TK/PUMP 2/SUPPLY	6QA	GEN2/B02

(2)De-energize the aircraft electrical network (Ref. 24-41-00, P. Block 301).
(3)Put the access platform in position below zone 550 (660).
(4)Remove the nuts (7) and (8) and the bolts (9) and 10) that attach the forward intermediate fairing (located on access door 550AB or 650AB).
(5)Attach the lanyard (3) to the aft fairing.

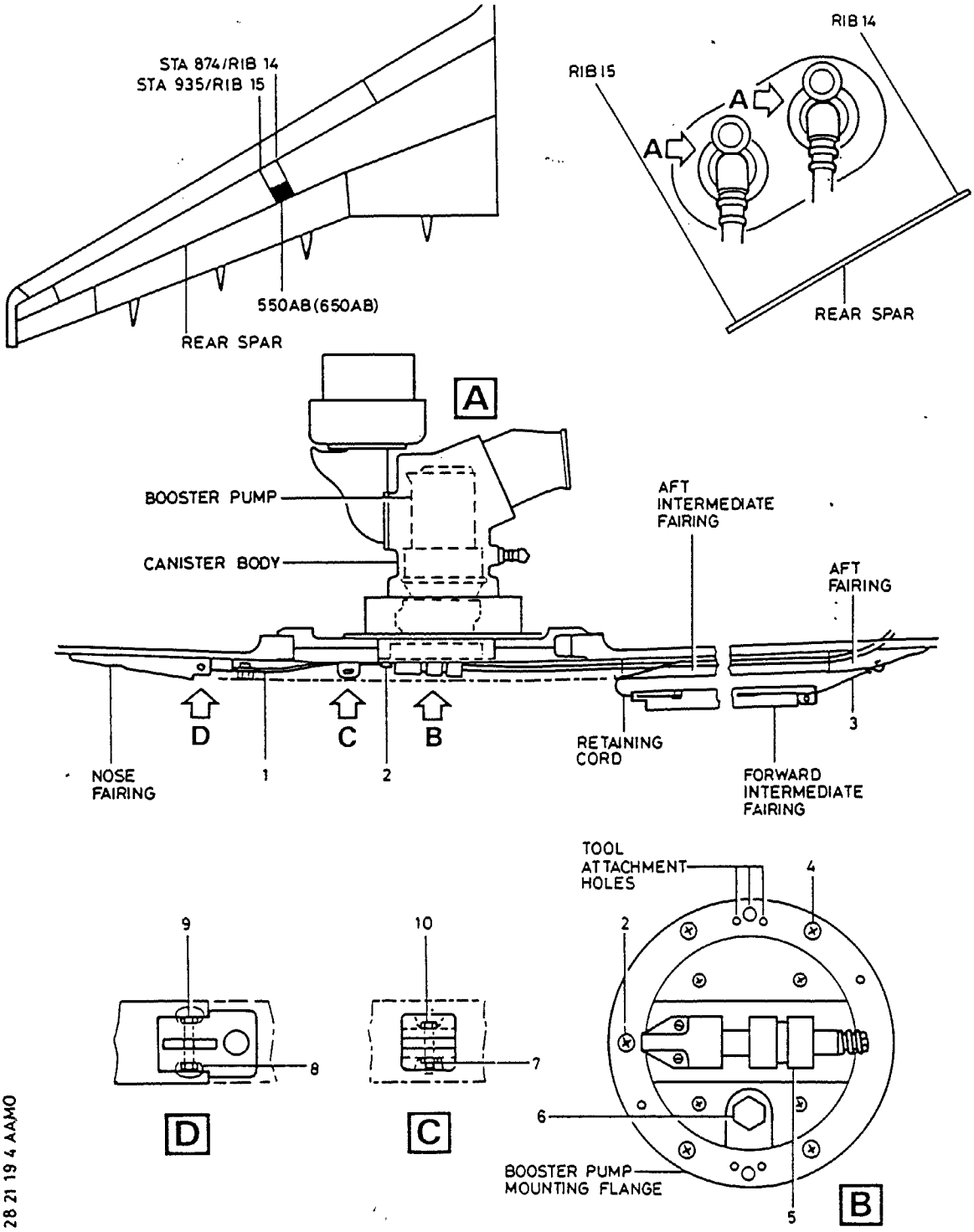
B. Removal
(1)Disconnect the electrical connector (5) from the pump and install the protective caps.
(2)Unscrew the captive screw (2) at the pump mounting flange, until it is free of the canister, then remove the captive screw (2) from the pump flange to disconnect the bonding lead (1). Install the captive screw (2) in the pump flange.
(3)Unscrew the five captive screws (4) at the pump mounting flange.
(4)Attach the shroud tool PN 98A28201003000 to the pump.
- Screw the four screws of the tool into the tool attachment holes in the pump mounting flange.
(5)Pull the pump down onto the internal stop.
(6)Put the container in position below the pump. Remove and discard the lockwire, then unscrew the drain plug (6) until it is free but retained. Let the residual fuel drain completely from the pump and canister.

R **ON A/C 001-100,

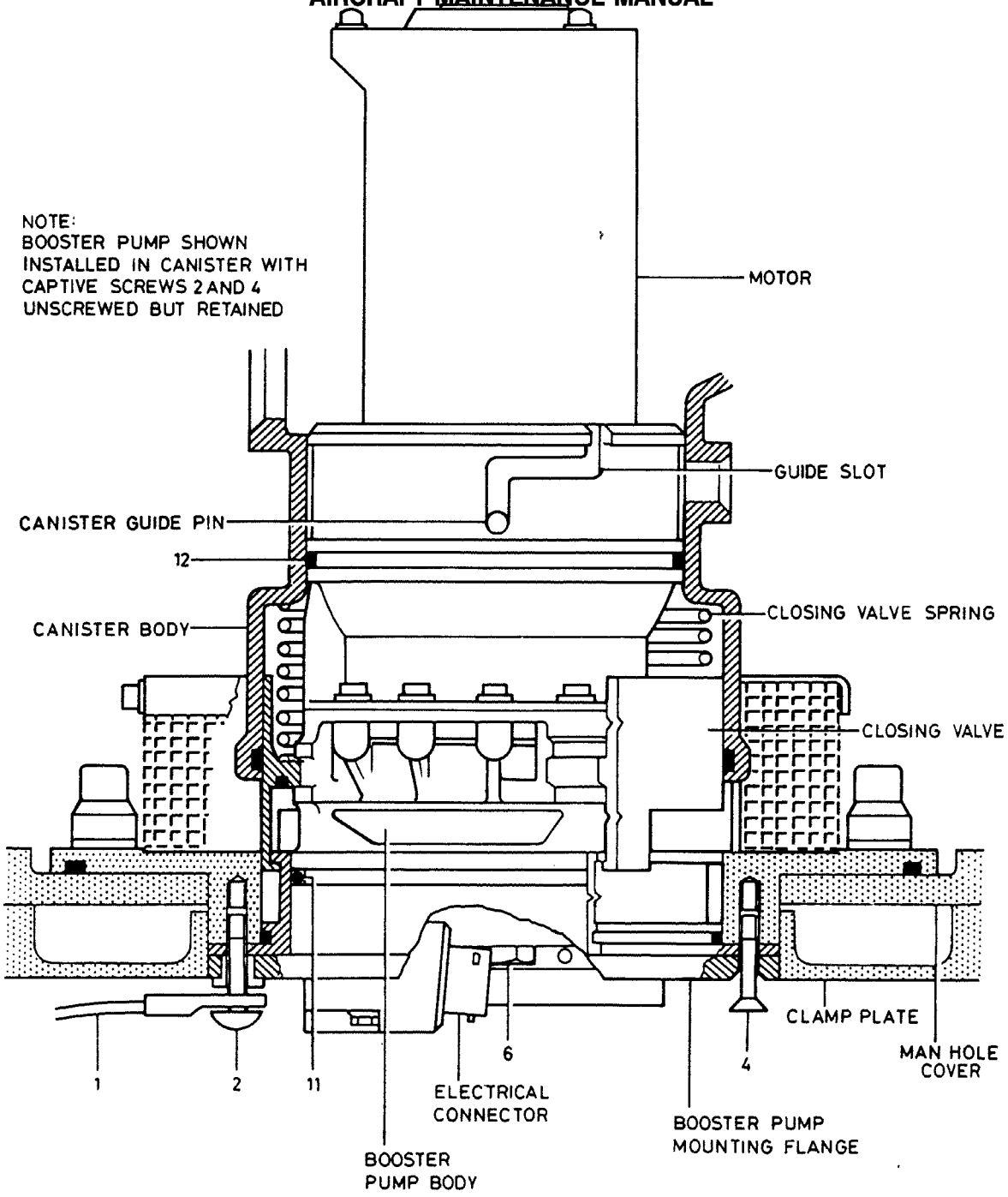
NOTE: If more than approximately 1 liter (0.26 US gals) of fuel flows from pump drain, the canister valve sealing mechanism is not fully closed; in this case proceed with the next step.

R **ON A/C 101-200,

NOTE: If more than approximately 0.26 US gals (1 liter) of fuel



Outer Tank Booster Pump
Figure 401



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Pump Installation - Sectional Details
Figure 402

flows from pump drain, the canister valve sealing mechanism is not fully closed; in this case proceed with the next step.

R **ON A/C ALL

(7)If the canister valve sealing mechanism fails to shut off the fuel supply to the pump :
(a)Tighten drain plug (6).
(b)Push pump back into canister.
(c)Repeat operations 2.B.(5) and (6).
If the condition persists, the canister mechanism is faulty :
(d)Tighten drain plug (6).
(e)Push pump back into canister.
(f)Defuel the tank (Ref. 28-25-00, P. Block 301) or transfer the fuel to another tank (Ref. 28-25-00, P. Block 301).

NOTE : (1)If the transfer method is to be adopted and the pump is unserviceable, the pump must be rendered electrically and mechanically safe and the associated circuit breakers referred to in paragraph 2.A. operation (1) must remain open, safetied and tagged.
(2)If the transfer method is to be adopted and the pump is serviceable, it can be utilized during transfer operations providing it is reinstalled to the requirements of paragraph 2.D. Installation operations (4) thru (8). Otherwise it must be made safe, as in the case of an unserviceable pump.

(g)This operation is only required if preceding operations (d), (e) and (f) have been effected. If applicable, repeat the requirements of paragraph 2.A. operation (1) and paragraph 2.B. operations (1) thru (6), prior to proceeding with the following operations. Subsequent to pump removal, check the canister for defects. If necessary, replace the canister (Ref. 28-21-21, P. Block 401).
(8)Rotate the pump counterclockwise, up to the internal mechanical stop position, then pull down and withdraw pump completely from canister.
(9)Remove tool from pump mounting flange.
(10)If a replacement pump is to be installed :
(a)Allow the removed pump to drain for approximately one hour before despatch to storage or overhaul. Tighten drain plug (6).
If the removed pump is to be reinstalled :
(b)Tighten drain plug (6) and safety with lockwire.
(c)Remove and discard O-ring seals (11) and (12) from pump body.
(d)Suitably protect the pump and blank the orifices.

C. Preparation of Replacement Component
(1)Make sure that the replacement pump is prepared for operation. Make sure that the captive screws (2) and (4) and the new O-ring seals (11) and (12) are available.
(2)Install the five captive screws (4) in the pump mounting flange holes. Do not install the captive screw (2) at this stage.

(3)Make sure that the drain plug (6) is installed, tightened and safetied with lockwire.
(4)Attach the designated tool to the pump mounting flange.
(5)Lubricate the O-ring seals (11) and (12) with fuel (Material No. 01-001) and install them in the pump body.

D. Installation
(1)This operation is only necessary if you install the pump that was removed.
(a)Remove the protective wrapping and blanks from the pump.
(b)Attach the designated tool to the pump mounting flange.
(c)Lubricate the new O-ring seals (11) and (12) with fuel (Material No. 01-001) and install them in the pump body.
(2)Make sure that the pump, canister and interfaces are clean and in good condition.
(3)Put the pump in a central position below the canister. Make sure that when the pump is turned into the final position, the pump electrical connector (5) points rearwards. Carefully install the pump into the canister and make sure that the guide slots of the pump correctly engage with the guide pins of the canister. Turn the pump clockwise, up to the internal stop/lock position, and push the pump firmly into the canister.
(4)Engage the captive screw (2) in the eye-end of bonding lead (1) and install the captive screw (2) in the pump mounting flange.
(5)Gradually tighten the five captive screws (4) and the captive screw (2). Tighten each opposite screw in sequence.
(6)Remove the tool from the pump mounting flange.
(7)Obey the requirements of 20-28-11 P. Block 1, for the connection of the bonding lead (1) at the captive screw (2).
(8)Remove the protective caps from the electrical connector (5) and connect the electrical connector (5) to the pump.
(9)If the tank has been defueled then refuel the tank (Ref. 12-11-28, P. Block 301).
(10)If the fuel was moved to another tank, then move the initial quantity of fuel back to the tank (Ref. 28-25-00, P. Block 301).
(11)Remove the safety clips and tags and close the circuit breakers 3QA, 4QA, 5QA, 6QA, 61QA, 62QA, 67QA and 68QA.

E. Test
(1)Do the Operational Test on the pump (Ref. 28-21-19, P. Block 501).
(2)When the test is completed satisfactorily, examine the pump for external leakage.

F. Close-Up
(1)Engage the forward intermediate fairing in position, then install and tighten the bolts (9) and (10) and the nuts (7) and (8).
(2)Make sure that the work area is clean and clear of tools and miscellaneous items of equipment.
(3)Remove the access platform.

WARNING : LANDING GEAR - MAKE SURE THAT THE GROUND SAFETIES AND CHOCKS ARE IN POSITION.

MAKE SURE THAT YOU ISOLATE THE ELECTRICAL CIRCUITS UPON WHICH WORK IS IN PROGRESS.

MAKE SURE THAT THE FIRE FIGHTING EQUIPMENT IS AVAILABLE AND ADEQUATE.

DO NOT OPERATE THE MICROPHONE BUTTONS ON HF TRANSMISSION DURING REFUELING/DEFUELING OR GROUND MAINTENANCE - FUEL TRANSFER OPERATIONS.

1. Operational Test

A. Equipment and Materials

ITEM	DESIGNATION
A. Material No. 01-001	Fuels (Ref. 20-31-00)
Referenced Procedures	
- 24-41-00, P. Block 301	AC External Power Control
- 12-11-28, P. Block 301	Replenishing of Fuel Tanks
- 28-25-00, P. Block 301	Refuel/Defuel System

R **ON A/C 001-100,

B. Procedure
(1)Job Set-Up
(a)Energize the aircraft electrical network (Ref. 24-41-00, P. Block 301).
(b)Make sure that the relevant tank contains at least 500 kg (1100 lb) of fuel. If necessary refuel or transfer fuel as required (Ref. 12-11-28 or 28-25-00, P. Block 301).

R **ON A/C 101-200,

B. Procedure
(1)Job Set-Up
(a)Energize the aircraft electrical network (Ref. 24-41-00, P. Block 301).
R (b)Make sure that the relevant tank contains at least 1100 lb (500 kg)
R of fuel. If necessary refuel or transfer fuel as required (Ref.
R 12-11-28 or 28-25-00, P. Block 301).

R **ON A/C ALL

(c)Make sure that these circuit breakers are closed:

- for left outer tank, Pump 1

PANEL	SERVICE	IDENT.	LOCATION
101VU	FUEL L OUTER TK PUMP 1 SUPPLY	5QA	GEN 2/A17
132VU	FUEL/L OUTR TK/PUMP 1/WARN	15QA	323/M56
132VU	FUEL/L OUTR TK/PUMP 1/CTL	67QA	322/N56

- for left outer tank, Pump 2

PANEL	SERVICE	IDENT.	LOCATION
22VU	FUEL/OUTR TK PUMP 2/L TK/WARN	13QA	201/J16
22VU	FUEL/OUTR TK PUMP 2/L TK/CTL	61QA	201/J15
101VU	FUEL L OUTER TK PUMP 2 SUPPLY	3QA	GEN 1/A20

- for right outer tank, Pump 1

PANEL	SERVICE	IDENT.	LOCATION
101VU	FUEL R OUTER TK PUMP 1 SUPPLY	4QA	GEN 1/A14
132VU	FUEL/R OUTR TK/PUMP 1/WARN	14QA	322/N57
132VU	FUEL/R OUTR TK/PUMP 1/CTL	62QA	323/M57

- for right outer tank, Pump 2

PANEL	SERVICE	IDENT.	LOCATION
22VU	FUEL/OUTR TK PUMP 2/R TK/WARN	16QA	201/J17
22VU	FUEL/OUTR TK PUMP 2/R TK/CTL	68QA	201/J18
101VU	FUEL R OUTER TK PUMP 2 SUPPLY	6QA	GEN 2/B02

C. Test

ACTION	RESULT
1. On panel 430VU: - check that relevant fuel pump pushbutton switch OFF legends are on.	Fuel pumps in manual control.
2. On panel 430VU: - press relevant fuel pump pushbutton switch.	- pump runs On panel 430VU: - OFF legend goes off - LO PR legend comes on momentarily then goes off.
3. On panel 430VU: - release relevant fuel pump pushbutton switch.	- pump stops On panel 430VU: - OFF legend comes on.

D. Close-Up

(1) De-energize the aircraft electrical network (Ref. 24-41-00, P. Block 301).

R **WARNING** : THIS PROCEDURE USES A FUEL SYSTEM ITEM THAT IS IN A CATEGORY
R KNOWN AS A CRITICAL DESIGN CONFIGURATION CONTROL LIMITATION
R (CDCCL). CDCCL IDENTIFIES AN ITEM THAT CAN BE THE SOURCE OF A
R POSSIBLE FUEL TANK IGNITION. YOU MUST KEEP ALL CDCCL ITEMS IN
R THE APPROVED CONFIGURATION. DAMAGE, WEAR OR CHANGES TO A CDCCL ITEM
R CAN CAUSE A POSSIBLE FUEL TANK EXPLOSION.

LANDING GEAR - MAKE CERTAIN GROUND SAFETIES AND CHOCKS ARE IN POSITION.

FLIGHT CONTROLS - MAKE CERTAIN GROUND SAFETIES AND NOTICES ARE IN POSITION.

OBSERVE THE SAFETY PRECAUTIONS IN 28-00-00, P. BLOCK 301.

MAKE CERTAIN THAT FIRE FIGHTING EQUIPMENT IS AVAILABLE AND ADEQUATE.

BEFORE POWER IS SUPPLIED TO THE AIRCRAFT MAKE CERTAIN THAT ELECTRICAL CIRCUITS UPON WHICH WORK IS IN PROGRESS ARE ISOLATED.

1. Reason for the Job

A. In-situ Removal of Check Valve (para. 2)

B. Removal of Canister (para. 3)

2. Check Valve (Non-return Valve) In-situ Removal

A. Equipment and Materials

ITEM	DESIGNATION
A.	O-Ring
B. Material No. 01-001	Fuels (Ref. 20-31-00)
Referenced Procedures	
- 12-11-28, P. Block 301	Replenishment of Fuel Tanks
- 24-41-00, P. Block 301	AC External Power Control
- 28-00-00, P. Block 301	Fuel - General
- 28-21-19, P. Block 401	Booster Pump, Outer Tanks
- 28-25-00, P. Block 301	Refuel/Defuel System

B. Procedure

(1) Job Set-Up

(a) Energize aircraft electrical network (Ref. 24-41-00, P. Block 301).

(b) On panel 430VU make certain that the relevant inner and outer tank ISOL VALVES pushbutton switches are released, OFF legend on, valve closed.

(c) Defuel or transfer fuel from the outer tank (Ref. 28-25-00, P.

Block 301).
(d)De-energize aircraft electrical network.
(e)Remove the relevant booster pump (Ref. 28-21-19, P. Block 401).
(2)Removal
(Ref. Fig. 401)
(a)Place a container beneath canister.
(b)Ease the check valve open, drain residual fuel into container.
(c)Remove screws (1) and washers (2).

NOTE: Gain access through canister/pump orifice.

(d)Push fingers through flap (3). Pull and remove valve (4).

NOTE: Access as (c). O-ring (5) compression can resist removal.

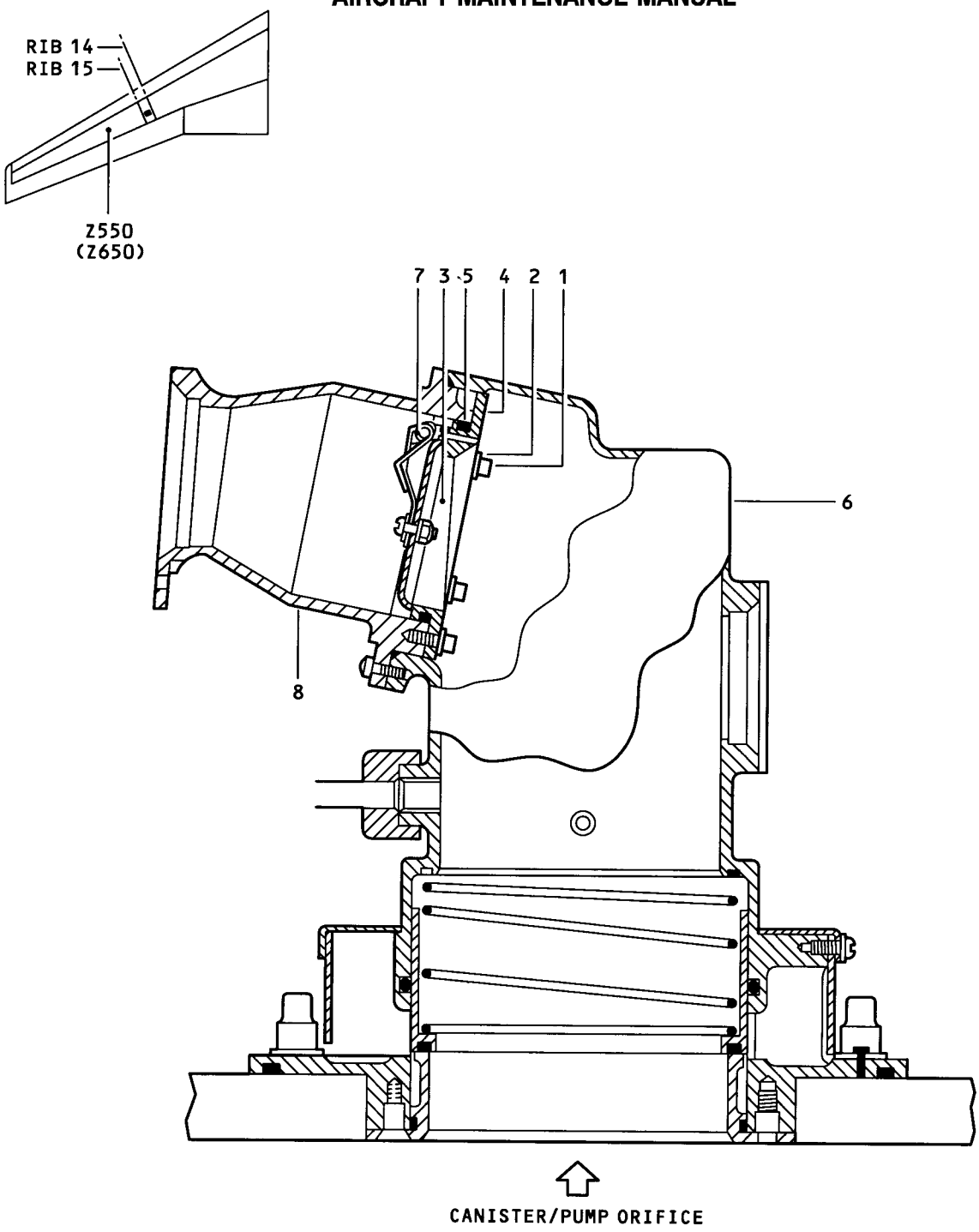
(e)Remove and discard O-ring (5).
(3)Examination.
(a)Examine valve (4) for defects. If defective, install new valve (4) (Ref. (4) and (5)). If serviceable examine canister (6) for defects. If canister is defective, install new canister (Ref. Para. 3).
(4)Preparation of Replacement Component.
(a)Apply Material No. 01-001 and install new O-ring (5) on valve (4).
(5)Installation.
(a)With the hinge (7) to the top, install valve (4) through the canister orifice.
(b)Engage the valve locating pin with the corresponding locating hole in the valve body (8). Make certain mating faces of valve (4) and valve body (8) are in contact.
(c)Install screws (1) and washers (2). Tighten screws (1) progressively.

NOTE: Screws (1) are secured by self-locking inserts.

(d)Make certain valve (4) is properly installed.
(e)Make certain that flap (3) opens freely and closes correctly.
(6)Test.
(a)Fill outer tank (Ref. 12-11-28, P. Block 301) or transfer fuel from another tank (Ref. 28-25-00, P. Block 301).

WARNING : MOVEMENT OF FLAP (3) CAN CAUSE UNCONTROLLED FUEL LEAKAGE.

(b)During step (a) monitor canister and valve (4) for signs of leakage.
(c)Place an empty container beneath canister to catch any fuel leakage.
(d)After 10 minutes measure the quantity of leaked fuel. The quantity should not exceed 20 cc. If leak rate is exceeded perform step (e).
(e)Switch on one outer pump and re-check leak rate. Leak rate should not exceed 30 cc/min. If leak rate is exceeded, change canister, Ref. para. 3.
(7)Close-up.
(a)Install booster pump (Ref. 28-21-19, P. Block 401).
(b)Make certain that working area is clean and clear of tools and miscellaneous items of equipment.



Canister - Check Valve
Figure 401

3. Canister (Complete)

A. Equipment and Materials

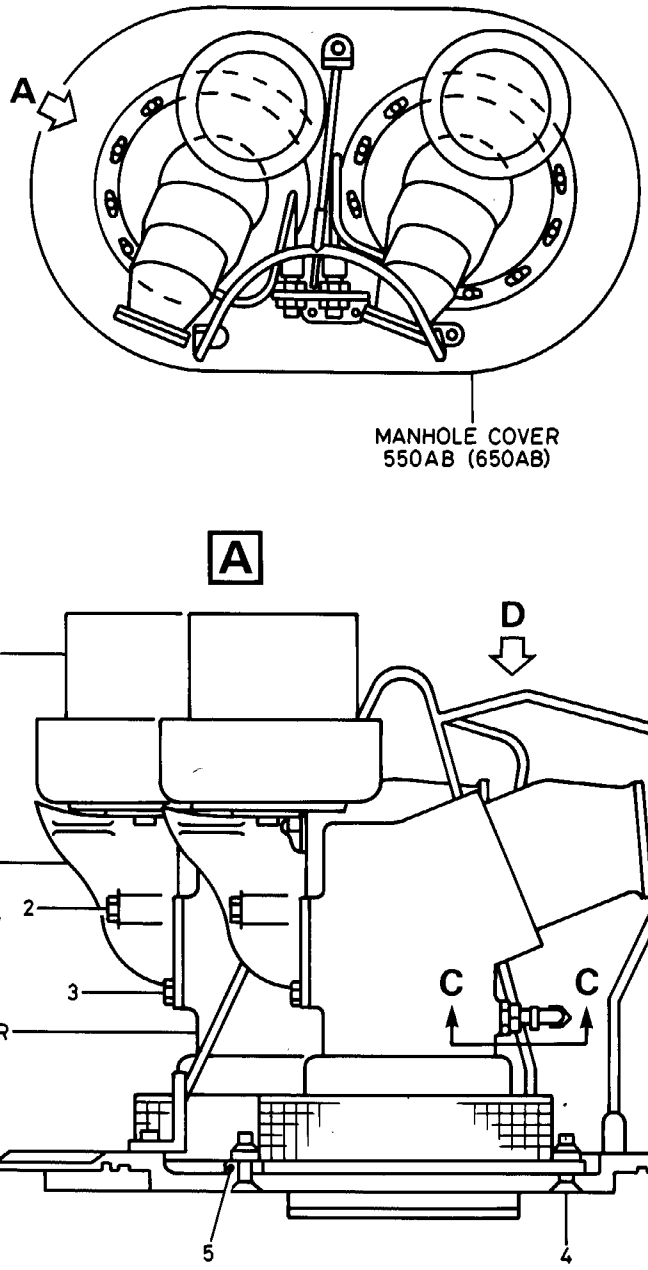
ITEM	DESIGNATION
A.	O-ring Seal, Elbow
B.	O-ring Seal, Elbow Union
C.	O-ring Seal, Canister Flange
D.	Retainer, O-ring Seal
E.	Torque Wrench, Set at: 105 to 115 lbf.in (1.185 to 1.299 m.daN)
F. Material No. 01-001	Fuels (Ref. 20-31-00)
G. Material No. 16-006	Structure Paints (Ref. 20-31-00)
Referenced Procedures	
- 12-11-28, P. Block 301	Replenishing of Fuel Tanks
- 28-00-00, P. Block 301	Fuel - General
- 28-11-24, P. Block 401	Manhole Cover, Outboard Pumps
- 28-21-19, P. Block 401	Pump-Booster, Outer Tanks
- 28-21-22, P. Block 401	Sequence Valve

B. Procedure

(1)Job Set-Up
(a)Remove relevant booster pump (Ref. 28-21-19, P. Block 401).
(b)Remove manhole cover 550(650)AB (Ref. 24-11-24, P. Block 401).
(c)Remove relevant sequence valve (Ref. 28-21-22, P. Block 401).

(2)Removal
(Ref. Fig. 402)
(Ref. Fig. 403)
(a)Unscrew sleeve nuts (11,13) or (14,16) and remove pipe (12) or (15).
(b)Remove bolts (4) in diametrical sequence and separate canister from manhole cover. Discard O-ring seal (5).
(c)Remove bolts (2,3) and separate elbow (1) from canister body. Discard O-ring seal (6).
(d)Slacken nut (8) and unscrew elbow union (9). Remove and discard O-ring seal (7) and retainer (10).
(e)Clean and inspect component interface. Check for correct condition of line end fittings.
(f)Cap open line ends and canister orifice. Protect component interface.

(3)Preparation of Replacement Component
(a)Depreserve the replacement canister and make certain that it is in good condition.
(b)Clean parts retained from removed component and check for correct condition.
(c)If applicable, install nut (8) on elbow union (9).
(d)Lubricate new O-ring seal (7) with Material No.01-001. Install new retainer (10) and O-ring seal (7) on elbow union (9), then screw the elbow union into the canister body. Do not tighten nut (8) at this



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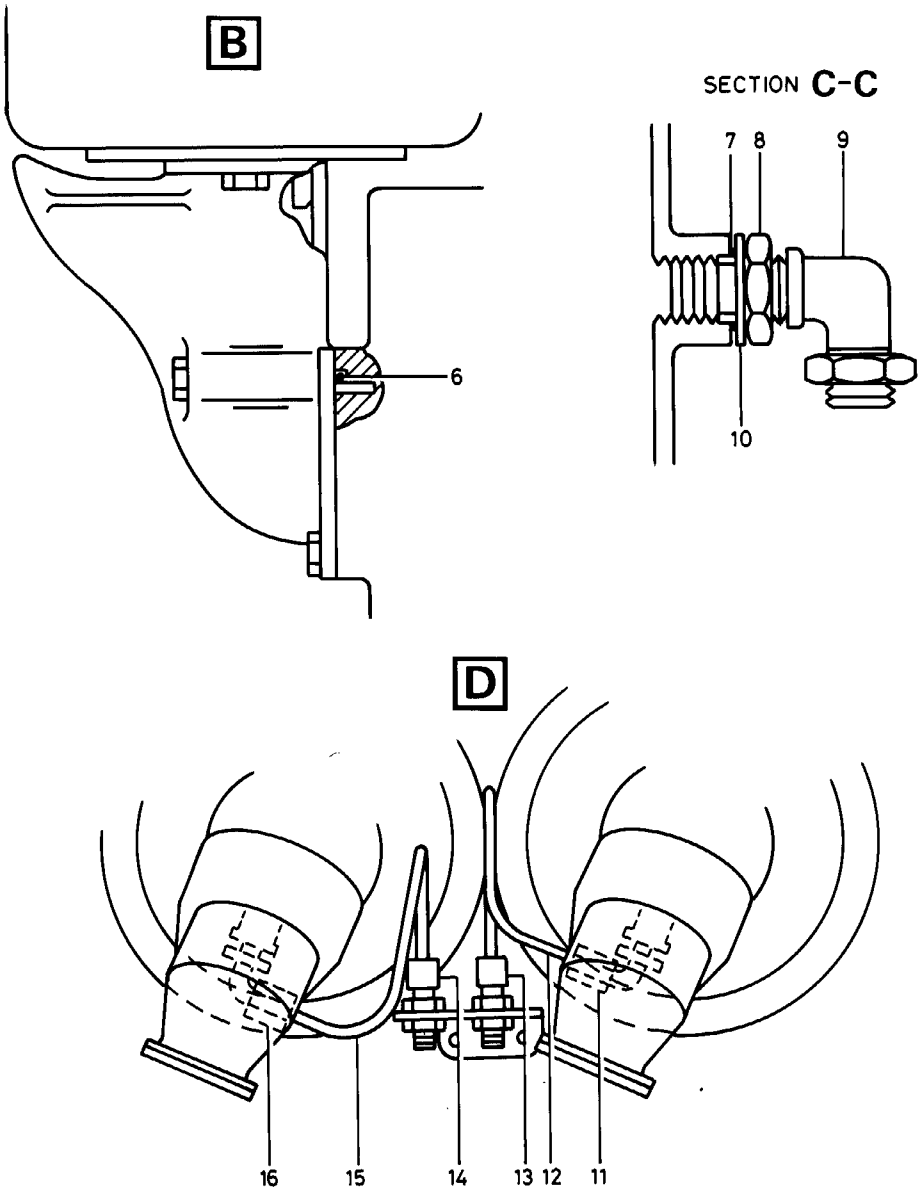
Canister Outer Tanks Installation Details
Figure 402



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Canister - Outer Tanks - Installation Details
Figure 403

stage.

(e)Lubricate new O-ring seal (6) with Material No.01-001 and position on elbow (1). Install the elbow on the canister body with bolts (2,3). Repaint bolt heads with Material No.16-006.

(4)Installation

(a)Lubricate new O-ring seal (5), with Material No.01-001, and position in groove of canister mounting flange.

(b)Position canister on manhole cover and install bolts (4). Tighten the bolts in diametrical sequence.

(c)Align elbow union (9) and install pipe (12) or (15) with sleeve nuts (11,13) or (14,16): finger tight only. Support the pipe and tighten nut (8).

(d)Torque tighten sleeve nuts (11,13) or (14,16) 105 to 115 lbf.in (1.185 to 1.299 m.daN).

(e)Install relevant sequence valve (Ref. 28-21-22, P. Block 401).

(f)Install manhole cover (Ref. 28-11-24, P. Block 401).

(5)Test

(a)Carry out para. 2. B. (6).

(b)Check for fuel seepage from canister flange.

(6)Close-Up

(a)Install booster pump (Ref. 28-21-19, P. Block 401).

(b)Make certain that working area is clean and clear of tools and miscellaneous items of equipment.

SEQUENCE VALVE - REMOVAL/INSTALLATION

WARNING : LANDING GEAR - MAKE SURE THAT THE GROUND SAFETIES AND CHOCKS ARE IN POSITION.

FLIGHT CONTROLS - MAKE SURE THAT THE GROUND SAFETIES AND NOTICES ARE IN POSITION.

FLIGHT CONTROLS - MAKE SURE THAT THE TRAVEL RANGES OF THE CONTROL SURFACES ARE CLEAR.

HYDRAULICS - BEFORE YOU PRESSURIZE THE SYSTEM, MAKE SURE THAT THE CONTROL SURFACE POSITIONS AND THE FLIGHT CONTROL POSITIONS ARE THE SAME.

MAKE SURE THAT YOU ISOLATE THE ELECTRICAL CIRCUITS UPON WHICH WORK IS IN PROGRESS.

1. Equipment and Materials

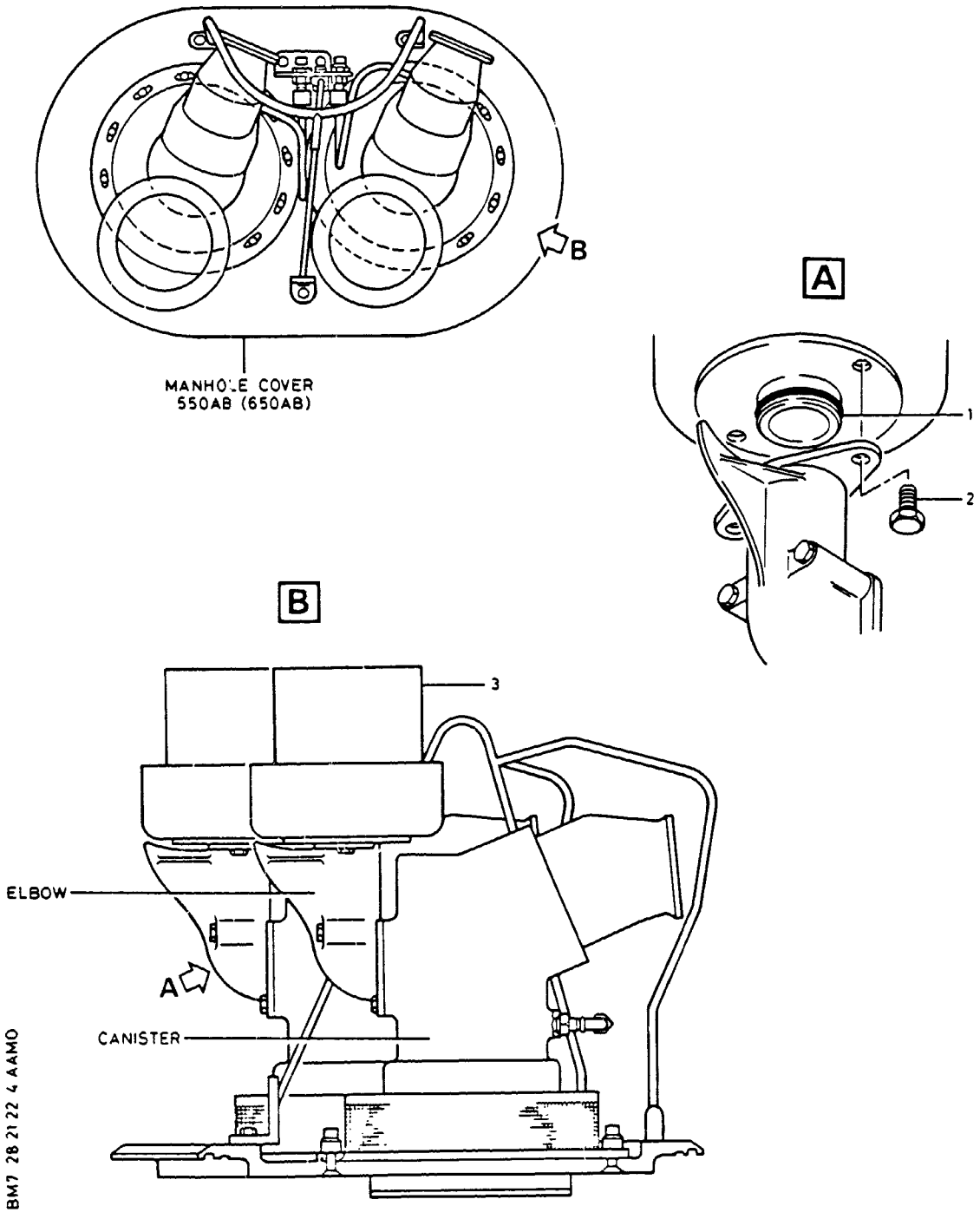
ITEM	DESIGNATION
A.	Access Platform 4 m (13 ft)
B.	Blanking Caps
C. 99A28404000000	Adaptor, Sequence Valve
D. Material No. 01-001	Fuels (Ref. 20-31-00)
E. Material No. 16-006	Structure Paints (Ref. 20-31-00)
Referenced Procedures	
- 12-11-28, P. Block 301	Replenishing of Fuel Tanks
- 24-41-00, P. Block 301	AC External Power Control
- 28-00-00, P. Block 301	Fuel
- 28-11-24, P. Block 401	Manhole Covers, Outer Pumps
- 28-21-52, P. Block 401	Pressure Switch, Main Pumps

2. Procedure

NOTE : The procedure that follows effects all outer pump sequence valves.

A. Job Set-Up
(1)Put the 4 m (13 ft) access platform in position below the manhole cover 550(650)AB.
(2)Remove the manhole cover 550(650)AB (Ref. 28-11-24, P. Block 401).
(3)Make sure that the base of the pumps and the pump electrical connectors are protected; then support the manhole cover, complete with the pumps, the canisters and the sequence valves, on a suitable bench.

B. Removal
(Ref. Fig. 401)
(1)Remove two bolts (2) and separate the sequence valve (3) from the elbow. Discard the seal (1).
(2)Clean and inspect the component interface. Put blanking caps on the



Sequence Valve - Outer Pumps
Figure 401

open orifices of the sequence valve and the elbow.

C. Installation
(1)Lubricate the new seal (1) with fuel (Material No. 01-001) and install it on the sequence valve (3).
(2)Install the sequence valve (3) on the elbow with two bolts (2). Repaint the bolt heads with paint (Material No. 16-006).
(3)Install the manhole cover 550(650)AB (Ref. 28-11-24, P. Block 401).
(4)Refuel the relevant fuel tank (Ref. 12-11-28, P. Block 301).

D. Test
(1)Remove the relevant pressure switch (Ref. 28-21-52, P. Block 401).
(2)Install the adaptor with the pressure gage onto the stud of the sealing valve with the pressure-switch plug and the O-rings.
(3)Make sure that the sequence valve has been calibrated correctly before you start the test.
(4)Energize the aircraft electrical network (Ref. 24-41-00, P. Block 301).
(5)Do the test that follows:

ACTION	RESULT
1. On panel 430VU: - push (in) the applicable pump p/bsw.	On panel 430VU: - the OFF legend in the associated pump p/bsw goes off - the pump runs.
2. Make sure that the indication on the pressure gage increases then stabilizes at a pressure of R 1.34 to 1.48 bar (19.5 to 21.5 psig).	
3. On panel 430VU: - release (out) the applicable pump p/bsw.	On panel 430VU: - the OFF legend in the associated pump p/bsw comes on - the pump stops.

E. Close-Up
(1)De-energize the aircraft electrical network (Ref. 24-41-00, P. Block 301).
(2)Remove the pressure switch plug and remove the adaptor with the pressure gage from the stud of the sealing valve.
(3)Install the pressure switch (Ref. 28-21-52, P. Block 401).
(4)Make sure that the work area is clean and clear of all tools and other items of equipment.
(5)Remove the access platform.

CHECK VALVE (1.25IN) REMOVAL/INSTALLATION

WARNING : LANDING GEAR - MAKE CERTAIN GROUND SAFETIES AND CHOCKS ARE IN POSITION.

FLIGHT CONTROLS - MAKE CERTAIN GROUND SAFETIES AND NOTICES ARE IN POSITION.

OBSERVE THE SAFETY PRECAUTIONS IN 28-00-00, P. BLOCK 301.

MAKE CERTAIN THAT FIRE FIGHTING EQUIPMENT IS AVAILABLE AND ADEQUATE.

BEFORE POWER IS SUPPLIED TO THE AIRCRAFT MAKE CERTAIN THAT ELECTRICAL CIRCUITS UPON WHICH WORK IS IN PROGRESS ARE ISOLATED.

1. Equipment and Materials

ITEM	DESIGNATION
A.	Spark Proof Lamp
B.	Containers one galon (4.5 liters)
C.	O-rings
D. Material No. 01-001	Fuels (ref. 20-31-00)
E. Material No. 16-006	Structure Paints (Ref. 20-31-00)
Referenced Procedures	
- 20-28-11, P. Block 1	Electrical Bonding
- 28-11-24, P. Block 401	Manhole Cover Outboard Pumps

2. Procedure

A. Job Set-Up

(1)Remove manhole cover 550(650)AB between STA874/RIB14 and STA935/RIB15 (Ref. 28-11-24, P. Block 401).

(2)Open, safety and tag the following circuit breakers:

- For check valves - left wing

PANEL	SERVICE	IDENT.	LOCATION
132VU	FUEL/L OUTR TK/PUMP 1/CTL	67QA	322/N56
22VU	FUEL/L OUTR TK/PUMP 2/CTL	61QA	201/J15

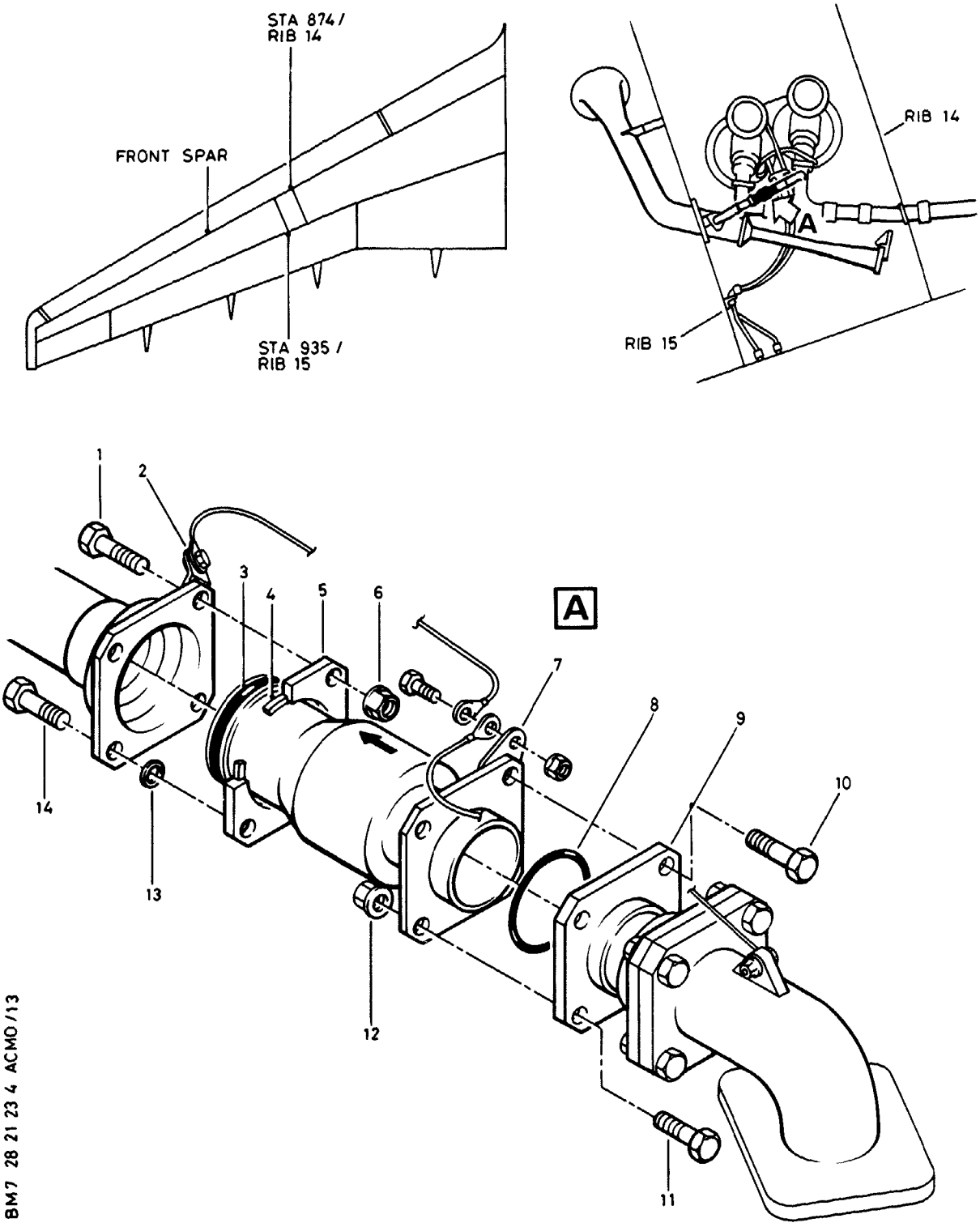
- For check valves - right wing

PANEL	SERVICE	IDENT.	LOCATION
132VU	FUEL/R OUTR TK/PUMP 1/CTL	62QA	323/M57
22VU	FUEL/R OUTR TK/PUMP 2/CTL	68QA	201/J18

B. Removal

(Ref. Fig. 401)

(1)Place container under check valve.



Check Valve 1.25 in - Installation
Figure 401

(2)Remove nuts (6), bolts (14) and bolt (1) securing downstream end of check valve and washer shims (13).
(3)Remove nuts (12), bolts (11) and bolt (10) securing check valve to adapter (9).
(4)Slide fuel line clear and remove check valve. Discard O-ring seals (3) and (8). Cap open line ends.
(5)For a replacement valve remove circlip (4) and plate (5).

C. Reparation of Replacement Component

NOTE: As the valve is not checked after installation, make certain that it is serviceable, has been correctly stored and that all associated paperwork is in order.

(1)Install plate (5) and circlip (4) on check valve.
(2)Lubricate new O-ring seals (8) and (3) with Material No.01-001 and install on check valve.

D. Installation (Ref. Fig. 401)
(1)Remove caps from line ends and secure check valve to adapter (9) with bolts (11), bolt (10) and nuts (12), securing bonding tag (7) with bolt (10).
(2)Secure downstream end of check valve to line with bolts (14), bolt (1), washer shims (13) and nuts (6), securing bonding tag (2) with bolt (1).
(3)Apply Material No.16-006 to nuts, and bolt heads and tails.

E. Test
None.

F. Close-Up
(1)Remove container from under check valve.
(2)Make certain the area is clean and clear of tools and miscellaneous items of equipment.
(3)Install manhole cover (Ref. 28-11-24, P. Block 401).
(4)Remove all ground handling and maintenance equipment, standard and special tools, all access equipment and miscellaneous items.
(5)Remove safety clips and tags and close the following circuit breakers:
For check valves - left wing 67QA and 61QA.
For check valves - right wing 62QA and 68QA.

PUMP - BOOSTER, CENTER TANK - REMOVAL/INSTALLATION

WARNING : MAKE CERTAIN THAT LANDING GEAR SAFETIES INCLUDING WHEEL CHOCKS ARE IN POSITION.
BEFORE UNDERTAKING MAINTENANCE OPERATIONS ON THE FUEL SYSTEM, THE PRESCRIBED SAFETY PRECAUTIONS MUST BE STRICTLY OBSERVED (REF. 28-00-00, P. BLOCK 301 AND 28-10-00, P. BLOCK 301).
MAKE CERTAIN THAT FIRE FIGHTING EQUIPMENT IS READILY AVIALABLE AND IN PROXIMITY TO THE WORK AREA.

1. Fuel Pump System

A. Equipment and Materials

	ITEM	DESIGNATION
	A.	Access platform 2.5m (8.4 ft)
	B.	Lint free cloth
	C.	O-rings
R	D.Material No. 11-026	Cleaning Agents (Ref.20.31.00)
R	E.	Lockwire-Corrosion Resistant Steel Dia. 0.8 mm
R		(0.032 in.)
R	F.	Canister Blanking Plug
R	G.	Circuit Breaker Safety Clips
R	H.98A28201003000	Tool - Fuel Pump Shroud
	Referenced Procedures	
	- 12-11-28, P. Block 301	Replenishing of Fuel Tanks
	- 24-41-00, P. Block 301	AC External Power Control
	- 28-00-00, P. Block 301	Safety Precautions
	- 28-21-37, P. Block 401	Center Tank Booster Pump Canister
	- 28-25-00, P. Block 301	Refuel/Defuel System
	- 32-12-11, P. Block 301	Main Gear Main Door - (Ground Door(s) Opening)

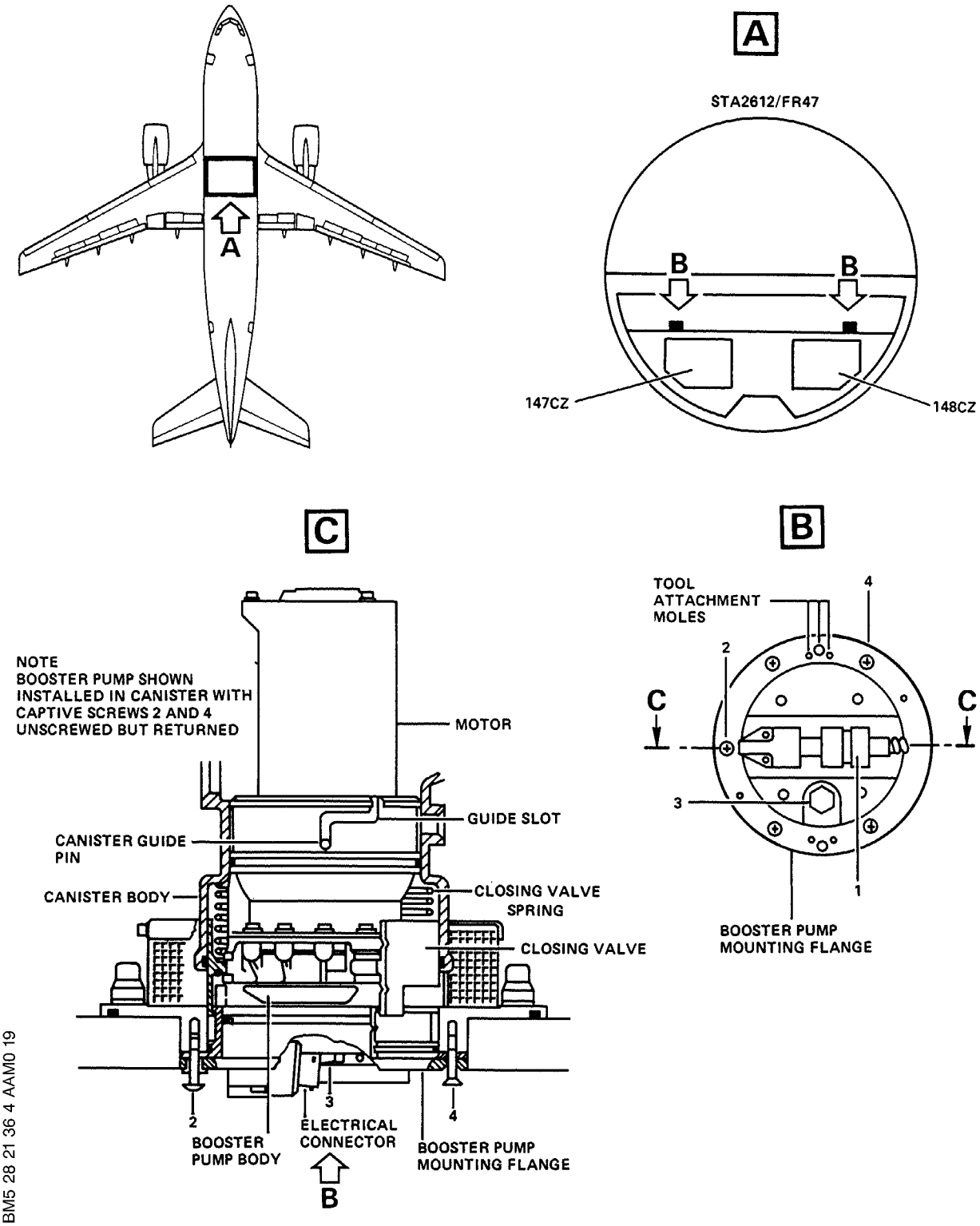
2. Procedure
(Ref. Fig. 401)

A. Job Set-Up
(1)Open, safety and tag following circuit breakers :

PANEL	SERVICE	IDENT.	LOCATION
132VU	FUEL/CTR TK/L/PUMP/CTL	63QA	322/N58
132VU	FUEL/CTR TK/R/PUMP/CTL	64QA	322/M59

(2)Open main landing gear doors (Ref. 32-12-11, P. Block 301).
(3)Position access platform.
(4)Open access doors 147CZ and 148CZ
NOTE : Pumps are located in upper recesses of area behind access doors 147CZ and 148CZ.

B. Removal



Center Tank Booster Pump Installation
Figure 401

R

(1)Disconnect electrical plug (1) from pump.
(2)Unscrew five screws (4) and screw (2) at pump mounting flange.
NOTE : Screws (2) and (4) are captive.
(3)Attach pump shroud tool to pump.
- Screw the four screws of tool into tool attachment holes in pump mounting flange.
(4)Pull pump down onto internal stop.
NOTE : This action automatically shuts off fuel supply to the pump.
(5)Position container below pump. Cut and remove lockwire then unscrew drain plug (3) until it is free but retained. Allow residual fuel to completely drain from pump and canister.
NOTE : If more than approximately 1 liter (1.75 pints) of fuel flows from pump drain, canister valve sealing mechanism is not fully closed ; in this case proceed with the next operation.
(6)If canister valve mechanism fails to shut off fuel supply to the pump :
(a)Tighten drain plug (3).
(b)Push pump back into canister.
(c)Repeat operations 2. B. (4) and (5).
If the condition persists, canister mechanism is faulty :
(d)Tighten drain plug (3).
(e)Push pump back into canister.
(f)Defuel tank (Ref. 28-25-00, P. Block 301) or transfer fuel to another tank (Ref. 28-25-00, P. Block 301).
NOTE : (1) If transfer method is to be adopted and pump is unserviceable, pump must be rendered electrically and mechanically safe and associated circuit breakers referred to in paragraph 2. A. operation (1) must remain open, safetied and tagged.
(2)If transfer method is to be adopted and pump is serviceable, it can be utilized during transfer operations providing it is reinstalled to the requirements of paragraph 2.D. Installation, operations (4), (5) and (6). Otherwise it must be made safe, as in the case of an unserviceable pump.
(g)This operation is only required if preceding operations (d), (e) and (f) have been effected. If applicable repeat the requirements of paragraph 2.A. operation (1) and paragraph 2.B. operations (1) thru (5), prior to proceeding with the following operations. Subsequent to pump removal, check canister for defects. If necessary, replace canister (Ref. 28-21-37, P. Block 401).
(7)Rotate pump counterclockwise, up to the internal mechanical stop position, then pull down and withdraw pump completely from canister.
(8)Remove pump shroud tool from pump mounting flange.
(9)If a replacement pump is to be installed :
(a)Allow the removed pump to drain for approximately one hour before despatch to storage or overhaul. Tighten drain plug (3).
If the removed pump is to be reinstalled :
(b)Tighten drain plug (3) and wirelock.
R (c)Suitably protect pump and blank the orifices.

C. Preparation of Replacement Component
(1)Depreserve the replacement pump and make certain that it is in good

R condition. Collect individually supplied screws (2) and (4).
(2)Install five screws (4) and screw (2) in pump mounting flange holes.
(3)Check that drain plug (3) is installed, tightened and wirelocked.
(4)Attach pump shroud tool to pump mounting flange.
R (5)This operation is only applicable if the removed pump is to be reinstalled :
(a)Remove protective wrapping and blanks from pump.
(b)Attach designated tool to pump mounting flange.
R

D. Installation
(1)Make certain that pump, canister and interfaces are scrupulously clean and in good condition.
(2)Position pump centrally below canister so that, when rotated for final installation, connection of electrical connector is possible. Then carefully insert pump into canister, making certain that guide slots of pump correctly engage with guide pins of canister. Rotate pump clockwise up to internal stop/lock position, then push pump fully into canister.
(3)Secure pump by progressively tightening five screws (4) and screw (2), in diametrically opposite sequence.
(4)Remove pump shroud tool from pump mounting flange.
(5)Connect electrical plug (1) to pump and wirelock.
(6)If tank has been defueled :

**ON A/C 001-100,

(7)Make certain that center tank contains at least 2000 kg of fuel. Replenish tank if necessary (Ref. 12-11-28, P. Block 1), or transfer fuel (Ref. 28-25-00, P. Block 301).

**ON A/C 101-200,

(7)Make certain that center tank contains at least 4400 lbs of fuel. Replenish tank if necessary (Ref. 12-11-28, P. Block 1), or transfer fuel (Ref. 28-25-00, P. Block 301).

**ON A/C ALL

E. Test
(1)Energize the aircraft electrical network (Ref. 24-41-00, P. Block 301). Make certain that electronics racks ventilation is correct.
(2)Make certain that ENG1(2) HP fuel shutoff valve control lever is in OFF position (HP fuel shutoff valve closed).
(3)Close circuit breakers 63QA, 64QA and make certain that the following circuit breakers are closed :

PANEL	SERVICE	IDENT.	LOCATION
101VU	FUEL/CTR TK/L/PUMP/SUPPLY	99QA	ESS/B04
101VU	FUEL/CTR TK/R/PUMP/SUPPLY	100QA	GEN2/B17

PANEL	SERVICE	IDENT.	LOCATION
132VU	FUEL/CTR TK/L/PUMP/WARN	101QA	323/M58
132VU	FUEL/CTR TK/R/PUMP/WARN	102QA	322/N59

(5)Perform the following :

ACTION	RESULT
1. On FUEL section of panel 430VU - check that relevant fuel pump pushbutton switch is released (out)	- OFF legend on pushbutton switch comes on.
2. On FUEL section of panel 430VU - press relevant fuel pump pushbutton switch (latched in)	- FAULT legend comes on monentarily then goes off.
3. Check for leakage under relevant pump.	
4. On FUEL section of panel 430VU - release relevant fuel pump pushbutton switch (latched out)	- pump stops operating - OFF legend on pushbutton switch comes on.

F. Close-Up.
(1)De-energize the aircraft electrical network (Ref. 24-41-00, P. Block 301).
(2)Remove container.
(3)Make certain that working area is clean and clear of tools and miscellaneous items of equipment.
(4)Close access doors 147CZ and 148CZ.
(5)Remove access platform.
(6)Close main landing gear doors (Ref. 32-12-11, P. Block 301).

R **ON A/C 002-002, 101-101, 104-104, 107-200,

R Post SB 28-2159 For A/C 002-002,101-101,104-104,107-200,

PUMP - BOOSTER, CENTER TANK - INSPECTION/CHECK

R **ON A/C 002-002, 101-101, 104-104, 107-200,

R Post SB 28-2159 For A/C 002-002,101-101,104-104,107-200,

WARNING : MAKE CERTAIN THAT LANDING GEAR SAFETIES INCLUDING WHEEL CHOCKS ARE IN POSITION.
BEFORE UNDERTAKING MAINTENANCE OPERATIONS ON THE FUEL SYSTEM, THE PRESCRIBED SAFETY PRECAUTIONS MUST BE STRICTLY OBSERVED (REF. 28-00-00, P. BLOCK 301 AND 28-10-00, P. BLOCK 301).
MAKE CERTAIN THAT FIRE FIGHTING EQUIPMENT IS READILY AVAILABLE AND IN PROXIMITY TO THE WORK AREA.

1. Fuel Pump System

A. Equipment and Materials

ITEM	DESIGNATION
(1)	Access platform 2.5m (8.4 ft)
(2)	Lint free cloth
(3)	O-rings
(4)Material No. 11-026	Cleaning Agents (Ref. 20-31-00)
Referenced procedures	
- 12-11-28, P. Block 301	Fuel Tank Replinishing
- 24-00-00, P. Block 301	Electrical Power - General
- 24-41-00, P. Block 301	AC External Power Control
- 28-00-00, P. Block 301	Safety Precautions
- 28-11-29, P. Block 401	Center Tank Manhole Cover
- 28-21-36, P. Block 401	Center Tank Booster Pump
- 28-21-37, P. Block 401	Center Tank Booster Pump Canister
- 28-25-00, P. Block 301	Refuel/Defuel System
- 32-12-11, P. Block 301	Main Gear Door - (Ground Door(s) Opening)
- NTM/57-10-14, P.Block 601	Skins and Plates

B. Procedure
(1)Job Set-up
(a)Make sure that the aircraft is electrically grounded (Ref. 24-00-00, P. Block 301).

(b)Defuel the inner fuel tanks and the center fuel tank
(Ref. 28-25-00, P. Block 301).
(c)Open main landing gear doors (Ref. 32-12-11, P. Block 301).
(d)Put access platforms in position and open the access doors 147CZ and 148CZ. (Ref. Fig. 601)
(e)De-energize the aircraft electrical circuits
(Ref. 24-41-00, P. Block 301).
(f)Remove the center fuel tank manhole-covers 147AZ and 148AZ
(Ref. 28-11-29, P. Block 401).
(g)Vent the center fuel tank with clean dry air.
(h)Remove the center fuel tank booster-pumps (LH) and (RH)
(Ref. 28-21-36, P. Block 401).

(2)Preparation For Inspection (Ref. Fig. 602)
(a)Clean the inspection areas of the components with cleaning agent (Mat. No. 11-026) and a lint free cloth.

(3)Center Fuel Tank - Fuel Booster-Pumps (LH) and (RH) - Visual Inspection
(Ref. Fig. 602)

R **ON A/C 002-002, 101-101, 104-104, 107-200,

R Post SB 28-2159 For A/C 002-002,101-101,104-104,107-200,

(a)Do a visual inspection in the area between the impeller assembly and the inducer assembly for cracks and missing or damaged fasteners.
(b)Do a visual inspection for signs of damage in the area of the guide slot (bayonet slot).
(c)If you find any cracks or damage, replace the pump.
(Ref. 28-21-36, P. Block 401).
(d)If you find that only fasteners are missing or damaged, replace the pump, (Ref. 28-21-36, P. Block 401).
(e)If you do not find cracks, damage or missing fastenners,
go to step (4).

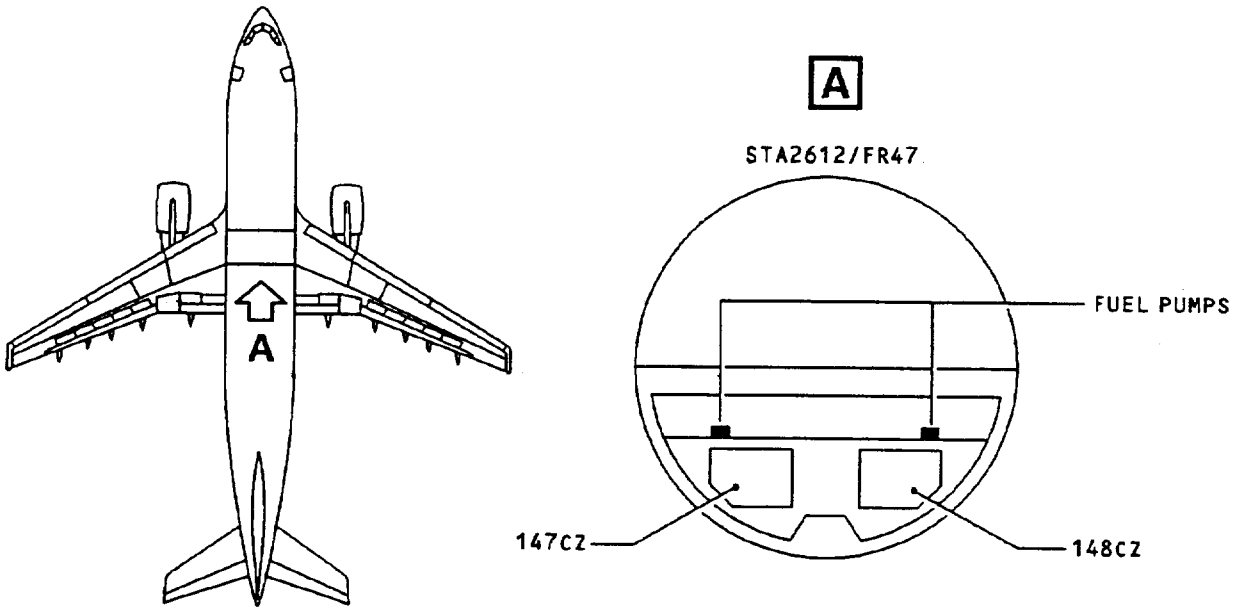
(4)Center Fuel Tank - Fuel Booster - Pump Canisters (LH) and (RH) - Special Detailed Inspection.
(Ref. Fig. 603)

R **ON A/C 002-002, 101-101, 104-104, 107-200,

R Post SB 28-2159 For A/C 002-002,101-101,104-104,107-200,

WARNING : BE CAREFUL WHEN YOU REMOVE THE CANISTERS INTERNAL ASSEMBLY. THE INTERNAL ASSEMBLY IS SPRING LOADED. SOME FUEL SPILL CAN ALSO OCCUR. DO NOT GET FUEL IN YOUR EYES.

(a)Remove the internal assemblies of the canisters, as follows :
1 Hold the flange in position and remove and retain the six flange attachment screws (1).
2 Carefully lower and remove the flange (2), the valve ring (4) and the spring (3).



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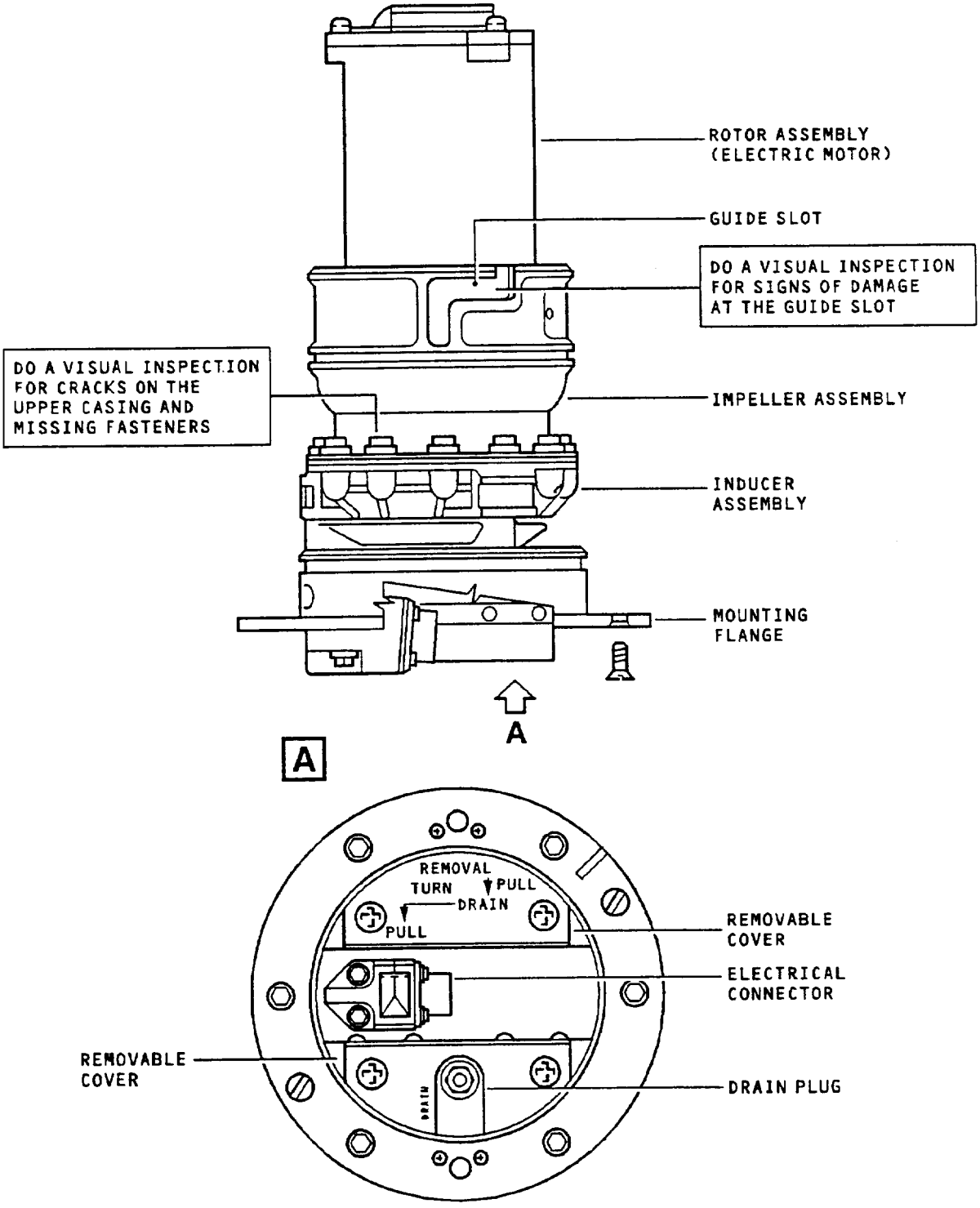
Center Tank
Figure 601



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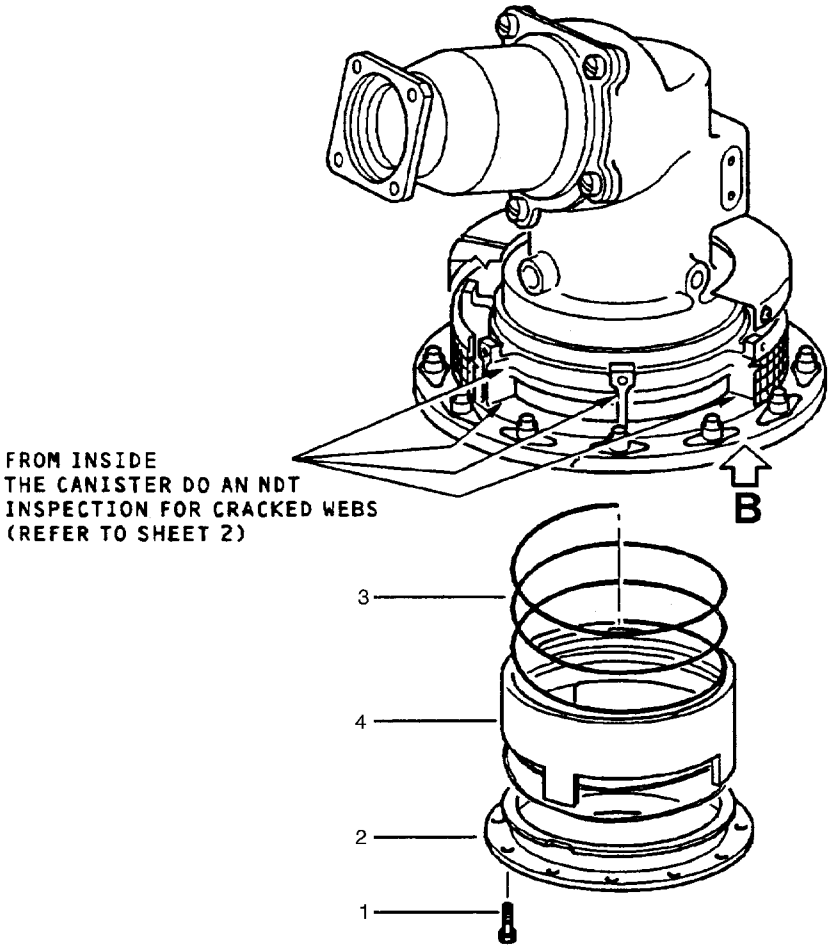
Fuel Booster Pumps (LH and RH) - Inspection Area
Figure 602

NOTE:
FOR CLARITY THE CANISTER
IS SHOWN NOT INSTALLED.



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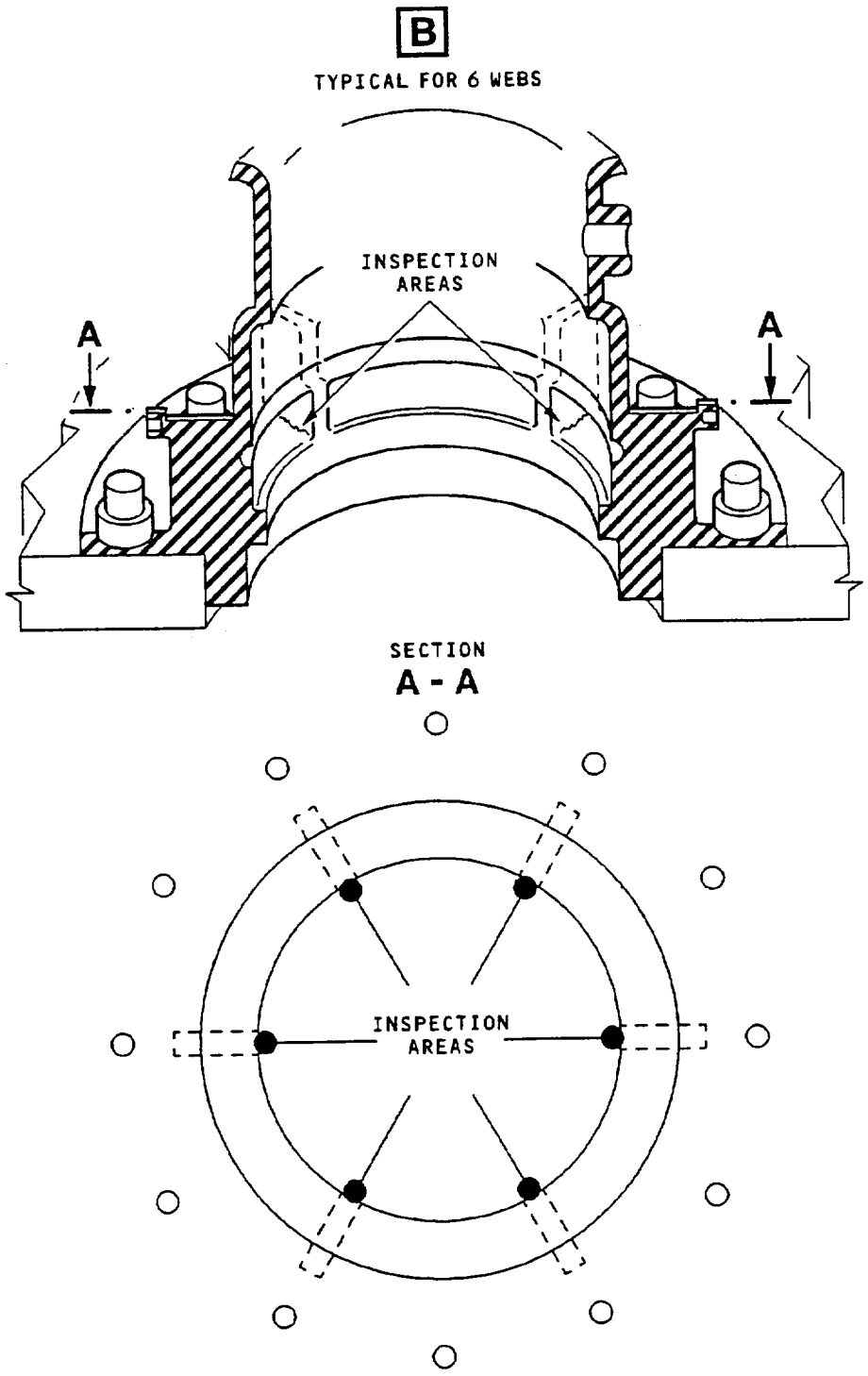
Fuel Booster Pumps Canisters - Inspection Area
(Sheet 1/2)
Figure 603



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Fuel Booster Pumps Canisters - Inspection Area
(Sheet 2/2)
Figure 603

(b)Inside the canister, do a special detailed inspection in the areas of the flange webs (Refer to NTM 57-10-14, P. Block 601). (Ref. Fig. 603).
(c)If you find any cracks, replace the canisters (Ref. 28-21-37, P. Block 401).
(d)If you do not find any cracks, install the internal assembly.

1 Install the flange (2) :
a Put the spring (3), the valve ring (4) and the flange (2) in position.
b Install the six flange attachment screws (1) and tighten them.

(e)Install the fuel booster pumps (Ref. 28-21-36, P. Block 401).

(5)Close-up
(a)Make sure that the work areas are clean and clear of tools and other items of equipment.
(b)Install the center fuel tank manhole-covers 147AZ and 148AZ (Ref. 28-11-29, P. Block 401).
(c)Refuel the inner tanks and refuel the center tank with a minimum of 2000 kg of fuel (Ref. 12-11-28, P. Block 301).
(d)Do a leakage check to make sure there are no fuel leaks in the area of the center fuel tank booster-pumps and canisters.
NOTE : Fuel leaks are not permitted.
(e)Close the access doors 147CZ and 148CZ.
(f)Remove the access platform.
(g)Close the main landing gear-doors (Ref. 32-12-11, P. Block 301).

R CENTER TANK BOOSTER PUMP CANISTER (280022), (280023) - REMOVAL/INSTALLATION

R WARNING : MAKE CERTAIN THAT LANDING GEAR SAFETIES INCLUDING WHEEL CHOCKS ARE IN POSITION.
BEFORE UNDERTAKING MAINTENANCE OPERATIONS ON THE FUEL SYSTEM, THE PRESCRIBED SAFETY PRECAUTIONS MUST BE STRICTLY OBSERVED (REF. 28-00-00, P. BLOCK 301 AND 28-10-00. P. BLOCK 301).
MAKE CERTAIN THAT FIRE FIGHTING EQUIPMENT IS READILY AVAILABLE AND IN PROXIMITY TO THE WORK AREA.

1. Equipment and Materials

ITEM	DESIGNATION
A.	Access Platform
B. Material No. 09-026	Sealants (Ref. 20-31-00)
C. Material No. 11-003	Cleaning Agents (Ref. 20-31-00)
D. Material No. 16-001	Structure Paints (Ref. 20-31-00)
Referenced Procedures	
- 12-11-28, P. Block 301	Fuel Tank Replenishing
- 28-10-00, P. Block 301	Storage - Servicing
- 28-11-29, P. Block 401	Center Tank Manhole Cover
- 28-21-36, P. Block 401	Center Tank Booster Pump
- 28-22-00, P. Block 501	Tank Isolation System
- 28-23-00, P. Block 501	Crossfeed System
- 28-25-00, P. Block 301	Refuel/Defuel System
- 32-12-11, P. Block 301	Main Gear Main Door (Ground Door(s) Opening)

2. Procedure
(Ref. Fig. 401)

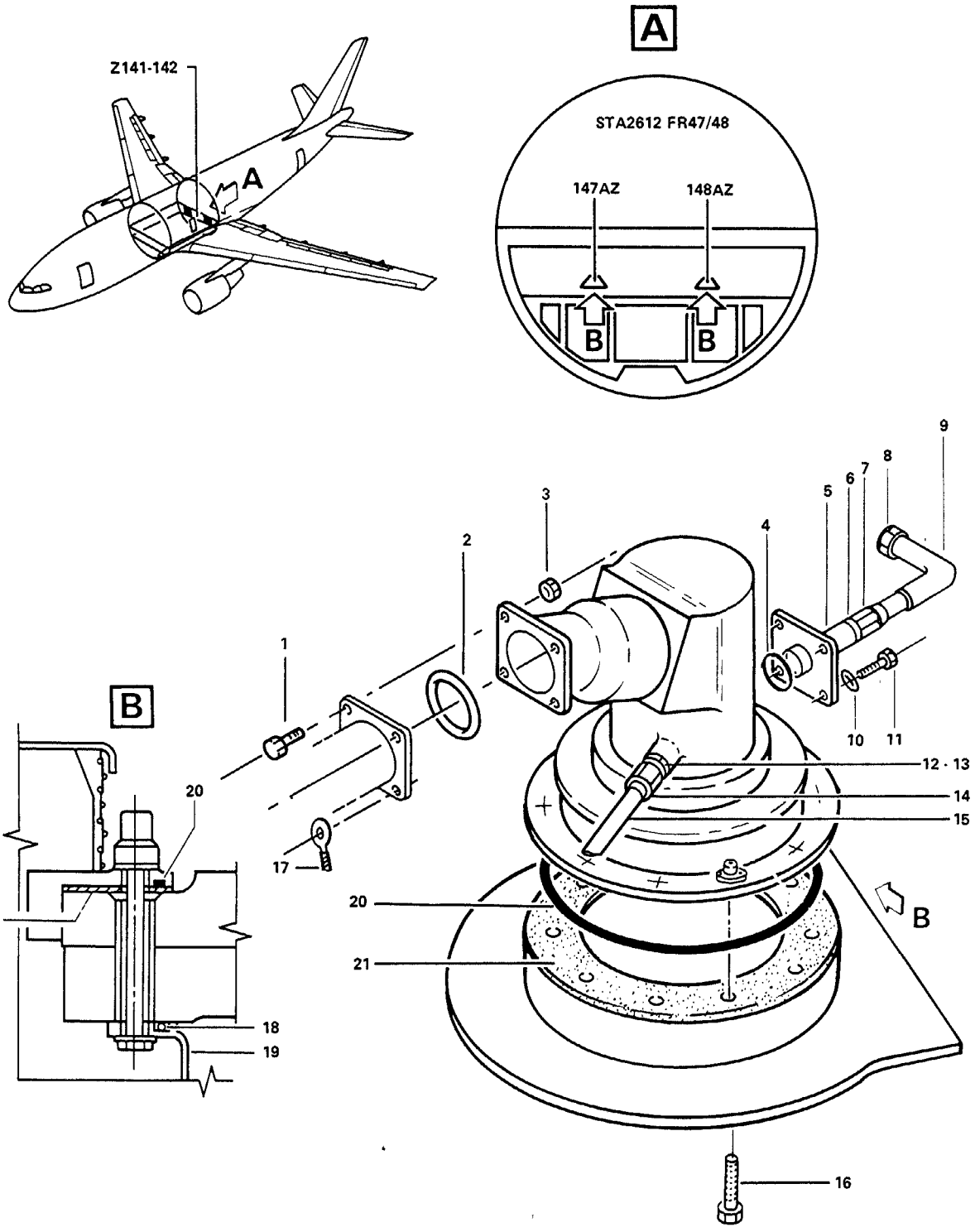
R **ON A/C ALL

R Post SB 28-2160 For A/C ALL

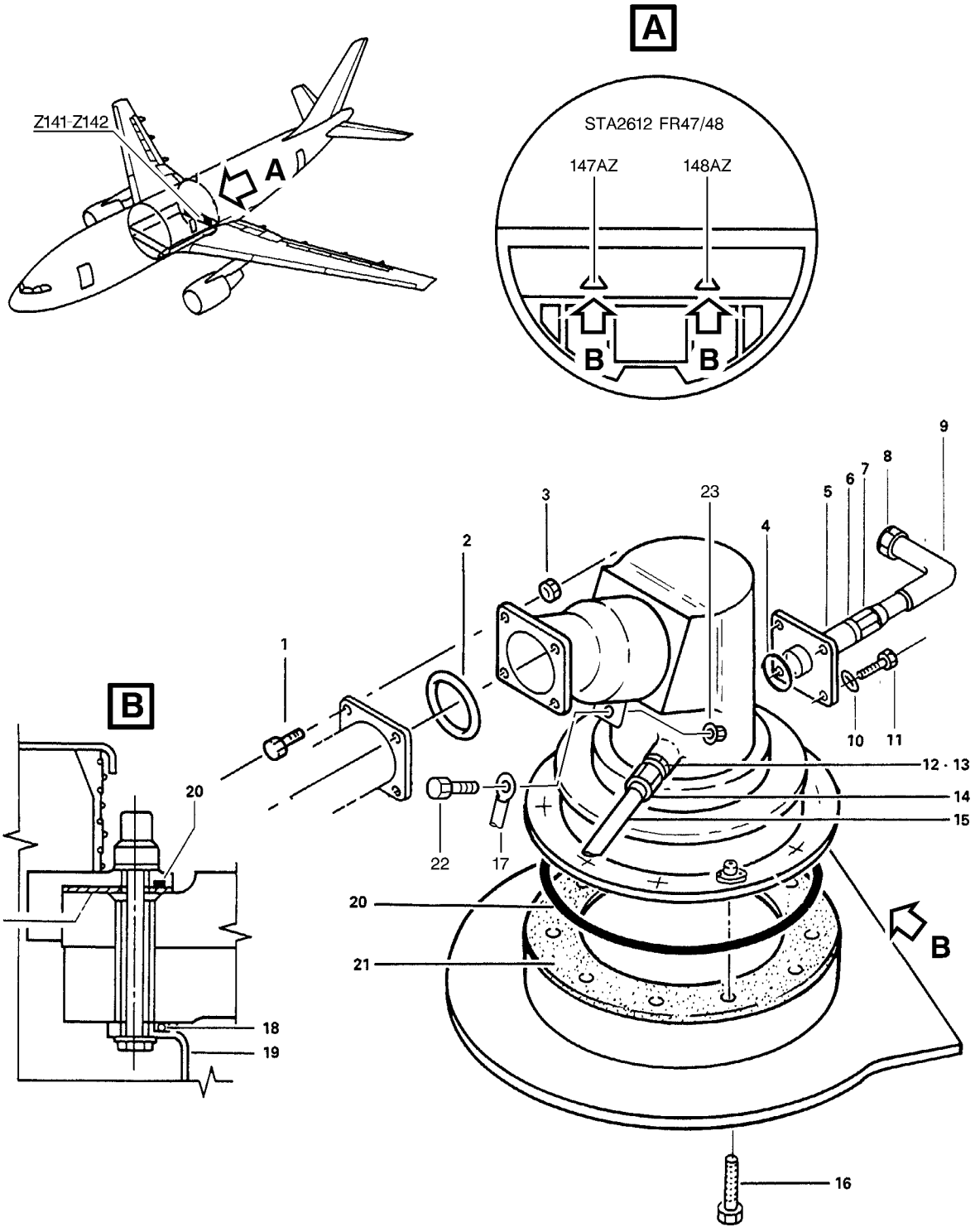
R (Ref. Fig. 402)

R **ON A/C ALL

A. Job Set-Up
(1)Defuel center tank (Ref. 28-25-00, P. Block 301).
(2)Defuel inner tank on side of canister to be removed (Ref. 28-25-00, P. Block 301).
(3)Close the outer tank isolation valves (Ref. 28-22-00, P. Block 501).
(4)Close the crossfeed valve (Ref. 28-23-00, P. Block 501).
(5)Open main gear door (Ref. 32-12-11, P. Block 301)
(6)Position access platform.
(7)Remove booster pump associated with canister to be removed (Ref. 28-21-36, P. Block 401).



Center Tank Booster Pump Canister
Figure 401



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Center Tank Booster Pump Canister
Figure 402

R

(8)Remove center tank manhole cover 147AZ or 148AZ corresponding to canister to be removed (Ref. 28-11-29, P. Block 401).

B. Removal

(1)Unscrew union nut (14) and disconnect pressure line (15) from canister.
(2)Remove the four nuts (3) and bolts (1) and remove bonding strip (17).
(3)Unscrew union nut (8) and disconnect jet pump line from elbow (9).
CAUTION : SPOUT (19) MUST BE MAINTAINED IN POSITION AGAINST TANK STRUCTURE TO AVOID MISALIGNMENT OF O-ring (18).
(4)Remove bolts (16) in diametrical sequence.
(5)Remove canister ; discard O-rings (2) and (20).
(6)Remove and discard gasket (21).

C. Preparation of Replacement Component

(1)Clean union (12) retained from removed component and check for correct condition, replace O-ring (13) and install on replacement component.
(2)Installation of base (5)
(a)Unscrew nut (7) and remove elbow (9). Discard O-ring (6).
(b)Remove the four bolts (11) and washers (10) and remove base (5). Discard O-ring (4).
(c)Install new O-ring (4) on base (5). Install base (5) on replacement canister, install bolts (11) equipped with washers (10).
(d)Install new O-ring (6) in groove between the two threads of elbow (9) then screw elbow into base (5) until elbow correctly aligned (angled forward when canister installed) and O-ring (6) contact countersink of base (5).
(e)Tighten nut (7) onto base (5).
(3)Clean gasket (21) bearing surface on structure using a spatula.
(4)Using Material No. 11-003, clean canister base and gasket (21) bearing surface on structure.
WARNING : CLEANING OPERATIONS USING SOLVENTS SHOULD BE PERFORMED IN A WELL VENTILATED ATMOSPHERE. EXERCISE NORMAL SAFETY PRECAUTIONS DURING USE
(5)Apply thinnest possible coat of primer (Material No. 09-026) to gasket (21) bearing surface on structure.
(6)Allow to dry in a dust-free area a minimum of 30 minutes before proceeding with next step.

D. Installation

(1)Installation of gasket (21).
NOTE 1 : Smooth out sealant before skin forms i.e. 4 to 8 minutes after application of sealant.
NOTE 2 : Do not interpose sealant between gasket (21) and canister mounting base.
(a)Using a spatula, apply a thin coat of sealant (Materiel No. 09-026) on bearing surface of gasket (21).
(b)Install gasket (21) on bearing surface on structure.
(2)Install new O-rings (2) and (20).
(3)Install canister making certain that O-rings remain correctly seated in grooves.
(4)Install bolts (16) in diametrical sequence ; do not fully tighten at this

stage.
(5)Connect jet pump line to elbow (9), install nut (8).
(6)Connect bonding strip (17) ; tighten bolts (1) and nuts (3).
(7)Tighten bolts (16) in diametrical sequence.
(8)Connect pressure line (15) to canister ; tighten union nut (14).
(9)Apply a coat of paint (Material No. 16-001) to bolts (1), (11) and nuts (3).

R **ON A/C ALL

R Post SB 28-2160 For A/C ALL

R A. Job Set-Up
R (1)Defuel center tank (Ref. 28-25-00, P. Block 301).
R (2)Defuel inner tank on side of canister to be removed (Ref. 28-25-00, P. Block 301).
R (3)Close outer tank isolation valves (Ref. 28-22-00, P. Block 501).
R (4)Close crossfeed valve (Ref. 28-23-00, P. Block 501).
R (5)Open main gear door (Ref. 32-12-11, P. Block 301)
R (6)Position access platform.
R (7)Remove booster pump associated with canister to be removed (Ref. 28-21-36, P. Block 401).
R (8)Remove center tank manhole cover 147AZ or 148AZ corresponding to canister to be removed (Ref. 28-11-29, P. Block 401).

R B. Removal
R (1)Unscrew union nut (14) and disconnect pressure line (15) from canister.
R (2)Remove the four nuts (3) and bolts (1).
R (3)Remove nut (23) and bolt (22) and remove bonding strip (17).
R (4)Unscrew union nut (8) and disconnect jet pump line from elbow (9).
R CAUTION : SPOUT (19) MUST BE MAINTAINED IN POSITION AGAINST TANK STRUCTURE TO AVOID MISALIGNMENT OF O-RING (18).
R (5)Remove bolts (16) in diametrical sequence.
R (6)Remove canister ; discard O-rings (2) and (20).
R (7)Remove and discard gasket (21).

R C. Preparation of Replacement Component
R (1)Clean union (12) retained from removed component and check for correct condition, replace O-ring (13) and install on replacement component.
R (2)Installation of base (5)
R (a)Unscrew nut (7) and remove elbow (9). Discard O-ring (6).
R (b)Remove the four bolts (11) and washers (10) and remove base (5). Discard O-ring (4).
R (c)Install a new O-ring (4) on base (5). Install base (5) on replacement canister, install bolts (11) equipped with washers (10).
R (d)Install a new O-ring (6) in groove between the two threads of elbow (9) then screw elbow into base (5) until elbow correctly aligned (angled forward when canister installed) and O-ring (6) contact countersink of base (5).

R (e)Tighten nut (7) onto base (5).
R (3)Clean gasket (21) bearing surface on structure using a spatula.
R (4)Using Cleaning Agents (Material No. 11-003), clean canister base and gasket (21) bearing surface on structure.
R WARNING : CLEANING OPERATIONS USING SOLVENTS SHOULD BE PERFORMED IN A WELL VENTILATED ATMOSPHERE. EXERCISE NORMAL SAFETY PRECAUTIONS DURING USE.
R (5)Apply the thinnest possible coat of Primer (Material No. 09-026) to gasket (21) bearing surface on structure.
R (6)Allow to dry in a dust-free area a minimum of 30 minutes before proceeding with next step.

R D. Installation
R (1)Installation of gasket (21).
R NOTE 1 : Smooth out sealant before skin forms i.e. 4 to 8 minutes after application of sealant.
R NOTE 2 : Do not interpose sealant between gasket (21) and canister mounting base.
R (a)Using a spatula, apply a thin coat of Sealant (Materiel No. 09-026) on bearing surface of gasket (21).
R (b)Install gasket (21) on bearing surface on structure.
R (2)Install new O-rings (2) and (20).
R (3)Install canister making certain that O-rings remain correctly seated in grooves.
R (4)Install bolts (16) in diametrical sequence ; do not fully tighten at this stage.
R (5)Connect jet pump line to elbow (9), install union nut (8).
R (6)Install bonding strip (17) ; tighten bolt (22) and nut (23).
R (7)Tighten bolts (1) and nuts (3).
R (8)Tighten bolts (16) in diametrical sequence.
R (9)Connect pressure line (15) to canister ; tighten union nut (14).
R (10)Apply a coat of Paint (Material No. 16-001) to bolts (1), (11) and nuts (3).

R **ON A/C ALL

E. Close-Up
(1)Install relevant pump (Ref. 28-21-36, P. Block 401).
(2)Make certain that working area is clean and clear of tools and miscellaneous items of equipment.
(3)Install manhole cover 147AZ or 148AZ (Ref. 28-11-29, P. Block 401).
(4)Refuel center and inner tanks (Ref. 12-11-28, P. Block 301).
(5)Check for leakage at canister mounting base.
(6)Remove access platform.
(7)Close main gear door (Ref. 32-12-11, P. Block 301).

JET PUMP - REMOVAL/INSTALLATION

WARNING : LANDING GEAR - MAKE CERTAIN GROUND SAFETIES AND CHOCKS ARE IN POSITION.

FLIGHT CONTROLS - MAKE CERTAIN GROUND SAFETIES AND NOTICES ARE IN POSITION.

OBSERVE THE SAFETY PRECAUTIONS IN 28-00-00, P. BLOCK 301.

MAKE CERTAIN THAT FIRE FIGHTING EQUIPMENT IS AVAILABLE AND ADEQUATE.

1. Equipment and Materials

	ITEM	DESIGNATION
R	A.	Circuit Breaker Safety Clips and Tags
R	B.	O-ring (Jet Pump)
R	C.	O-ring (Jet Pump Flange)
R	D.	O-ring (Pressure Feed Line)
R	E. Material No. 01-001	Fuels (Ref. 20-31-00)
R	F. Material No. 09-002	Sealants (Ref. 20-31-00)
R	G. Material No. 09-005	Sealants (Ref. 20-31-00)
R	H. Material No. 16-006	Structure Paints (Ref. 20-31-00)

Referenced Procedures

- 20-28-11, P. Block 1	Electrical Bonding
- 28-00-00, P. Block 301	Fuel - General
- 28-11-22, P. Block 401	Manhole Covers (Wing)
- 28-11-24, P. Block 401	Manhole Covers, Booster Pump
- 28-21-23, P. Block 401	Check Valve (1.25in)
- 51-76-10, P. Block 801	Repair of Sealing

2. Procedure

A. Job Set-Up

(1)Remove manhole covers 550(650)AB (Ref. 28-11-24, P. Block 401) and 550(650)BB (Ref. 28-11-22, P. Block 401).

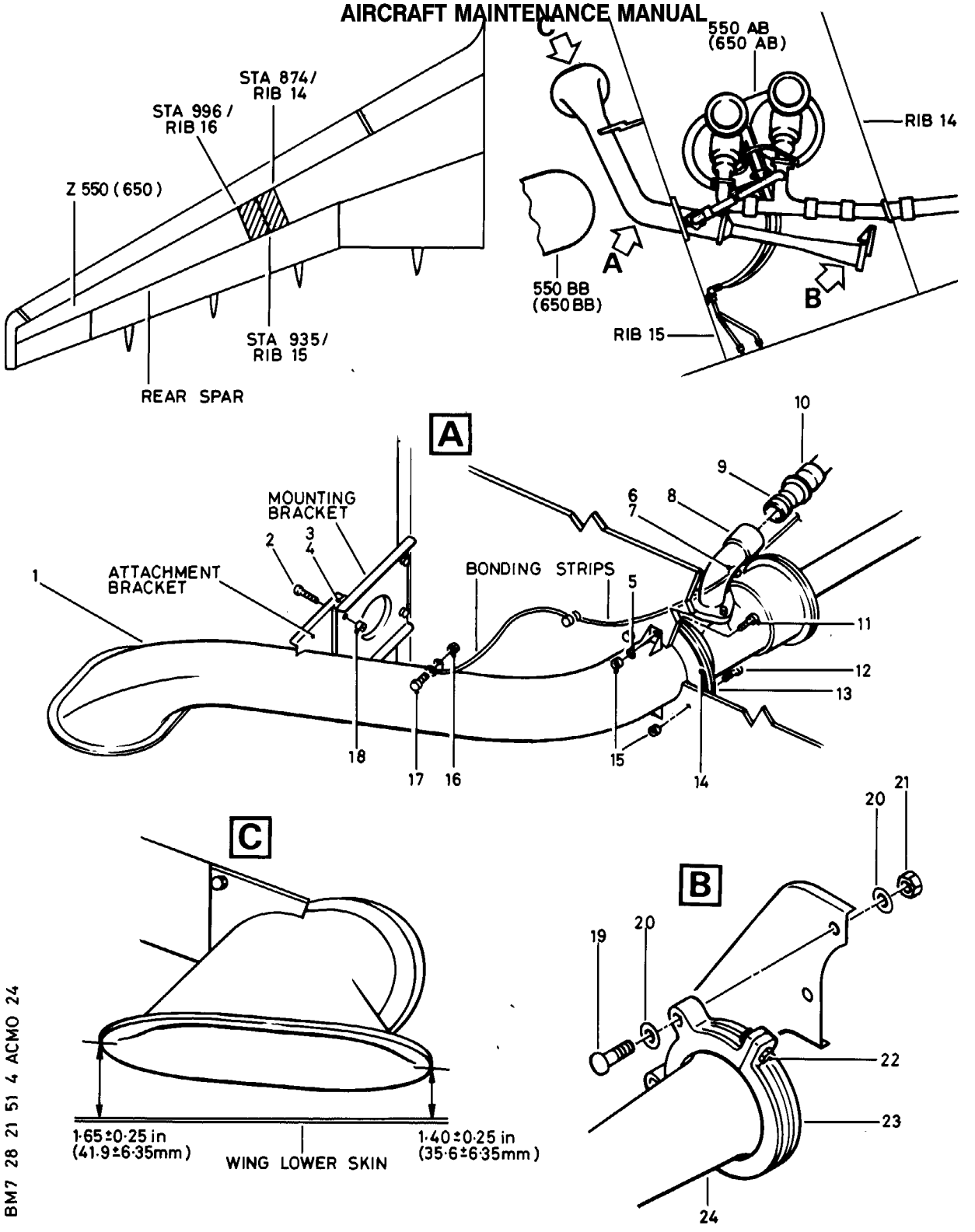
R (2)Open, safety and tag the circuit breakers that follow:

PANEL	SERVICE	IDENT.	LOCATION
101VU	FUEL/L OUTER TK/PUMP 2/SUPPLY	3QA	GEN1/A20
101VU	FUEL/R OUTER TK/PUMP 1/SUPPLY	4QA	GEN1/A14
101VU	FUEL/L OUTER TK/PUMP 1/SUPPLY	5QA	GEN2/A17
101VU	FUEL/R OUTER TK/PUMP 2/SUPPLY	6QA	GEN2/B02

B. Removal

(Ref. Fig. 401)

(1)Gain access to jet pump inlet (1) through manhole 550(650)BB. Remove



Jet Pump - Installation
Figure 401

nut (16) screw (17) and disconnect bonding strip.
(2)Remove nuts (15) and washers (5).
(3)Gain access to jet pump inlet (1) through manhole 550(650)AB. Remove nut (7) screw (6) and disconnect bonding strip.

NOTE: At no stage during removal or installation should the jet pump body with the feed pipe elbow (8) be separated from the mixing tube (24).

(4)Disconnect pressure feed line (10) at check valve (9) (Ref. 28-21-23, P. Block 401). Cap open line end.
(5)Slacken clamp bolts (22), remove nuts (21), washers (20), and bolts (19), then slide clamp (23) outboard along jet pump mixing tube (24).
(6)Collect bolts (12) and bolts (11) from jet pump flange (13), remove jet pump body and mixing tube.
(7)Remove clamp (23) from mixing tube. Discard O-ring (14).
(8)Gain access to jet pump inlet (1) through manhole 550(650)BB and remove nuts (18) and bolts (2). Collect and retain spacers (3) and, if fitted, packing (4), and remove inlet.
(9)Cap jet pump orifices.

C. Preparation of Replacement Component
(1)Lubricate new O-ring (14) with Material No. 01-001 and place in position on jet pump body. Slide clamp (23) onto end of jet pump mixing tube (24). Lubricate new O-ring with fuel (Material No. 01-001) and install on check valve (9).

D. Installation
(1)Inspect attachment surfaces and clean as necessary.
(2)Place jet pump body and mixing tube in position; loosely attach clamp (23) with bolts (19) washers (20) and nuts (21), remove cap from line end and loosely attach pump elbow (8) to feed-line check valve (9) (Ref. 28-21-23, P. Block 401).
(3)Loosely attach jet pump inlet (1) with bolts (2), packing (4), if necessary, spacers (3) and nuts (18), using sealant (Material No. 09-005) on interfaying surfaces and sealant (Material No. 09-002) for the edge fillet (Ref. 51-76-10, P. Block 801).

NOTE: Up to three packing plates may be used if required.

(4)Engage inlet with pump body at RIB 15 and loosely attach with bolts (11), washers (5) and nuts (15).
(5)Check the position of the jet pump inlet (1) relative to the wing lower skin. Adjust as necessary, tightening nuts (15) (18) (21) and bolts (22), and connection at check valve (9) (Ref. 28-21-23, P. Block 401).
(6)Insert bolts (12) and secure with nuts (15).
(7)Secure bonding strip to jet pump inlet with screw (17) and nut (16) (Ref. 20-28-11, P. Block 1).
(8)Connect bonding strip to feed pipe elbow (8) with screw (6) and nut (7) (Ref. 20-28-11, P. Block 1).

(9)Repaint nuts (15) (18) (21) and head and tails of bolts (2) (11) (12) (22) (19) with paint (Material No. 16-006).

R (10)Install the manhole covers (Ref. 28-11-22 and 28-11-24, P. Block 401).

R (11)Remove the safety clips and tags and close the circuit breakers 3QA and 5QA (4QA and 6QA) on panel 101VU.

E. Test

R (1)Do the functional test of the jet pump (Ref. 28-21-51, P. Block 501).

F. Close-Up

R (1)Make sure that the work area is clean and clear of tools and all other items of equipment.

R (2)Remove all the ground handling, maintenance and access equipment.

WARNING : LANDING GEAR - MAKE CERTAIN GROUND SAFETIES AND CHOCKS ARE IN POSITION.

FLIGHT CONTROLS - MAKE CERTAIN GROUND SAFETIES AND NOTICES ARE IN POSITION.

OBSERVE THE SAFETY PRECAUTIONS IN 28-00-00, P. BLOCK 301.

MAKE CERTAIN THAT FIRE FIGHTING EQUIPMENT IS AVAILABLE AND ADEQUATE.

BEFORE POWER IS SUPPLIED TO THE AIRCRAFT MAKE CERTAIN THAT ELECTRICAL CIRCUITS UPON WHICH WORK IS IN PROGRESS ARE ISOLATED.

DO NOT OPERATE THE MICROPHONE BUTTONS ON HF TRANSMISSION DURING REFUELING/DEFUELING OR GROUND MAINTENANCE-FUEL TRANSFER OPERATIONS.

1. Functional Test

A. Equipment and Materials

ITEM	DESIGNATION
A.	Access Platform 4 m (13 ft)
B.	Warning Notices
C.	Pressure Gage 0 to 0.30 bar (0 to 4.35 psi)
D. 97A28002117002	Purging Tool
R or alternative	
R E. 98A28203000000	Test Equipment - Jet Pump
R F.	Plastic Hose
Referenced Procedures	
- 12-11-28, P. Block 301	Replenishing of Fuel Tanks
- 24-41-00, P. Block 301	AC External Power Control
- 28-00-00, P. Block 301	Fuel General
- 28-25-00, P. Block 301	Refuel/Defuel System

B. Procedure

(Ref. Fig. 501)

(1) Job Set-up

(a)Make certain that the following circuit breakers are closed:

- for jet pump - left wing

PANEL	SERVICE	IDENT.	LOCATION
22VU	FUEL/OUTR TK PUMP 2/L TK/CTL	61QA	201/J15
22VU	FUEL/OUTR TK PUMP 2/L TK/WARN	13QA	201/J16
132VU	FUEL/ISOL VALVE/L OUTER/TK SUPPLY	1QB	324/L53
132VU	FUEL/L OUTR TK/PUMP 1/CTL	67QA	322/N56
132VU	FUEL/L OUTR TK/PUMP 1/WARN	15QA	323/M56
132VU	FUEL/FQI/SUPPLY & IND	1QT	321/P59
132VU	FUEL/FQI/CHAN SUPPLY 1	3QT	321/P60

PANEL	SERVICE	IDENT.	LOCATION
132VU	FUEL/FQI/CHAN SUPPLY 2	4QT	321/P61

- for jet pump - right wing

PANEL	SERVICE	IDENT.	LOCATION
22VU	FUEL/OUTR TK PUMP 2/R TK/WARN	16QA	201/J17
22VU	FUEL/OUTR TK PUMP 2/R TK/CTL	68QA	201/J18
132VU	FUEL/R OUTR TK/PUMP 1/WARN	14QA	322/N57
132VU	FUEL/R OUTR TK/PUMP 1/CTL	62QA	323/M57
132VU	FUEL/ISOL VALVE/R OUTER/TK SUPPLY	2QB	324/L56
132VU	FUEL/FQI/SUPPLY & IND	1QT	321/P59
132VU	FUEL/FQI/CHAN SUPPLY 1	3QT	321/P60
132VU	FUEL/FQI/CHAN SUPPLY 2	4QT	321/P61

(b)Display **NO SMOKING** notices.
(c)Put the access platform in position.
(d)Energize the aircraft electrical network (Ref. 24-41-00, P. Block 301).

**ON A/C 001-100,

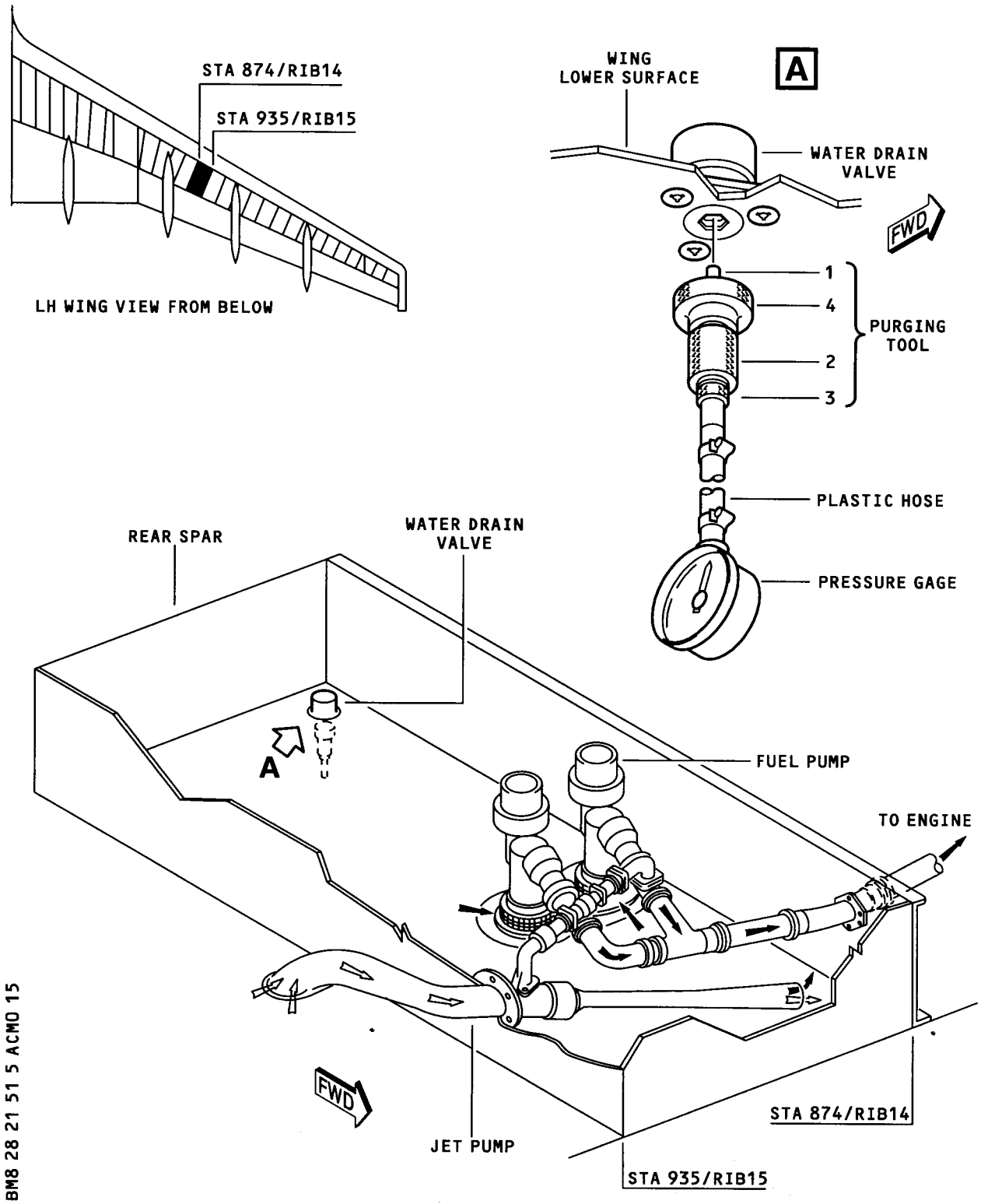
(e)In the flight compartment on panel 430VU, make sure that the related outer tank contains a minimum of 1000 Kg (2200 LB) of fuel. Refuel or transfer fuel (Ref. 12-11-28 or 28-25-00, P. Block 301) as necessary.

R **ON A/C 101-200,

R (e)In the flight compartment on panel 430VU, make sure that the related
R outer tank contains a minimum of 1000 kg (2200 lb) of fuel. Refuel or
R transfer fuel (Ref. 12-11-28 or 28-25-00, P. Block 301) as necessary.

**ON A/C ALL

(f)In the procedure that follows, use the purging tool PN 97A28002117002 or the test equipment - jet pump PN 98A28203000000 to open the water drain valve and test the operation of the jet pump.
(g)Use the plastic hose to connect the pressure gage to the purging tool or the test equipment - jet pump.
(h)Do the procedure that follows to position the purging tool or the test equipment - jet pump and the pressure gage on the water drain valve:
1 Fully retract the nut (4), the screw (3) and the plunger (1).
2 Put the hexagonal end of the bush (2) in the bottom of the water drain valve and turn the bush (2) through 30 degrees.
3 Turn the nut (4) until it touches and seals against the lower surface of the wing.
4 Hold the bush (2) and turn the screw (3), clockwise to its stop position. This causes the plunger (1) to open the drain valve and the



Jet Pump Test Equipment
Figure 501

fuel to flow to the pressure gage.

5 As the fuel in the tank flows through the hollow plunger (1), bleed all the air from the plastic hose and the pressure gage.

(2)Test

ACTION	RESULT
1. On panel 430VU: - release (out) the applicable OUTR TK ISOL VALVE p/bsw.	In the inner tank: - the related outer tank isolation valve closes. On panel 430VU: - the OFF legend in the related OUTR TK ISOL VALVE p/bsw comes on.
R 2. On the purging tool/test R equipment - jet pump: - wait until the indication on the pressure gage has stabilized then record the pressure indication.	
3. On panel 430VU: - push (in) the applicable OUTR TK PUMP 1 and 2 p/bsw's.	In the outer tank: - the related outer tank pumps run. On panel 430VU: - the LO PR and OFF legends in the related OUTR TK PUMP 1 and 2 p/bsw's go off.
R 4. On the purging tool/test R equipment - jet pump: - wait until the indication on the pressure gage has stabilised then record the pressure indication.	- subtract the first pressure gage indication from the second indication. Make sure that a pressure difference greater than 0.09 bar (1.3 psig) is obtained.
5. On panel 430VU: - Release (out) the applicable OUTR TK PUMP 1 and 2 p/bsw's.	In the outer tank: - the related outer tank pumps stop. On panel 430VU: - the LO PR and OFF legends in the related OUTR TK PUMP 1 and 2 p/bsw's come on.
- Push (in) the applicable OUTR TK ISOL VALVE p/bsw.	In the inner tank: - the related outer tank isolation valve opens. On panel 430VU: - the OFF legend in the related OUTR TK ISOL VALVE p/bsw goes off.

C. Close-up

R (1) Disconnect and remove the purging tool PN 97A28002117002 or the test
R equipment - jet pump PN 98A28203000000, the plastic hose and the
R pressure gage from the water drain valve.

(2) Put the aircraft in the required fuel state, refuel, defuel or transfer fuel (Ref. 12-11-28 or 28-25-00, P. Block 301).

(3) De-energize the aircraft electrical network and disconnect the electrical ground power unit (Ref. 24-41-00, P. Block 301).

(4) Remove the warning notices.

(5) Remove the access platform.

(6) Remove all the ground handling and maintenance equipment, standard and special tools, all access equipment and miscellaneous items.

WARNING : LANDING GEAR - MAKE SURE THAT THE GROUND SAFETIES AND CHOCKS ARE IN POSITION.

FLIGHT CONTROLS - MAKE SURE THAT THE GROUND SAFETIES AND NOTICES ARE IN POSITION.

OBEY THE SAFETY PRECAUTIONS IN 28-00-00, P. BLOCK 301.

MAKE SURE THAT THE FIRE FIGHTING EQUIPMENT IS AVAILABLE AND ADEQUATE.

MAKE SURE THAT YOU ISOLATE THE ELECTRICAL CIRCUITS UPON WHICH WORK IS IN PROGRESS.

1. Purge the Pressure Switch Feed Line

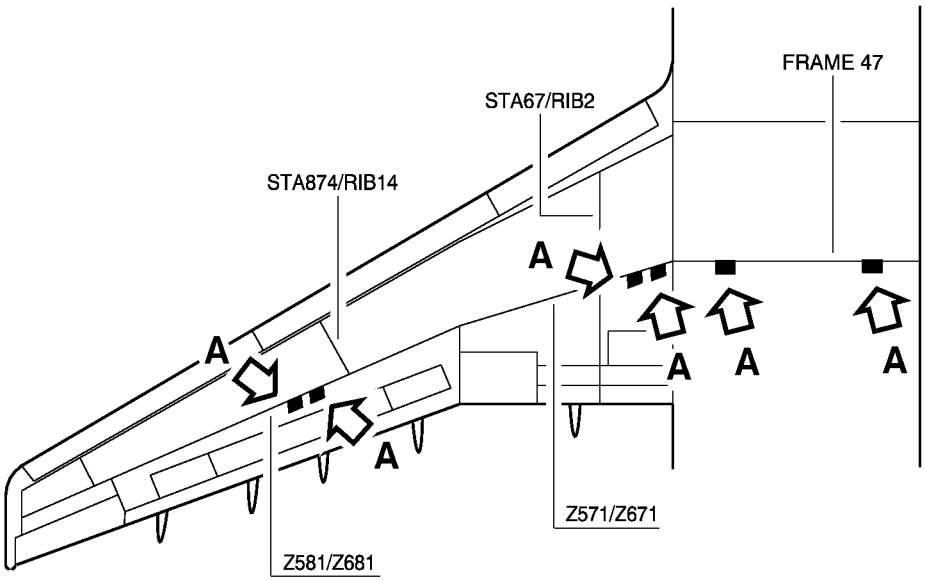
A. Reason for the Job
(1)To make sure there is no water or unwanted material in the feed line of the fuel pump pressure switch.

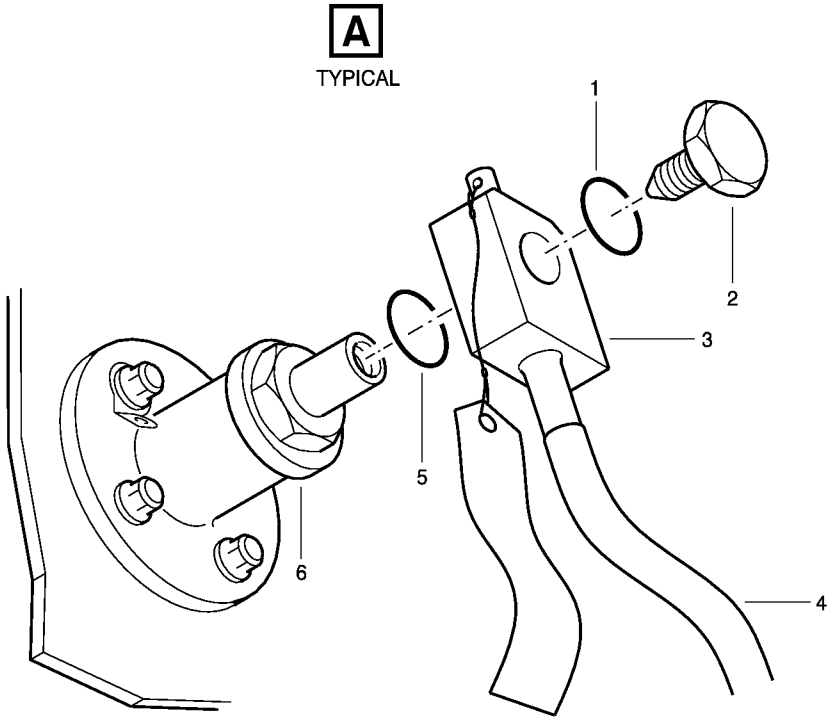
B. Equipment and Materials

	ITEM	DESIGNATION
	A.	Access Platform 5 m (16 ft)
	B.	Circuit Breaker Safety Clips and Tags
R	C.	Container 5 liters (1.3 US gal)
	D.	Hose - Fuel Resistant 9.65 mm (0.38 in.) ID
R	E.	Torque Wrench 10 to 20 lbf.ft
R		(1.35 to 2.71 m.daN)
R	F. 98A28104030000	Adaptor-banjo
R	G.	O-rings
	Referenced Procedures	
	- 12-11-28, P. block 301	Replenishing of Fuel Tanks
	- 24-41-00, P. Block 301	AC External Power Control
	- 28-00-00, P. Block 301	Fuel - General
	- 28-21-52, P. Block 401	Pressure Switch
	- 28-25-00, P. Block 301	Refuel/Defuel System
	- 32-12-11, P. Block 301	Main Gear Main Doors

C. Procedure
(Ref. Fig. 201)

(1)Job Set-up
(a)Energize the aircraft electrical network (Ref. 24-41-00, P. Block 301).
(b)On panel 20VU, make sure the related fuel tank contains sufficient fuel for the purge procedure:
- for feed lines in the inner and outer fuel tanks, the minimum amount of fuel required is 500 kg (1100 lb)
- for feed lines in the center fuel tank, the minimum amount of fuel





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R

Adaptor-banjo PN 98A28104030000 - Installation
Figure 201

required is 1000 kg (2200 lb).

(c)If necessary, refuel or transfer fuel to make sure there is the required minimum amount of fuel in the related fuel tank (Ref. 12-11-28 or 28-25-00, P. Block 301).

(d)De-energize the aircraft electrical network (Ref. 24-41-00, P. Block 301).

(e)Open, safety and tag the circuit breakers that follow:

PANEL	SERVICE	IDENT.	LOCATION
For the feed line of left outer tank pump 1:			
132VU	FUEL/L OUTR TK/PUMP 1/CTL	67QA	322/N56
132VU	FUEL/L OUTR TK/PUMP 1/WARN	15QA	323/M56
For the feed line of left outer tank pump 2:			
22VU	FUEL/OUTR TK PUMP 2/L TK/CTL	61QA	201/J15
22VU	FUEL/OUTR TK PUMP 2/L TK/WARN	13QA	201/J16
For the feed line of left inner tank pump 1:			
132VU	FUEL/L INR TK/PUMP 1/CTL	69QA	322/N60
132VU	FUEL/L INR TK/PUMP 1/WARN	17QA	323/M60
For the feed line of left inner tank pump 2:			
132VU	FUEL/L INR TK/PUMP 2/CTL	59QA	323/M61
132VU	FUEL/L INR TK/PUMP 2/WARN	11QA	322/N61
For the feed line of center tank left pump:			
132VU	FUEL/CTR TK/L/PUMP/CTL	63QA	322/N58
132VU	FUEL/CTR TK/L/PUMP/WARN	101QA	323/M58
For the feed line of center tank right pump:			
132VU	FUEL/CTR TK/R/PUMP/CTL	64QA	323/M59
132VU	FUEL/CTR TK/R/PUMP/WARN	102QA	322/N59
For the feed line of right inner tank pump 1:			
132VU	FUEL/R INR TK/PUMP 1/CTL	60QA	322/N62
132VU	FUEL/R INR TK/PUMP 1/WARN	12QA	323/M62
For the feed line of right inner tank pump 2:			
132VU	FUEL/R INR TK/PUMP 2/CTL	70QA	323/M63
132VU	FUEL/R INR TK/PUMP 2/WARN	18QA	322/N63
For the feed line of right outer tank pump 1:			
132VU	FUEL/R OUTR TK/PUMP 1/CTL	62QA	323/M57
132VU	FUEL/R OUTR TK/PUMP 1/WARN	14QA	322/N57
For the feed line of right outer tank pump 2:			
22VU	FUEL/OUTR TK PUMP 2/R TK/CTL	68QA	201/J18
22VU	FUEL/OUTR TK PUMP 2/R TK/WARN	16QA	201/J17

(f)For the feed line of wing tank pressure switches:

1 Position the access platform.
2 Open the applicable access door:
- for the feed line of outer tank pressure switches, open the access door 581EB (681EB)
- for the feed line of inner tank pressure switches, open the access door 571AB (671AB).

(g)For the feed line of center tank pressure switches:
1 Open the applicable main gear main door (Ref. 32-12-11, P. Block 301).

(h)Remove the related pressure switch from the feed line (Ref. 28-21-52, P. Block 401).

NOTE : Retain the O-rings (1) and (5) and the plug (2) from the pressure switch. They are used to install the adaptor-banjo (3) for the purge procedure.

(j)Connect the fuel resistant hose (4) to the adaptor-banjo (3).

(2)Purge the feed line

NOTE : Two persons are necessary for this procedure.

(a)Put the container below the valve (6) of the feed line.
(b)Install the adaptor-banjo PN 98A28104030000:
1 Put the free end of the fuel resistant hose (4) into the container.
2 Attach the adaptor-banjo (3) to the valve (6) with the O-rings (1) and (5) and the plug (2) retained in step 1. C. (1) (h).
3 TORQUE the plug (2) to between 12.9 - 14.74 lbf.ft (1.75 - 2.0 m.daN).

NOTE : When you tighten the plug (2), fuel will flow into the container.

(c)Energize the aircraft electrical network (Ref. 24-41-00, P. Block 301).
(d)Remove the safety clips and tags and close the circuit breakers for the applicable feed line:
- left outer tank pump 1, 67QA and 15QA
- left outer tank pump 2, 61QA and 13QA
- left inner tank pump 1, 69QA and 17QA
- left inner tank pump 2, 59QA and 11QA
- center tank left pump, 63QA and 101QA
- center tank right pump, 64QA and 102QA
- right inner tank pump 1, 60QA and 12QA
- right inner tank pump 2, 70QA and 18QA
- right outer tank pump 1, 62QA and 14QA
- right outer tank pump 2, 68QA and 16QA.

(e)On the panel 430VU, push (in) the P/BSW of the related PUMP. Let a maximum of 2 liters (0.5 US gal) of fuel flow into the container, then release (out) the P/BSW of the related PUMP.
(f)Loosen the plug (2) to stop the flow of fuel through the valve (6).

(g)De-energize the aircraft electrical network (Ref. 24-41-00, P. Block 301).

(3)Close-up

R (a)Remove the plug (2), the adaptor-banjo (3) and the O-rings (1) and (5) from the valve (6). Discard the O-rings.

(b)Remove the container and the adaptor-banjo (3) from the aircraft.

(c)Install the related pressure switch on the feed line with new O-rings (Ref. 28-21-52, P. Block 401).

(d)Make sure that the work area is clean and clear of tools and all other items of equipment.

(e)For the feed line of wing tank pressure switches:

1 Close the applicable access door:

- for the feed line of outer tank pressure switches, close the access door 581EB (681EB)
- for the feed line of inner tank pressure switches, close the access door 571AB (671AB).

2 Remove the access platform.

(f)For the feed line of center tank pressure switches:

1 Close the applicable main gear main door (Ref. 32-12-11, P. Block 301).

PRESSURE SWITCH - REMOVAL/INSTALLATION

WARNING : LANDING GEAR - MAKE CERTAIN GROUND SAFETIES AND CHOCKS ARE IN POSITION.

FLIGHT CONTROLS - MAKE CERTAIN GROUND SAFETIES AND NOTICES ARE IN POSITION.

OBSERVE THE SAFETY PRECAUTIONS IN 28-00-00, P. BLOCK 301.

MAKE CERTAIN THAT FIRE FIGHTING EQUIPMENT IS AVAILABLE AND ADEQUATE.

BEFORE POWER IS SUPPLIED TO THE AIRCRAFT MAKE CERTAIN THAT ELECTRICAL CIRCUITS UPON WHICH WORK IS IN PROGRESS ARE ISOLATED.

1. Equipment and Materials

	ITEM	DESIGNATION
	A.	Access Platform 5 m (16 ft)
R	B.	Circuit Breakers Safety Clips and Tags
R	C.	Container 5 Liters (1.3 US gal)
R	D.	Protective Caps
R	E.	Lockwire, Corrosion Resistant Steel, 0.8 mm (0.032 in) dia.
R	F.	Torque Wrench 10 to 20 lbf.ft
R		(1.35 to 2.71 m.daN)
R	G.	Lint-free cloth
R	H.	O-rings
R	J. Material No. 01-001	Fuels (Ref. 20-31-00)
	Referenced Procedures	
	- 24-41-00, P. Block 301	AC External Power Control
	- 28-00-00, P. Block 301	Fuel - General
	- 32-12-11, P. Block 301	Main Gear Main Doors

2. Procedure

A. Job Set-Up
(Ref. Fig. 401)
(1)Open, safety and tag the following circuit breakers:

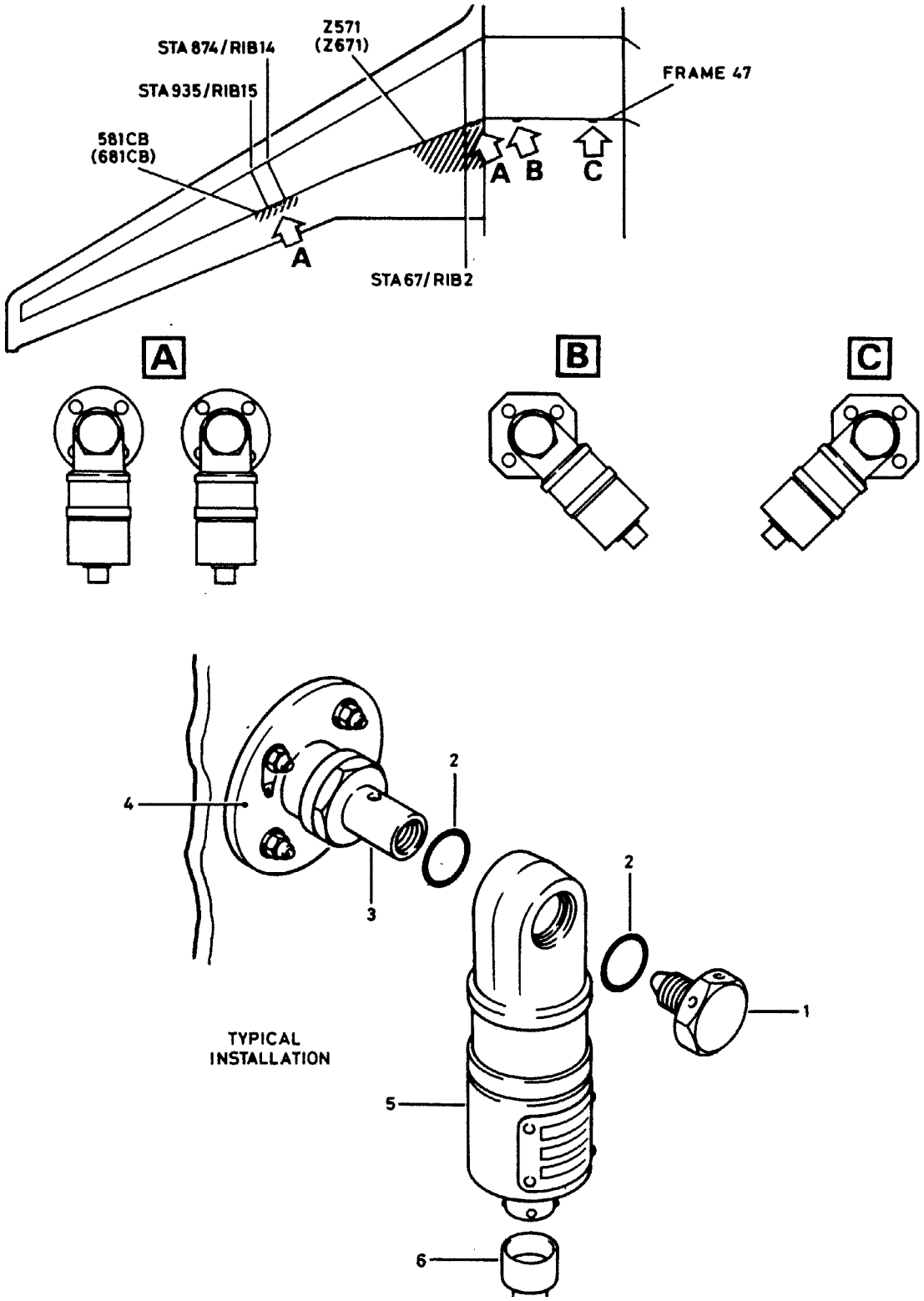
PANEL	SERVICE	IDENT.	LOCATION
	- For pressure switch, left outer tank pump 1		
132VU	FUEL/L OUTR TK/PUMP 1/CTL	67QA	322/N56
132VU	FUEL/L OUTR TK/PUMP 1/WARN	15QA	323/M56
	- For pressure switch, left outer tank pump 2		
22VU	FUEL/OUTR TK PUMP 2/L TK/CTL	61QA	201/J15
22VU	FUEL/OUTR TK PUMP 2/L TK/WARN	13QA	201/J16
	- For pressure switch, left inner tank pump 1		

PANEL	SERVICE	IDENT.	LOCATION
132VU	FUEL/L INR TK/PUMP 1/CTL	69QA	322/N60
132VU	FUEL/L INR TK/PUMP 1/WARN	17QA	323/M60
	- For pressure switch, left inner tank pump 2		
132VU	FUEL/L INR TK/PUMP 2/CTL	59QA	323/M61
132VU	FUEL/L INR TK/PUMP 2/WARN	11QA	322/N61
	- For pressure switch, center tank left pump		
132VU	FUEL/CTR TK/L/PUMP/CTL	63QA	322/N58
132VU	FUEL/CTR TK/L/PUMP/WARN	101QA	323/M58
	- For pressure switch, center tank right pump		
132VU	FUEL/CTR TK/R/PUMP/CTL	64QA	323/M59
132VU	FUEL/CTR TK/R/PUMP/WARN	102QA	322/N59
	- For pressure switch, right inner tank pump 1		
132VU	FUEL/R INR TK/PUMP 1/CTL	60QA	322/N62
132VU	FUEL/R INR TK/PUMP 1/WARN	12QA	323/M62
	- For pressure switch, right inner tank pump 2		
132VU	FUEL/R INR TK/PUMP 2/CTL	70QA	323/M63
132VU	FUEL/R INR TK/PUMP 2/WARN	18QA	322/N63
	- For pressure switch, right outer tank pump 1		
132VU	FUEL/R OUTR TK/PUMP 1/CTL	62QA	323/M57
132VU	FUEL/R OUTR TK/PUMP 1/WARN	14QA	322/N57
	- For pressure switch, right outer tank pump 2		
22VU	FUEL/OUTR TK PUMP 2/R TK/CTL	68QA	201/J18
22VU	FUEL/OUTR TK PUMP 2/R TK/WARN	16QA	201/J17

(2)For outer tanks:
(a)Position access platform.
(b)Remove access door 581(681)CB.
(3)For inner tanks and center tank, open relevant main gear door (Ref. 32-12-11, P. Block 301).

B. Removal

R (1)Disconnect and cap the electrical connector (6).
R (2)Remove the lockwire between the plug (1) and the tag (4).
R (3)Put a container in position under the switch (5).
R (4)Support the switch (5) and remove the plug (1) as quickly as possible to minimise fuel loss. Remove the switch complete with the plug.
R (5)Separate the plug from the switch and discard the two O-rings (2).
R (6)Make sure that there is no fuel flow from the sealing valve (3). Cap the sealing valve and the switch (5).



Pressure Switch - Installation
Figure 401

C. Preparation for Installation

R (1)Remove the protective caps from the switch (5) and the sealing
R valve (3).
R (2)Use Fuel (Material No. 01-001 to lubricate the two new O-rings.

D. Installation

R (1)Position one new O-ring (2) against the shoulder of the sealing
R valve (3).
R (2)Install the switch (5) on the sealing valve (3) and put the other
R new O-ring (2) in the groove of the switch attachment banjo.
R (3)Put a container in position under the switch (5), then screw the plug
R (1) into the sealing valve (3) as quickly as possible.
R (4)TORQUE the plug (1) to between 12.9 - 14.74 lbf.ft
R (1.75 - 2.0 m.daN). Do not safety the plug with lockwire at this step.
R (5)Use a clean lint-free cloth to remove all residual fuel.
R (6)Remove the protective caps, check for correct condition and connect
R the electrical connector (6) to the switch (5).

E. Preparation for Test

(1)Remove safety clips and tags and close the following circuit breakers:
- For pressure switch, left outer tank pump 1, 67QA, 15QA
- For pressure switch, left outer tank pump 2, 61QA, 13QA
- For pressure switch, left inner tank pump 1, 69QA, 17QA
- For pressure switch, left inner tank pump 2, 59QA, 11QA
- For pressure switch, center tank left pump, 63QA, 101QA
- For pressure switch, center tank right pump, 64QA, 102QA
- For pressure switch, right inner tank pump 1, 60QA 12QA
- For pressure switch, right inner tank pump 2, 70QA,18QA
- For pressure switch, right outer tank pump 1, 62QA, 14QA
- For pressure switch, right outer tank pump 2, 68QA, 16QA

(2)Energize the aircraft electrical network (Ref. 24-41-00, P. Block 301).

F. Test

ACTION	RESULT
1. On panel 430VU: - make certain all pump pushbutton switches are released	On panel 110VU: - OFF legends are on - pumps in manual control
- press relevant PUMP pushbutton switch	- OFF legend goes off - pump runs For outer tank pumps - LO PR legend comes on briefly, then goes off For inner and center tank pumps - FAULT legend comes on briefly, then goes off

ACTION	RESULT
- release PUMP pushbutton switch	- OFF legend comes on - pump stops
2. Check pressure switch (5) for fuel leakage	- no leaks permitted

G. Close-Up

(1) De-energize the aircraft electrical network and disconnect the electrical ground power unit.

(2) Close access door(s).

R (3) Safety the plug (1) to the tag (4) with lockwire.

R (4) Make sure that the work area is clean and clear of tools and all miscellaneous items of equipment.

R (5) If applicable, remove access platform.

TANK ISOLATION SYSTEM - DESCRIPTION AND OPERATION

1. General

The inner and outer tank isolation system is provided to isolate the inner, outer and center wing tanks from the engine feed lines.
The trim tank isolation system is provided to isolate the trim tank from the fuel transfer feed lines.

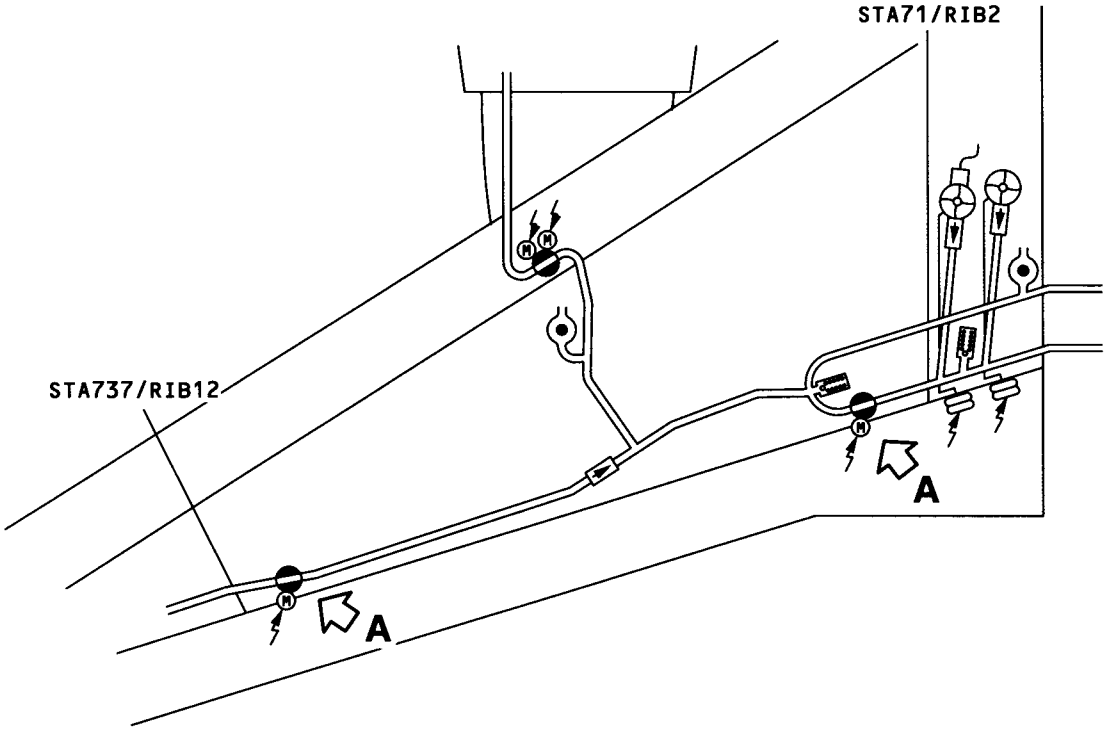
2. Component Location

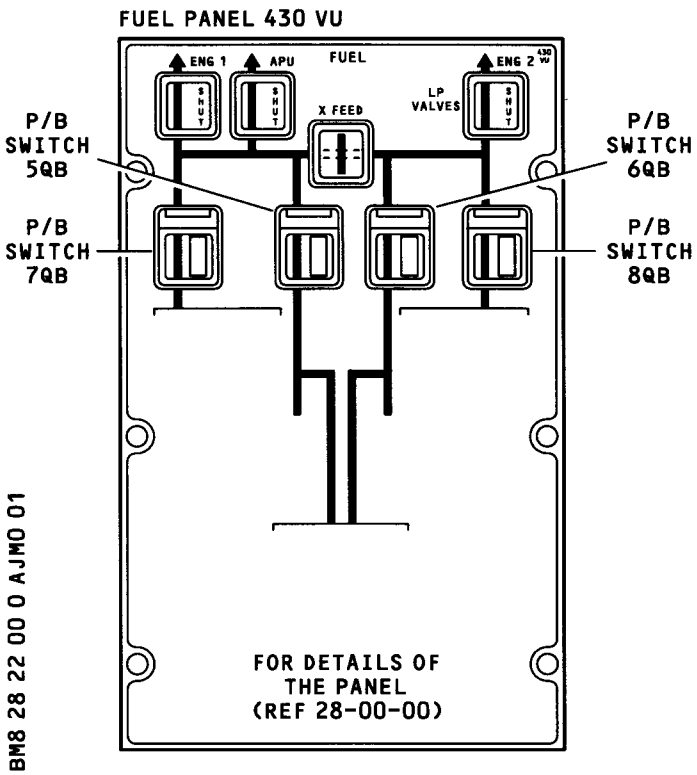
(Ref. Fig. 001)

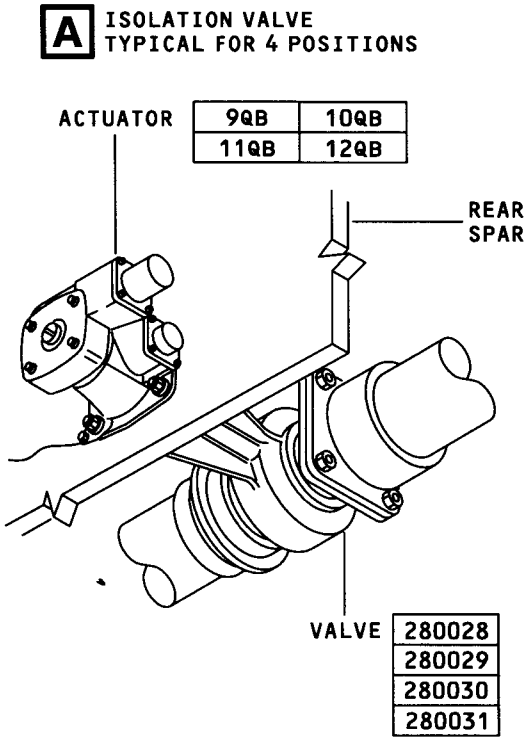
FIN	FUNCTIONAL DESIGNATION	PANEL	ZONE	ACCESS DOOR	ATA REF
280028	VALVE - FUEL ISOL L INR TK		540	540AB	28-22-51
280029	VALVE - FUEL ISOL R INR TK		640	640AB	28-22-51
280030	VALVE - FUEL ISOL L OUTR TK		540	540FB	28-22-51
280031	VALVE - FUEL ISOL R OUTR TK		640	640FB	28-22-51

FIN	FUNCTIONAL DESIGNATION	PANEL	ZONE	ACCESS DOOR	ATA REF
280507	VALVE - FUEL ISOL TRIM TK		319	319AB	28-22-54
280508	ACTR - ISOL VALVE, TRIM TK (48QB)		319	319AB	28-22-55
280509	DRIVE UNIT - ISOL VALVE, TRIM TK		319	319AB	28-22-56
1QB	C/B - FUEL/ISOL VALVES/L OUTR TK SUPPLY	132VU	212	324/L53	
2QB	C/B - FUEL/ISOL VALVES/ R OUTR TK SUPPLY	132VU	212	324/L58	
3QB	C/B - FUEL/ISOL VALVES/L INR TK SUPPLY	132VU	212	324/L55	
4QB	C/B - FUEL/ISOL VALVES/R INR TK SUPPLY	132VU	212	324/L56	
5QB	P/B SW - ISOL VALVES,L INR TK	430VU	210		
6QB	P/B SW - ISOL VALVES,R INR TK	430VU	210		
7QB	P/B SW - ISOL VALVES,L OUTR TK	430VU	210		
8QB	P/B SW - ISOL VALVES,R OUTR TK	430VU	210		
9QB	ACTR - ISOL VALVE L OUTR TK		581		28-22-52
10QB	ACTR - ISOL VALVE R OUTR TK		681		28-22-52
11QB	ACTR - ISOL VALVE L INR TK		571		28-22-52
12QB	ACTR - ISOL VALVE R INR TK		671		28-22-52

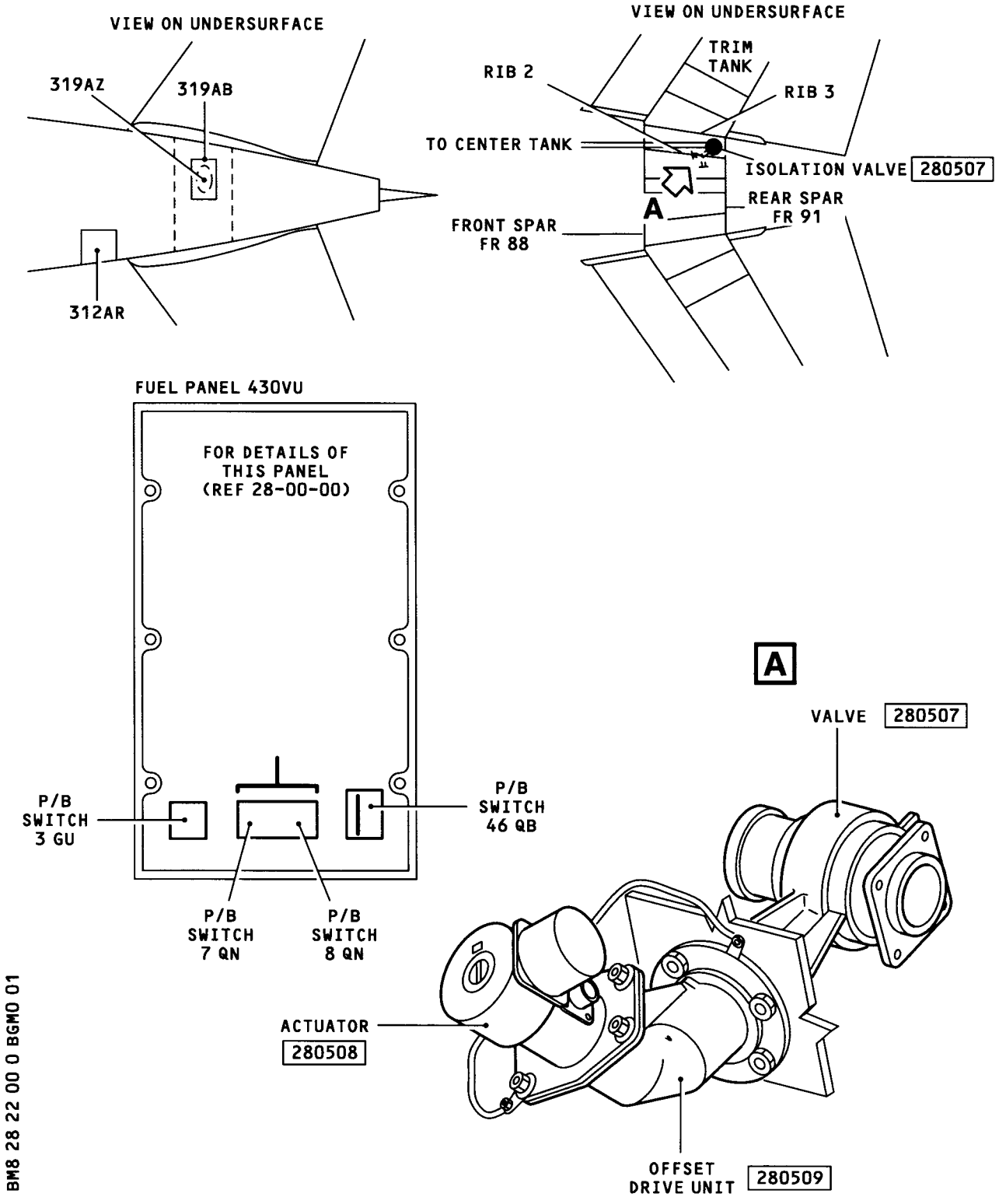
FIN	FUNCTIONAL DESIGNATION	PANEL	ZONE	ACCESS DOOR	ATA REF
33QB	FLASHER UNIT - ISOL VALVE L INR TK	282VU	122	132AZ	
34QB	FLASHER UNIT - ISOL VALVE R INR TK	282VU	122	132AZ	
35QB	FLASHER UNIT - ISOL VALVE L OUTR TK	282VU	122	132AZ	
36QB	FLASHER UNIT - ISOL VALVE R OUTR TK	282VU	122	132AZ	
39QB	RELAY-ISOL VALVE FLASHER UNIT L INR TK	282VU	122	132AZ	
40QB	RELAY-ISOL VALVE FLASHER UNIT R INR TK	282VU	122	132AZ	
41QB	RELAY-ISOL VALVE FLASHER UNIT L OUTR TK	282VU	122	132AZ	
42QB	RELAY-ISOL VALVE FLASHER UNIT R OUTR TK	282VU	122	132AZ	







Wing-Tank Isolation System - Component Location
Figure 001



Trim-Tank Isolation System - Component Location
Figure 002

FIN	FUNCTIONAL DESIGNATION	PANEL	ZONE	ACCESS DOOR	ATA REF
43QB	RELAY-ISOL VALVE FLASHER UNIT CTR TK L	282VU	122	132AZ	
44QB	RELAY-ISOL VALVE FLASHER UNIT CTR TK R	282VU	122	132AZ	
45QB	C/B - FUEL/TRIM TK/ISOL VALVE	132VU	212	325/K52	
46QB	P/BSW - ISOL VALVE, TRIM TK	430VU	210		
47QB	RELAY - ACTR/ISOL VALVE, TRIM TK				
48QB	ACTR - ISOL VALVE, TRIM TK		319	319AB	28-22-55
49QB	RELAY - ACTR/ISOL VALVE/ALTN CTL				
50QB	RELAY - REFUEL PANEL, DOOR POSITION				
51QB	C/B - FUEL/ISOL VALVES/L OUTR TK & L INR TK FLASHER	132VU	212	324/L54	
52QB	C/B - FUEL/ISOL VALVES/R OUTR TK & R INR TK FLASHER	132VU	212	324/L57	
53QB	FLASHER UNIT - ISOL VALVE, TRIM TK				
54QB	RELAY - FAULT				
137QA	RELAY - ISOL VALVE CONTROL CTR TK L	282VU	122	132AZ	
138QA	RELAY - ISOL VALVE CONTROL CTR TK R	282VU	122	132AZ	

3. Description

(Ref. Fig. 003)
(Ref. Fig. 004)

A. Isolation Valves

The isolation valves are electrically-actuated, spherical-plug valves, of two-inch diameter, and consist of a body, with pipe attachments, a ball, and spindle. The wing tank isolation valves flange-mount to the inside of the tank rear web; the spindles protrude through the tank walls, and the wing tank isolation valve electrical actuators are mounted on the outside of the tank.

The trim tank isolation valve is mounted inside the trim tank in the transfer fuel feed line, close to the tank outlet, on the lower skin. The mounting of the valve and actuator is such that reactive loads are not transmitted to the fuel lines.

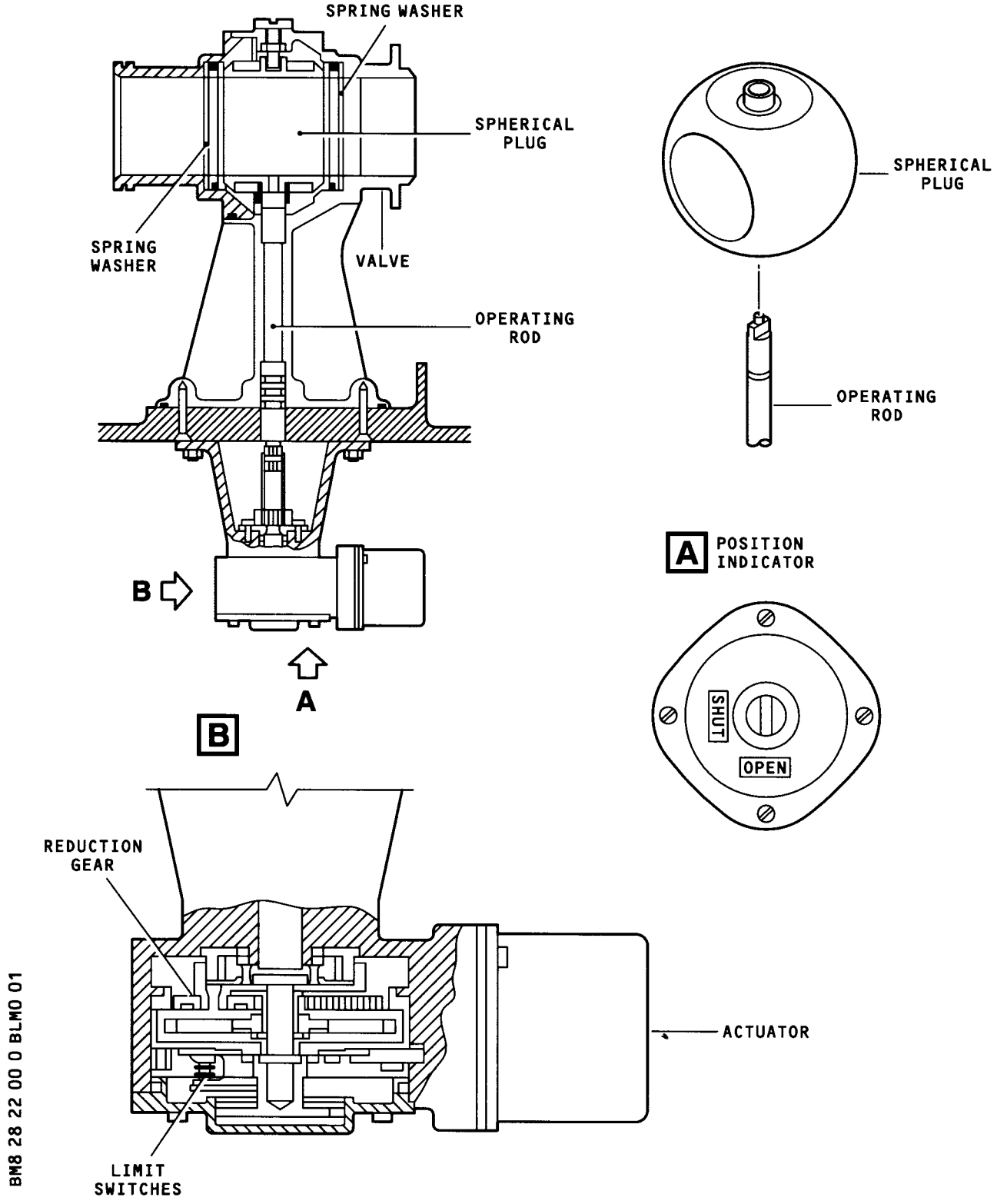
A single electric motor drives the actuator, which comprises a reduction gear-box, for 90 deg. ball travel and microswitches to stop the motor at the end of its travel and to indicate valve position.

The trim tank actuator is externally mounted on an offset bevel drive unit.

The inner and outer tank isolation valves are electrically operated.

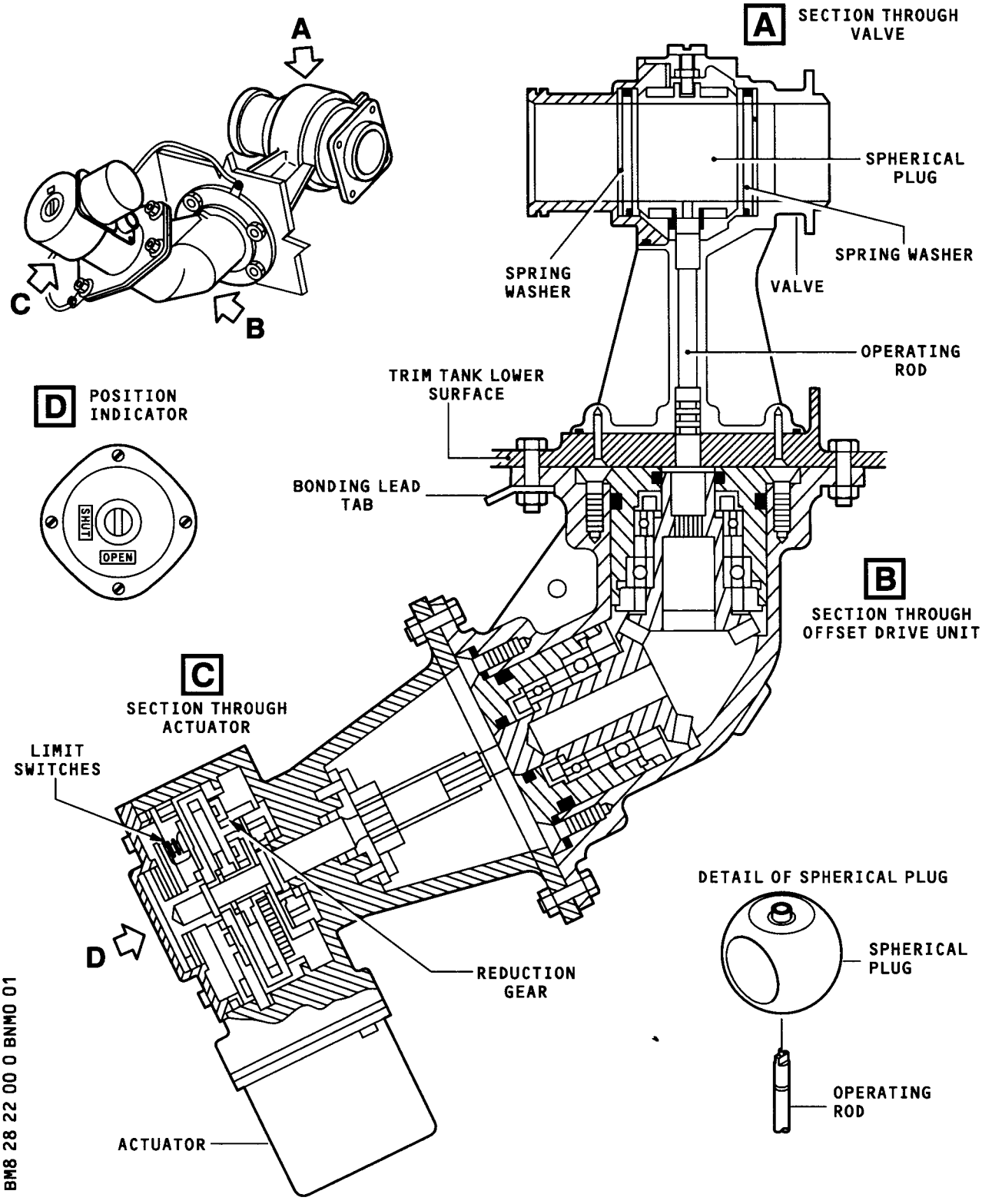
4. Operation

(Ref. Fig. 005)
(Ref. Fig. 006)
(Ref. Fig. 007)

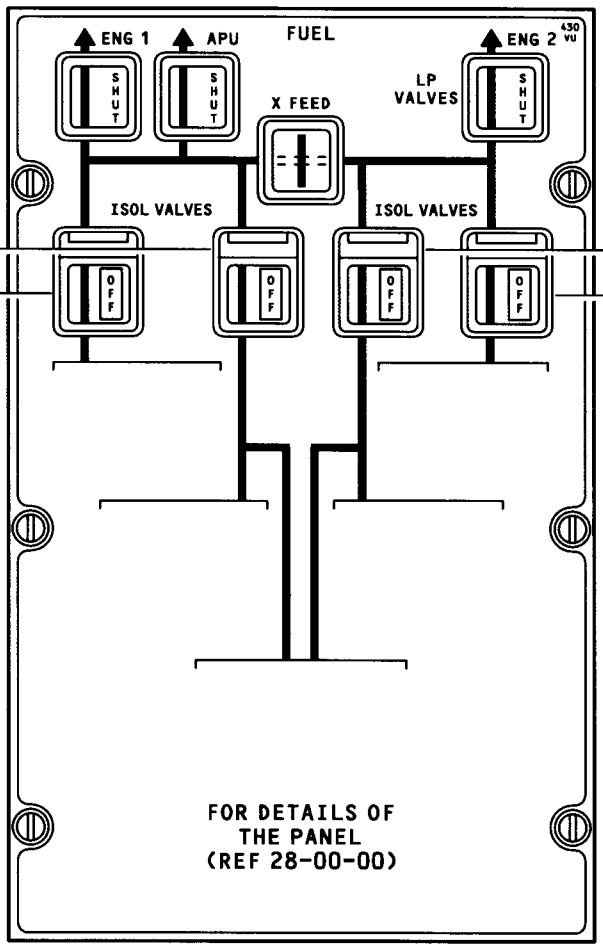


Tank Isolation Valve - Details
Figure 003

R



Trim-Tank Isolation Valve and Offset Drive - Details
R Figure 004



FUEL PANEL 430 VU

1. INR AND OUTR TK ISOL VALVES P/BSW,s.
   P/BSW RELEASED (OUT):
   - THE WHITE OFF LEGEND IS ON.
   - THE VALVE IS CLOSED.

   WHEN THE P/BSW IS PUSHED (IN):
   - THE WHITE OFF LEGEND GOES OFF.
   - THE VALVE IS OPEN.
   - DURING VALVE OPERATION TO OPEN, THE GREEN FLOWBAR FLASHES.
   - WHEN THE VALVE IS FULLY OPEN, THE GREEN FLOWBAR IS STABLE.

   WHEN THE P/BSW IS RELEASED (OUT):
   - THE OFF LEGEND COMES ON.
   - DURING VALVE OPERATION TO CLOSE, THE GREEN FLOWBAR FLASHES.
   - WHEN THE VALVE IS FULLY CLOSED, THE GREEN FLOWBAR GOES OFF.
   - THE WHITE OFF LEGEND COMES ON.

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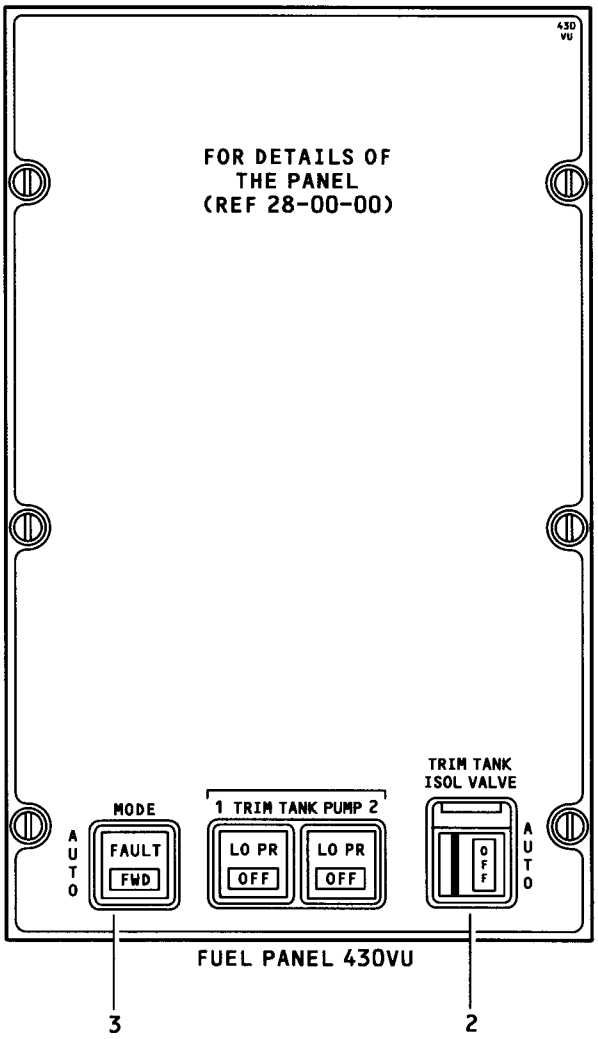
Fuel Control Panel 430VU
Figure 005



2. TRIM TK ISOL VALVE P/BSW.
   P/BSW RELEASED (OUT):
   - THE WHITE OFF LEGEND IS ON.
   - THE VALVE IS CLOSED.

   WHEN THE P/BSW IS PUSHED (IN):
   - THE WHITE OFF LEGEND GOES OFF.
   - THE VALVE OPENS.
   - DURING VALVE OPERATION TO OPEN,
   - THE GREEN FLOWBAR FLASHES.
   - WHEN THE VALVE IS FULLY OPEN.
   - THE GREEN FLOWBAR IS STABLE.

   WHEN THE P/BSW IS RELEASED (OUT):
   - THE WHITE OFF LEGEND COMES ON.
   - DURING VALVE OPERATION TO CLOSE,
   - THE GREEN FLOWBAR FLASHES.
   - WHEN THE VALVE IS FULLY CLOSED,
   - THE GREEN FLOWBAR GOES OFF.
   - THE WHITE LEGEND GOES OFF.

3. AUTO/MODE P/BSW.
   P/BSW IS RELEASED (OUT)
   (AUTO CONTROL MODE SET):
   - THE FAULT AND FWD LEGENDS ARE OFF.
   - THE CGCC CONTROLS THE OPERATION OF THE TRIM TANK PUMPS AND THE FWD AND AFT TRANSFER VALVES (TRIM TANK PUMP P/BSW'S PUSHED (IN).

   WHEN THE P/BSW IS PUSHED (IN):
   - THE FWD LEGEND COMES ON.
   - THE AUX FWD TRANSFER VALVE OPENS.
   - THE TRIM TANK PUMPS ARE CONTROLLED WITH THE P/BSW,s.

   WHEN THE P/BSW IS RELEASED (OUT)
   (AUTO CONTROL MODE SET):
   - THE FWD LEGEND GOES OFF.
   - THE AUX FWD TRANSFER VALVE CLOSES.

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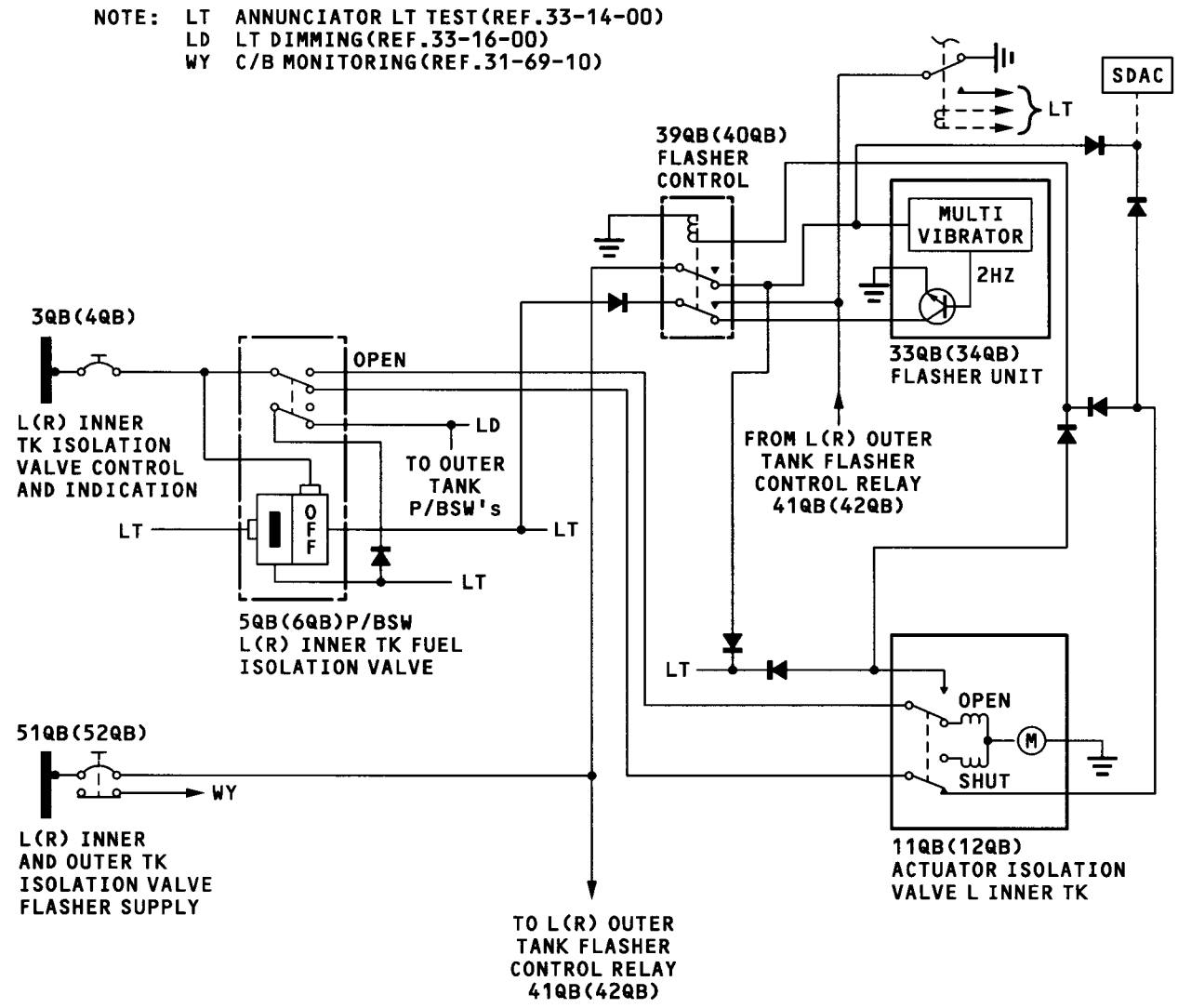
Fuel Control Panel 430VU (Trim-Tank)
Figure 006

R



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NOTE: L INNER TANK SHOWN
L OUTER TANK SIMILAR
(R INNER AND OUTER TANK SIMILAR)

Tank Isolation Valves - Circuit Diagram
Figure 007

**ON A/C ALL

(Ref. Fig. 008)

**ON A/C ALL

The wing tank isolation valves are controlled from the fuel section of the flight-compartment overhead panel (430VU) which also gives indication of the positions of the valves. The tank valves are operated by guarded pushbutton switches. When the relevant switch is in the released (out) position, the valve is closed and the OFF legend comes on. When the switch is pressed (in) the OFF legend goes off (the valve starts to open) and the flow-bar flashes. When the valve is fully open the flow-bar becomes stable. When the P/BSW is released (the valve starts to close) the flow-bar flashes. When the valve is fully closed the OFF legend comes on and the flow-bar goes off.

Each isolation valve supplies a discrete output to the SDAC to indicate its open or closed position. The R ECAM display (Fuel page) shows the related
R valve symbol (Ref. AMM 31-51-00 P.Block 001):
R -Green inline, when the related P/BSW on 430VU is pressed in and the valve is fully open
R -Amber, when the valve is in transit
R -Amber cross-hatched, when the valve is closed and the related P/BSW is released out
R -Amber inline, when the related P/BSW is pressed in and there is no fuel pressure at the isolation valve.

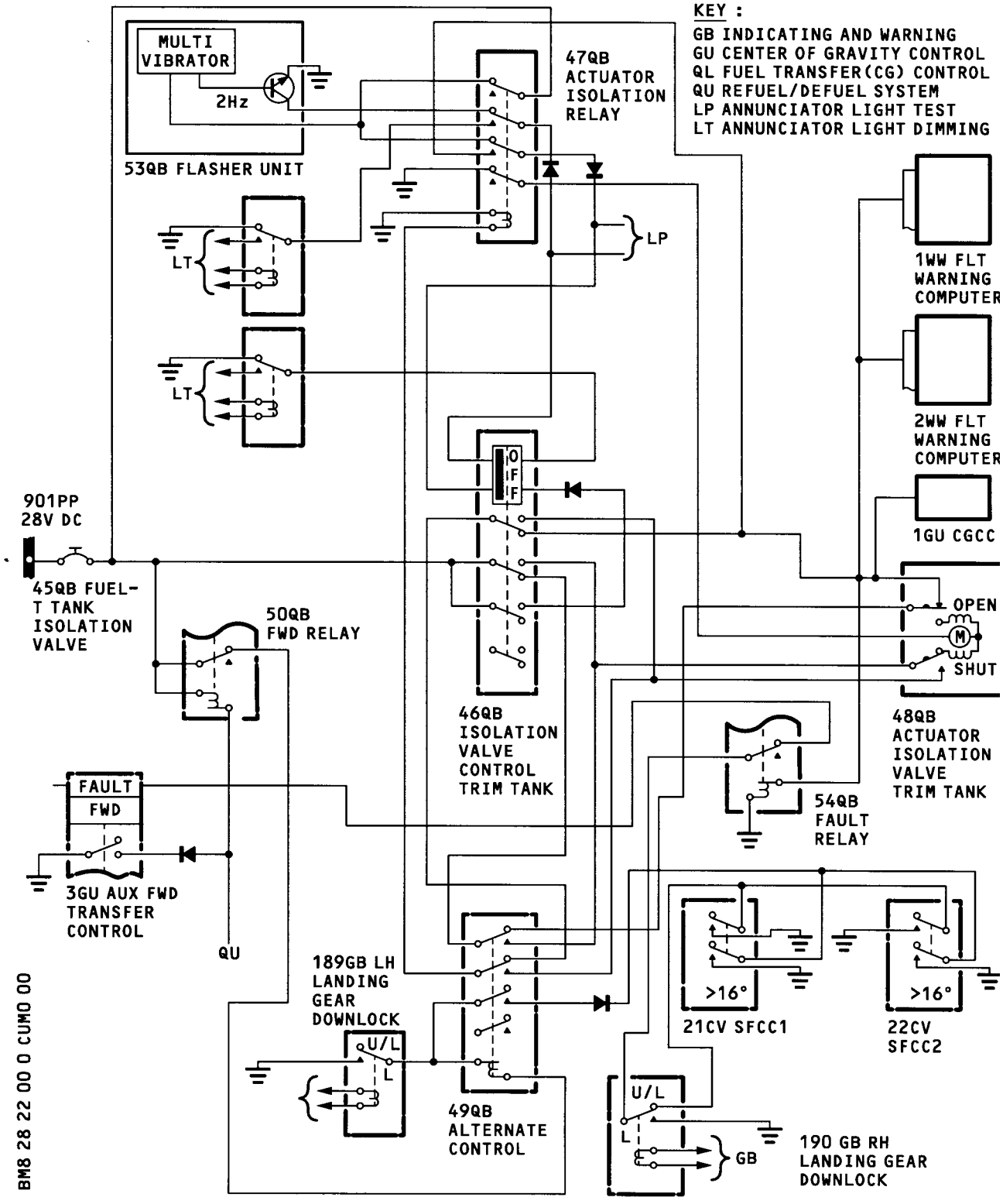
R NOTE : The R ECAM shows the Amber inline valve symbol, because a
R low level sensor failure will command the pumps to the OFF position.

The position of the trim tank isolation valve is controlled automatically by the CGCC fuel transfer system, or by pushbutton switches from the flight compartment overhead panel 430VU. If the automatic system fails, the system is manually operated by the TRIM TK ISOL VALVE and TRIM TK MODE pushbutton switches.

On panel 430VU, if the TRIM TK ISOL VALVE pushbutton switch is released, the isolation valve closes and the OFF legend comes on.

If the TRIM TK ISOL VALVE switch is pressed, the isolation valve opens, the OFF legend goes off and the flow bar on the pushbutton switch comes on.

The operation of the TRIM TK ISOL VALVE pushbutton switch overrides the valve position as selected by the automatic system.
If the TRIM TK MODE pushbutton switch is pressed to select manual forward



Trim-Tank Isolation System - Circuit Diagram
Figure 008

transfer, the isolation valve will not open if previously closed by the **TRIM TK ISOL VALVE** pushbutton switch.

If the valve is moving, the flow bar on the pushbutton switch flashes.

The **OFF** legend is off if the system is automatically controlled and will come on only if the valve is manually selected closed.

The trim tank isolation valve closes when the landing gear locks down before landing and remains closed whilst the aircraft is on the ground, except during refueling. The valve remains closed after take off until the slats and landing gear are retracted, when the valve automatically opens.

If the aircraft electrical network is energized and the access door **144DR** is open then:
- the refuel/defuel panel **110VU** is energized
- the landing-gear downlock-position signal is overridden
- the slat position signal is overridden
- the trim-tank isolation valve will open to let you refuel the trim tank.

WARNING : LANDING GEAR - MAKE SURE THAT THE GROUND SAFETIES AND CHOCKS ARE IN POSITION.

FLIGHT CONTROLS - MAKE SURE THAT THE GROUND SAFETIES AND NOTICES ARE IN POSITION.

HYDRAULICS - BEFORE YOU PRESSUIZE THE SYSTEM, MAKE SURE THAT THE CONTROL SURFACE POSISTIONS AND THE FLIGHT CONTROL POSITIONS ARE THE SAME.

MAKE SURE THAT THE FIRE FIGHTING EQUIPMENT IS AVAILABLE AND ADEQUATE.

MAKE SURE THAT YOU ISOLATE THE ELECTRICAL CIRCUITS UPON WHICH WORK IS IN PROGRESS.

DO NOT OPERATE THE MICROPHONE BUTTONS ON HF TRANSMISSION DURING REFUELING/DEFUELING OR GROUND MAINTENANCE-FUEL TRANSFER OPERATIONS.

1. Operational Test On Tank Isolation Valves

A. Reason for the Job

(1)To make sure that the isolation valve - control and indicating circuits operate correctly.

B. Equipment and Materials

ITEM	DESIGNATION
A.	Access Platform 5 m (16.5 ft)
B.	Access Platform 8 m (26.2 ft)
C.	Circuit Breaker Safety Clips and Tags

Referenced Procedures

	- 12-11-28, P. Block 301	Replenishing of Fuel Tanks
	- 24-41-00, P. Block 301	AC External Power Control
	- 27-80-00, P. Block 301	Lift Augmenting (Slats and Krueger Flaps)
	- 28-25-00, P. Block 301	Refuel/Defuel System
	- 32-12-11, P. Block 301	Main Gear Main Door
R	- 34-11-15, P. Block 401	Probe - Pitot
R	- 34-11-16, P. Block 401	Probe - Static

C. Procedure

(Ref. Fig. 501)

(1)Job Set-Up

R (a)Make sure that the circuit breakers that follow are closed:

PANEL	SERVICE	IDENT.	LOCATION
132VU	FUEL/ISOL VALVES/L OUTR TK/SUPPLY	1QB	324/L53
132VU	FUEL/ISOL VALVES/R OUTR TK/SUPPLY	2QB	324/L58

PANEL	SERVICE	IDENT.	LOCATION
132VU	FUEL/ISOL VALVES/L INR TK/SUPPLY	3QB	324/L55
132VU	FUEL/ISOL VALVES/R INR TK/SUPPLY	4QB	324/L56
132VU	FUEL/ISOL VALVES/L OUTR & INR TK FLASHER	51QB	324/L54
132VU	FUEL/ISOL VALVES/R OUTR & INR TK FLASHER	52QB	324/L57

(b)Energize the aircraft electrical network (Ref. 24-41-00, P. Block 301).

(c)On panel 430VU, make certain relevant wing tank ISOL VALVES pushbutton switches are pressed in (OPEN position) and flowbars are on.

(d)Gain access to isolation valves.

1 Outer Tank
- position access platform 5 m (16.5 ft)
- open access doors 581(681)AB to gain access to the isolation valves located at the rear spar between STA663 (RIB 11) and STA737 (RIB 12).

2 Inner Tank
- open the main landing gear doors (Ref. 32-12-11, P. Block 301) to gain access to the isolation valves located at the rear spar between STA67 (RIB 2) and STA139 (RIB 3).

3 Trim Tank
- position access platform 8 m (26.2 ft)
- open access door 313AL to gain access to the isolation valve located at the tank floor between STA53 (RIB 2) and STA93 (RIB 3) LH side.

(2)Test - (Wing Tank Isolation Valves).

ACTION	RESULT
1. On panel 436VU: - place ANN LT switch in TEST position	On panel 430VU: - ISOL VALVES OFF legends come on
- place ANN LT switch in BRT position	- OFF legends go OFF
2. On panel 430VU: - release relevant wing tank ISOL VALVES pushbutton switch (out)	On panel 430VU: - OFF legend comes on - flowbar flashes as valve is in transit to SHUT position
	- when valve is fully shut flowbar goes off
	On relevant valve actuator: - indicator groove shows SHUT (vertical)
3. On panel 430VU:	On panel 430VU:

ACTION	RESULT
- press relevant wing tank ISOL VALVES pushbutton switch (in)	- OFF legend goes off - flowbar flashes as valve is in transit to OPEN position - when valve is fully open flowbar comes on steady On relevant valve actuator: - indicator groove shows OPEN (horizontal)

R (3)Indication Test - Trim Tank Isolation Valve
(Ref. Fig. 502)
(a)Preparation for Test (Trim Tank Isolation Valve - Indication).
1 Make sure that the slats are retracted (Ref. 27-80-00, P. Block 301).
2 Make sure that the access door 144DR is closed.
3 Make sure that this circuit breaker is closed:

PANEL	SERVICE	IDENT.	LOCATION
132VU	FUEL/TRIM TK/ISOL VALVE	45QB	325/K52

4 Open, safety and tag the following circuit breaker:

PANEL	SERVICE	IDENT.	LOCATION
133VU	HYD-L/G PROX DET/RELAYS SYS 1 GEAR DN/CTR PNL POS IND.	3GB	332/U53

5 On panel 430VU:
- make sure that the TRIM TK AUTO MODE pushbutton switch is released (out) in the auto position
- make sure that the TRIM TK ISOL VALVE pushbutton switch is pressed in (open position) and the flowbar is on.

6 Gain access to the trim tank isolation valve actuator through the access door 313AL and make sure the indicator groove shows OPEN.

(b)Test (Trim Tank Isolation Valve Indication).

ACTION	RESULT
1. On panel 436VU: - place ANN LT switch in TEST position	On panel 430VU: - TRIM TK ISOL VALVE OFF legend comes on
- place ANN LT switch in BRT position	- TRIM TK ISOL VALVE OFF legend goes off
2. On panel 430VU: - release (out) TRIM TK ISOL VALVE pushbutton switch	On panel 430VU: - TRIM TK ISOL VALVE OFF legend comes on

ACTION	RESULT
	- flowbar flashes as valve is in transit to shut position - when valve is fully shut flowbar goes off - **TRIM TK AUTO FAULT** legend comes on On valve actuator: - indicator groove shows **SHUT** (vertical) On panel 430VU: - **TRIM TK ISOL VALVE OFF** legend goes off - flowbar flashes as valve is in transit to open position - when valve is fully open flowbar comes on steady - **TRIM TK AUTO FAULT** legend goes off On valve actuator: - indicator groove shows **OPEN** (horizontal)
- press (in) **TRIM TK ISOL VALVE** pushbutton switch	
3. Extend slats to 15 degrees (Ref. 27-80-00, P. Block 301)	- indicator groove remains in **OPEN** position On panel 430VU: - **TRIM TK ISOL VALVE OFF** legend remains off - flowbar remains on steady
- retract slats (Ref. 27-80-00, P. Block 301)	
4. On panel 133VU: - close circuit breaker 3GB (line 332/U53)	On panel 430VU: - **TRIM TK ISOL VALVE** flowbar flashes as valve is in transit to shut position - when valve is fully shut flowbar goes off

ACTION	RESULT
	On valve actuator: - indicator groove shows **SHUT** (vertical)
5. At zone **144**: - open access door **144DR**	On panel **430VU**: - **TRIM TK ISOL VALVE** flowbar flashes as valve is in transit to open position - when valve is fully open flowbar comes on steady On valve actuator: - indicator groove shows **OPEN** (horizontal)
- close access door **144DR**	On panel **430VU**: - **TRIM TK ISOL VALVE** flowbar flashes as valve is in transit to shut position - when valve is fully shut flowbar goes off On valve actuator: - indicator groove shows **SHUT** (vertical)
6. On panel **430VU**: - press (in) **TRIM TK AUTO MODE** pushbutton switch (manual selected)	On panel **430VU**: - **TRIM TK AUTO MODE FWD** legend comes on - **TRIM TK ISOL VALVE** flowbar flashes as valve is in transit to open position - when valve is fully open flowbar comes on steady On valve actuator: - indicator groove shows **OPEN** (horizontal)
- release (out) **TRIM TK AUTO MODE** pushbutton switch (auto selected)	On panel **430VU**: - **TRIM TK AUTO MODE FWD** legend goes off - **TRIM TK ISOL VALVE** flowbar flashes as valve is in transit to shut position

ACTION	RESULT
	- when valve is fully shut flowbar goes off On valve actuator: - indicator groove shows SHUT (vertical)
7. Extend slats to 15 degrees Ref. 27-80-00, P. Block 301)	
8. On panel 133VU: - open circuit breaker 3GB (line 332/U53)	- indicator groove remains in SHUT position
9. Retract slats (Ref. 27-80-00, P. Block 301)	On panel 430VU: - TRIM TK ISOL VALVE flowbar flashes as valve is in transit to open position - when valve is fully open flowbar comes on steady On valve actuator: - indicator groove shows OPEN (horizontal)

(c)Close-Up
1 Return aircraft to normal operating condition.
2 Make sure that the work area is clean and clear of tools and all other items of equipment.
3 Close main landing gear bay doors (Ref. 32-12-11, P. Block 301).
4 Remove safety clip and tag and close circuit breaker 3GB (line 332/U53).
5 De-energize the aircraft electrical network (Ref. 24-41-00, P. Block 301).
6 Close access door 581(681)AB.
7 Remove access platform 5m (16.5ft).
8 Close access door 313AL.
9 Remove access platform 8m (26.2ft).

R (4)Operational Test - Trim Tank Isolation Valve (Ref. Fig. 502)
(a)Preparation for Test (Trim Tank Isolation Valve Operation)
1 Make sure that the circuit breakers that follow are closed:

PANEL	SERVICE	IDENT.	LOCATION
21VU	ECAM		LINE 108
22VU	FUEL/TRIM TK/FWD XFR		LINE 201

PANEL	SERVICE	IDENT.	LOCATION
132VU	FUEL/FQI		LINE 321
132VU	FUEL/TRIM TK		LINE 325
132VU	FUEL/FUELLING		LINE 321

WARNING : DO NOT OPERATE THE MICROPHONE BUTTONS ON HF TRANSMISSION DURING REFUELING/DEFUELING OR GROUND MAINTENANCE-FUEL TRANSFER OPERATIONS. IF YOU EMIT WITH THE HF SYSTEM, YOU CAN CAUSE INJURY AND/OR START A FIRE.

R CAUTION : YOU MUST OBSERVE THE AIRCRAFT STABILITY INFORMATION IN
R TOPIC 05-57-11, P. BLOCK 001 IF YOU DO THE PROCEDURE
R 'REARWARD TRANSFER TO TRIM TANK FOR WATER DRAINAGE'.

R 2 Make sure that the trim tank contains at least 500 kg (1000 lb) of
R fuel. If necessary, refuel (Ref. 12-11-28, P. Block 301) or use the
R procedure 'Rearward Transfer To Trim Tank For Water Drainage'
R (Ref. 28-25-00, P. Block 301). Only transfer 500 kg (1000 lb) of
R fuel and then continue with this procedure.

3 Activate the ECAM DU's:
- On the flight-compartment center pedestal, push (in) the ECAM SGU 1 and 2 p/bsw's.
- Turn the LEFT and RIGHT DISPLAY rotary switches clockwise to switch on the display and adjust the brightness to the required level.
- Push (in) the FUEL p/bsw to call up the fuel page.

4 Make sure that the circuit breakers that follow are closed:

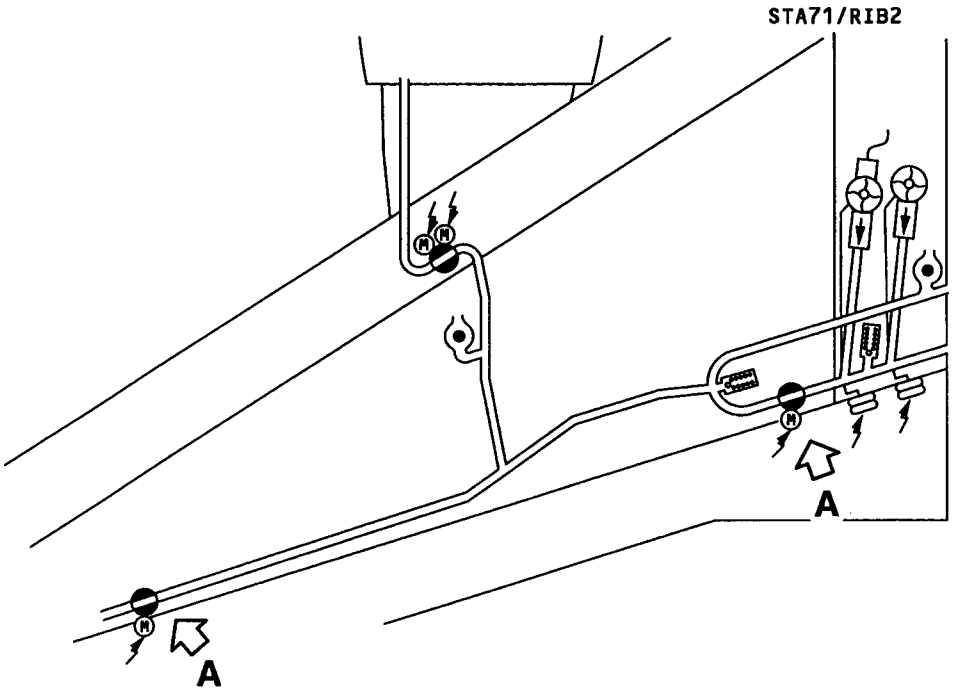
PANEL	SERVICE	IDENT.	LOCATION
22VU	FUEL/TRIM TK/FWD XFR AUX VALVE	2QL	201/J21
132VU	FUEL/TRIM TK/FWD XFR MAIN VALVE	1QL	325/K53

5 Open access door 144DR. Do not close the door or operate the door microswitch until the transfer is complete.

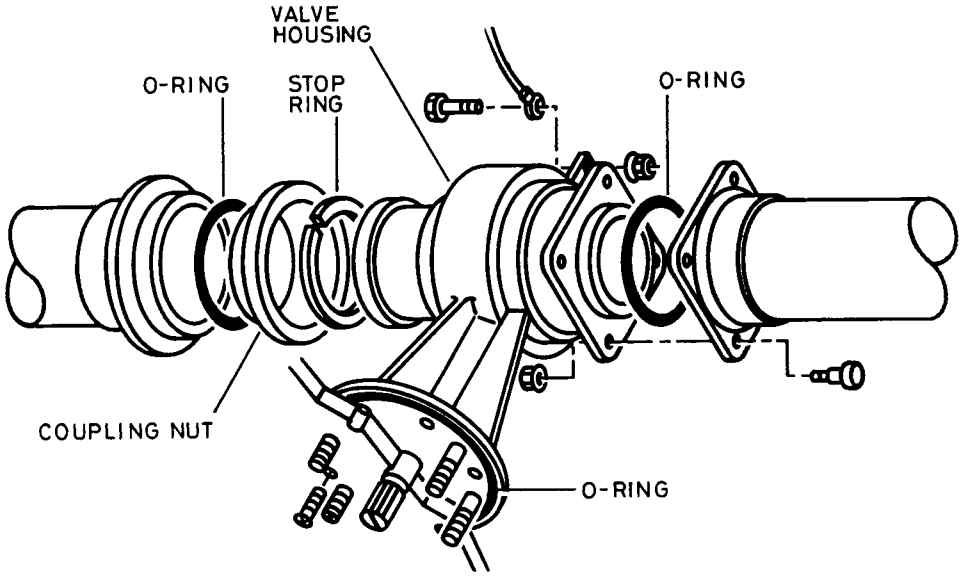
6 On panel 430VU:
- Make sure that all the pump p/bsw's are released (out) and that the OFF legends are on
- Make sure that the TRIM TK ISOL VALVE p/bsw is pushed (in) and that the in-line flowbar is on.

(b)Test (Trim Tank Isolation Valve Operation)

WARNING : DO NOT OPERATE THE MICROPHONE BUTTONS ON HF TRANSMISSION DURING REFUELING/DEFUELING OR GROUND MAINTENANCE-FUEL TRANSFER OPERATIONS. IF YOU EMIT WITH THE HF SYSTEM, YOU CAN CAUSE INJURY AND/OR START A FIRE.



A ISOLATION VALVE
TYPICAL FOR 4 POSITIONS



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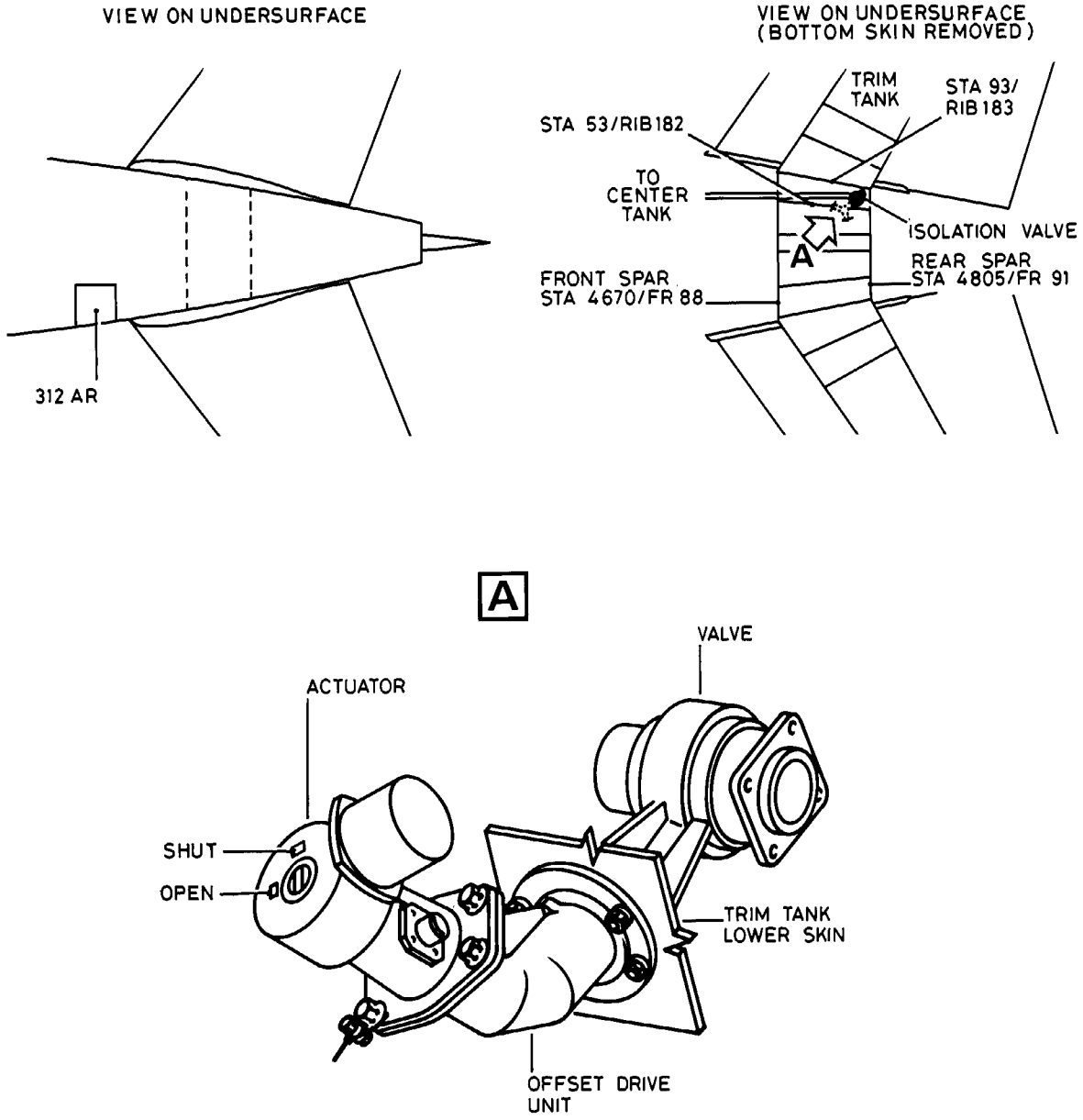
Wing Tank Isolation Valve - Installation
Figure 501



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Trim Tank Isolation Valve - Installation
Figure 502

ACTION	RESULT
1. On panel 430VU: - press (in) the TRIM TK PUMP 1 and 2 P/BSW's	On panel 430VU: - the OFF legends go off - the pumps run
2. On panel 430VU: - press (in) the TRIM TK AUTO MODE P/BSW	On panel 430VU: - the TRIM TK AUTO MODE FWD legend comes on
3. On the RIGHT ECAM DU, monitor the fuel transfer	Make sure that: - the center tank contents increase - the trim tank contents decrease
4. On panel 430VU: - release (out) the TRIM TK ISOL VALVE P/BSW	On panel 430VU: - the in-line flowbar goes off - the OFF legend comes on
5. On the RIGHT ECAM DU	Make sure that: - the center tank contents stabilize - the trim tank contents stabilize
6. On panel 430VU: - press (in) the TRIM TK ISOL VALVE P/BSW	On panel 430VU: - the in-line flowbar comes on - the OFF legend goes off
7. On the RIGHT ECAM DU, monitor the fuel transfer	Make sure that: - the center tank contents increase - the trim tank contents decrease
8. On panel 430VU: - release (out) the TRIM TK PUMP 1 and 2 P/BSW's	On panel 430VU: - the OFF legends come on - the pumps stop
9. On panel 430VU: - release (out) the TRIM TK AUTO MODE P/BSW	On panel 430VU: - the TRIM TK AUTO MODE FWD legend goes off

(c)Close-Up

1 Return the aircraft to the normal operating condition.

2 On the flight compartment center-pedestal, turn the ECAM LEFT and RIGHT DISPLAY rotary switches to the OFF position, release (out) the ECAM SGU 1 and 2 P/BSW(s).

3 Close the access door 144DR.
4 Not applicable.
5 De-energize the aircraft electrical network (Ref. 24-41-00, P. Block 301).
6 Make sure that the work area is clean and clear of tools and other items of equipment.
7 Remove the access platform.

(5)Test (Trim-Tank Auto-Mode Fault-Warning Lamp)

(a)Preparation for test.

1 Remove the pitot tube covers (Ref. 34-11-15, P. Block 401), and the static tube covers (Ref. 34-11-16, P. Block 401).

NOTE : The heaters will come on during the test.

2 Energize the aircraft electrical network (Ref. 24-41-00, P. Block 301).
3 Make sure that the slats are retracted (Ref. 27-80-00, P. Block 301).
4 Open, safety and tag this circuit breaker:

PANEL	SERVICE	IDENT.	LOCATION
132VU	FUEL/TRIM TK/ISOL VALVE	45QB	325/K52

5 On panel 430VU:
- make sure that the TRIM TK AUTO MODE pushbutton switch is released (out) in the auto position.

NOTE : With circuit breaker 45QB open the TRIM TK ISOL VALVE does not operate.

(b)Test

ACTION	RESULT
1. On panel 133VU: - open circuit breaker 3GB (line 332/U53)	On panel 430VU - the TRIM TK AUTO MODE pushbutton switch FAULT lamp is illuminated
2. On panel 133VU: - open circuit breaker 3GB (line 332/U53)	On panel 430VU - the TRIM TK AUTO MODE pushbutton switch FAULT lamp goes off On the valve actuator : - the indicator groove shows SHUT (vertical).

(c)Close-up

1 Remove safety clip and tag and close circuit breaker 3GB (line 332/U53).
2 De-energize the aircraft electrical network (Ref. 24-41-00,

P. Block 301).

3 Install the pitot tube covers (Ref. 34-11-15, P. Block 401), and the static tube covers (Ref. 34-11-16, P. Block 401).

4 Make sure that the work area is clean and clear of tools and all other items of equipment.

ISOLATION VALVE - REMOVAL/INSTALLATION

WARNING : LANDING GEAR - MAKE CERTAIN GROUND SAFETIES AND CHOCKS ARE IN POSITION.

FLIGHT CONTROLS - MAKE CERTAIN GROUND SAFETIES AND NOTICES ARE IN POSITION.

OBSERVE THE SAFETY PRECAUTIONS IN 28-00-00, P. BLOCK 301 AND 28-10-00, P. BLOCK 301.

MAKE CERTAIN THAT FIRE FIGHTING EQUIPMENT IS AVAILABLE AND ADEQUATE.

BEFORE PRESSURIZING FUEL SYSTEMS, MAKE CERTAIN THAT FUEL SYSTEM UNDER MAINTENANCE HAS BEEN ISOLATED.

BEFORE POWER IS SUPPLIED TO THE AIRCRAFT MAKE CERTAIN THAT ELECTRICAL CIRCUITS UPON WHICH WORK IS IN PROGRESS ARE ISOLATED.

1. Equipment and Materials

ITEM	DESIGNATION
A.	Container
B.	O-rings
C.	Circuit Breaker Safety Clips and Tags
D.	Access Platform 4.5 m (15 ft)
E.	Line Blanking Caps
F. Material No. 01-001	Fuels (Ref. 20-31-00)
G. Material No. 16-006	Structure Paints (Ref. 20-31-00)
Referenced Procedures	
- 20-28-11, P. Block 1	Electrical Bonding
- 28-00-00, P. Block 301	Fuel - General
- 28-10-00, P. Block 301	Storage
- 28-11-22, P. Block 401	Manhole Covers (Wings)
- 28-22-51, P. Block 501	Isolation Valve
- 28-22-52, P. Block 401	Isolation Valve Actuator

2. Procedure

A. Job Set-Up
(1)Position access platform.
(2)Remove isolation valve actuator (Ref. 28-22-52, P. Block 401).
R (3)Remove the applicable manhole cover (Ref. 28-11-22, P. Block 401):
R (a)For the outer-tank isolation valve - 540 (640)FB
R (b)For the inner-tank isolation valve - 540 (640)AB.
(4)Open, safety and tag the following circuit breakers:
- For outer tank isolation valve - left

PANEL	SERVICE	IDENT.	LOCATION
22VU	FUEL/OUTR TK PUMP 2/L TK/CTL	61QA	201/J15
132VU	FUEL/L OUTR TK/ISOL VALVE	1QB	324/L53
132VU	FUEL/L OUTR TK/PUMP 1/CTL	67QA	322/N56

- For outer tank isolation valve - right

PANEL	SERVICE	IDENT.	LOCATION
22VU	FUEL/OUTR TK PUMP 2/R TK/CTL	68QA	201/J18
132VU	FUEL/R OUTR TK/PUMP 1/CTL	62QA	323/M57
132VU	FUEL/R OUTR TK/ISOL VALVE	2QB	324/L58

- For inner tank isolation valve - left

PANEL	SERVICE	IDENT.	LOCATION
132VU	FUEL/CTR TK/L/PUMP/CTL	63QA	322/N58
132VU	FUEL/L INR TK/ISOL VALVE	3QB	324/L55

- For inner tank isolation valve - right

PANEL	SERVICE	IDENT.	LOCATION
132VU	FUEL/CTR TK/R/PUMP/CTL	64QA	323/M59
132VU	FUEL/R INR TK/ISOL VALVE	4QB	324/L56

B. Removal

(1)Outer tank isolation valve

(Ref. Fig. 401)

(a)Place container under isolation valve (13)

(b)Remove nuts (6) and bolts (4) and disconnect bonding leads (5).

(c)Unscrew ring nut (14).

(d)Remove nuts (17) and bolts (16) and slide line (2), clear of isolation valve (13). Discard O-ring seal (1).

(e)Remove nuts (7) and bolts (9) securing connector (10) to isolation valve (13). Slide connector clear of valve.

(f)Remove screws (11) securing isolation valve (13) to rear spar.

(g)Withdraw isolation valve from tank. Cap open line ends.

(h)Remove and discard O-ring seals (3,8 and 12).

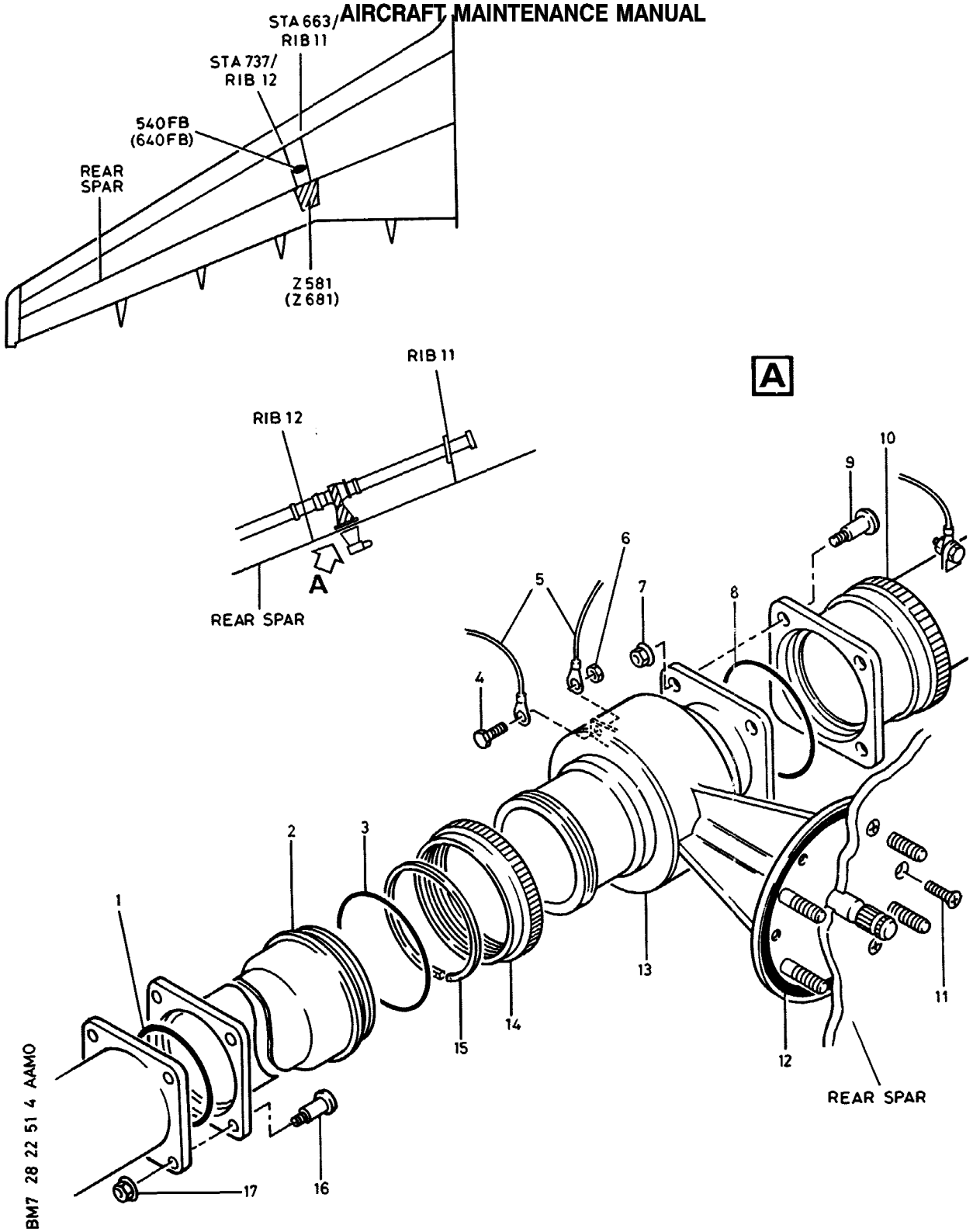
(i)If a replacement valve (13) is to be installed, remove and retain circlip (15) and ring nut (14).

(2)Inner Tank Isolation Valve

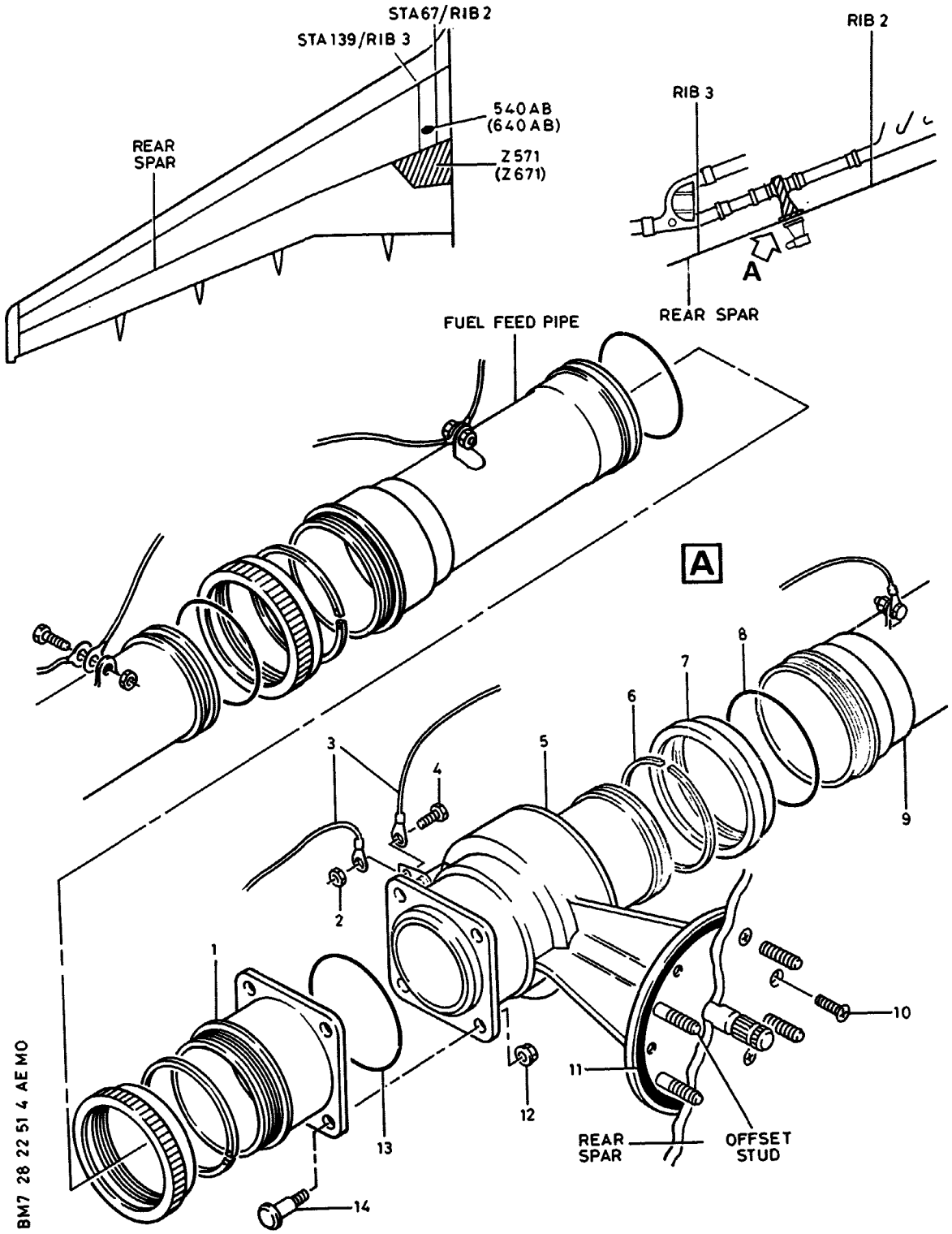
(Ref. Fig. 402)

(a)Place container under isolation valve (5)

(b)Remove nut (2) and bolt (4) and disconnect bonding leads (3).



Outer Tank Isolation Valve
Figure 401



Inner Tank Isolation Valve
Figure 402

(c)Remove nuts (12) and bolts (14) securing connector (1) to valve (5). Slide connector and fuel feed pipe clear of valve.
(d)Unscrew ring nut (7).
(e)Remove screws (10). With line (9) engaged on isolation valve (5), slide valve into the tank and off line end. Cap open line ends.
(f)Remove and discard seals (8,11 and 13).
(g)If a replacement valve (5) is to be installed, remove and retain circlip (6) and ring nut (7).

C. Preparation of Replacement Component
(1)Outer tank isolation valve
(a)Install ring nut (14) and circlip (15) on isolation valve (13).

(2)Inner tank isolation valve
(a)Install ring nut (7) and circlip (6) on isolation valve (5).

D. Installation
(1)Outer Tank Isolation Valve (Ref. Fig. 401)
(a)Remove caps from line ends.
(b)Lubricate new O-ring seals (3,8 and 12) with fuel (Material No.01-001) and install on isolation valve (13).
(c)Install valve (13) onto tank rear spar and secure with screws (11). Tighten screws in a diametrical sequence.
(d)Lubricate new O-ring seal (1) with fuel (Material No.01-001) and install on feed line. Secure feed line to line (2) with bolts (16) and nuts (17).
(e)Secure line (2) to isolation valve (13) with ring nut (14).
(f)Secure connector (10) to isolation valve with bolts (9) and nuts (7).
(g)Connect bonding leads (5) to tag on isolation valve and secure with bolts (4) and nuts (6) (Ref. 20-28-11, P. Block 1).
(h)Return any disturbed pipelines to their mid-travel positions.
(i)Apply paint (Material No.16-006) to nuts and bolts heads/tails.

(2)Inner Tank Isolation Valve (Ref. Fig. 402)
(a)Remove caps from line ends.
(b)Lubricate new O-ring seals (8,11 and 13) with fuel (Material No.01-001) and install on isolation valve.
(c)Engage isolation valve (5) in line (9), then secure to rear spar with screws (10). Tighten screws in a diametrical sequence.
(d)Secure connector (1) to isolation valve (5) with bolts (14) and nuts (12).
(e)Secure line (9) to isolation valve (5) with ring nut (7).
(f)Connect bonding leads (3) to tag on isolation valve (5) with bolts (4) and nuts (2) (Ref. 20-28-11, P. Block 1).
(g)Return any disturbed pipelines to their mid-travel positions.
(h)Apply paint (Material No.16-006) to nuts and bolts heads/tails.
(3)Not applicable.
(4)Install isolation valve actuator (Ref. 28-22-52, P. Block 401).
(5)Remove safety clips and tags and close the following circuit breakers:

- For outer tank isolation valve 61QA(68QA), 1QB(2QB), 67QA(62QA)
- For inner tank isolation valve 63QA(64QA), 3QB(4QB).

E. Test

(1)Perform isolation valve leak test (Ref. 28-22-51, P. Block 501) and simultaneously check isolation valve actuator visual indicator to ensure correct operation of valve.

F. Close-Up

(1)Remove container from tank.
(2)Make certain that working area is clean and clear of tools and miscellaneous equipment.

(3)Install relevant manhole cover (Ref. 28-11-22, P. Block 401).
(4)Remove access platforms.
(5)Remove all ground handling and maintenance equipment, standard and special tools, all access equipment and miscellaneous items.

WARNING : LANDING GEAR - MAKE CERTAIN GROUND SAFETIES AND CHOCKS ARE IN POSITION.

FLIGHT CONTROLS - MAKE CERTAIN GROUND SAFETIES AND NOTICES ARE IN POSITION.

OBSERVE THE SAFETY PRECAUTIONS IN 28-00-00, P. BLOCK 301 AND 28-10-00, P. BLOCK 301.

MAKE CERTAIN FIRE FIGHTING EQUIPMENT IS AVAILABLE AND ADEQUATE.

BEFORE POWER IS SUPPLIED TO THE AIRCRAFT, MAKE CERTAIN THAT ELECTRICAL CIRCUITS UPON WHICH WORK IS IN PROGRESS ARE ISOLATED.

1. Reason for the Job

A. Leak tests of fuel feed system isolation valve pipe connections.

2. Equipment and Materials

ITEM	DESIGNATION
A.	Access Platform 2.5 - 4.5 m (8.5 ft - 15 ft)
Referenced Procedures	
R - 12-11-28, P. Block 301	Replenishing of Fuel Tanks
- 24-41-00, P. Block 301	AC External Power Control
- 28-00-00, P. Block 301	Fuel-General
R - 28-10-00, P. Block 301	Storage
- 28-11-22, P. Block 401	Manhole Covers (Wings)
- 28-25-00, P. Block 301	Refuel/Defuel System

R

R 3. Procedure

A. Job Set-Up

R (1)Make sure that the applicable tank contains at least 500 kg (1100 lb) of fuel. If necessary, refuel the tank(s) or transfer fuel as required (Ref. 12-11-28 or 28-25-00, P. Block 301). Refer to the table that follows for the tanks to contain fuel and applicable isolation valves to be tested:

R ISOLATION VALVE TO BE TESTED	TANK REQUIRING FUEL
R OUTER TANK	OUTER TANK
R	
R INNER TANK	CENTER TANK

R (2)Remove the applicable manhole cover (Ref. 28-11-22, P. Block 401):

R - for the outer tank isolation valve 540(640) FB.
R - for the inner tank isolation valve 540(640) AB.
R (3)Put the access platform in the applicable position.
R (4)Energize the aircraft electrical network (Ref. 24-41-00, P. Block 301).
R (5)Make sure that the circuit breakers that follow are closed:
R

R (a)Left wing inner and outer tank isolation valves

PANEL	SERVICE	IDENT.	LOCATION
101VU	FUEL/L OUTER TK/PUMP 1 SUPPLY	5QA	GEN 2/A17
101VU	FUEL/CTR TK/L PUMP/SUPPLY	99QA	ESS/B04
133VU	ENGINES/ENG 1/FUEL HP VALVE/CTL	3KC	333/T69
133VU	ENGINES/ENG 1/FUEL HP VALVE/WARN	1KC	333/T68
132VU	FUEL/CTR TK/L PUMP/CTL	63QA	322/N58
132VU	FUEL/CTR TK/L PUMP/WARN	101QA	323/M58
132VU	FUEL/L INR TK/ISOL VALVE	3QB	324/L55
132VU	FUEL/L OUTR TK/ISOL VALVE	1QB	324/L53
132VU	FUEL/ISOL VALVE/L OUTR TK/& INR TK FLASHER	51QB	324/L54
132VU	FUEL/L OUTR TK/PUMP 1/CTL	67QA	322/N56
132VU	FUEL/L OUTR TK/PUMP 1/WARN	15QA	323/M56
132VU	FUEL/X FEED VALVE/MOTOR 1	2QE	324/L60
132VU	FUEL/X FEED VALVE/MOTOR 2	1QE	324/L61

R (b)Right wing inner and outer tank isolation valves

PANEL	SERVICE	IDENT.	LOCATION
101VU	FUEL/R OUTER TK/PUMP 1 SUPPLY	4QA	GEN 1/A14
101VU	FUEL/CTR TK/R PUMP/SUPPLY	100QA	GEN 2/B14
133VU	ENGINES/ENG 2/FUEL HP VALVE/CTL	4KC	333/T70
133VU	ENGINES/ENG 2/FUEL HP VALVE/WARN	2KC	335/R73
132VU	FUEL/CTR TK/R PUMP/CTL	64QA	323/M59
132VU	FUEL/CTR TK/R PUMP/WARN	102QA	322/N59
132VU	FUEL/R INR TK/ISOL VALVE	4QB	324/L56
132VU	FUEL/R OUTR TK/ISOL VALVE	2QB	324/L58
132VU	FUEL/ISOL VALVE/R OUTR TK/& INR TK FLASHER	52QB	324/L57
132VU	FUEL/R OUTR TK/PUMP 1/CTL	62QA	323/M57
132VU	FUEL/R OUTR TK/PUMP 1/WARN	14QA	322/N57
132VU	FUEL/X FEED VALVE/MOTOR 1	2QE	324/L60
132VU	FUEL/X FEED VALVE/MOTOR 2	1QE	324/L61

R
R (6)On panel 430VU, make sure that:
R 1 The X FEED valve P/BSW is released (out) and the crossline flowbar is on.
R 2 The four wing tank ISOL VALVES P/BSW's are pushed (in) and the in-line flowbars are on.
R (7)On the center pedestal, make sure that the FUEL HP VALVE ENG 1 (HP VALVE ENG 2) is in the OFF position.

R B. Test
R (1)Leak test - Inner and outer tank isolation valves.
R (a)Test - outer tank isolation valve.

ACTION	RESULT
1. On panel 430VU: R - push (in) the L(R) OUTR TK PUMP 1 P/BSW.	On panel 430VU: - the L(R) OUTR TK PUMP 1 P/BSW OFF legend goes off - the pump runs - the engine feed system is pressurized with fuel.
R 2. On the rear spar, between Ribs 11 and 12: R - Check the outer tank isolation valve and all disturbed pipelines for leakage.	- no leaks are permitted.
R 3. On panel 430VU: R - release (out) the L(R) OUTR TK PUMP 1 P/BSW.	On panel 430VU: - the L(R) OUTR TK PUMP 1 P/BSW OFF legend comes on. - the pumps stop.

R (b)Test - inner tank isolation valve.

ACTION	RESULT
1. On panel 430VU: R - push (in) the L(R) CTR TK PUMP P/BSW.	On panel 430VU: - the L(R) CTR TK PUMP P/BSW OFF legend goes off - the pump runs - the engine feed system is pressurized with fuel.
R 2. On the rear spar, between Ribs 2 and 3: R - check the inner tank isolation valve and all disturbed pipelines for leakage.	- no leaks are permitted.
R 3. On panel 430VU: R - release (out) the L(R) CTR TK PUMP P/BSW.	On panel 430VU: - the L(R) CTR TK PUMP P/BSW OFF legend comes on - the pump stops.

R C. Close-Up
R (1)De-energize the aircraft electrical network (Ref. 24-41-00, P. Block 301).
R (2)Make sure that the work area is clean and clear of tools and miscellaneous items of equipment.

R (3)Install the applicable manhole cover (Ref. 28-11-22, P. Block 401).
R (4)Remove the access platform.
R (5)Defuel the aircraft if required (Ref. 28-25-00, P. Block 301).

R ISOLATION VALVE (280028) (280029) (280030) (280031)
R DEACTIVATION/REACTIVATION
R Ref: MMEL Section 1-28, Item 8

CAUTION : THIS PROCEDURE TO BE USED IN ACCORDANCE WITH THE REQUIREMENTS OF THE MMEL.

R WARNING : LANDING GEAR - MAKE SURE THAT THE GROUND SAFETIES AND CHOCKS ARE
R IN POSITION.

R FLIGHT CONTROLS - MAKE SURE THAT THE GROUND SAFETIES AND NOTICES ARE
R IN POSITION.

R YOU MUST OBEY THE SAFETY PRECAUTIONS IN 28-00-00, P. BLOCK 301.

R MAKE SURE THAT THE FIRE FIGHTING EQUIPMENT IS AVAILABLE AND ADEQUATE.

R MAKE SURE THAT YOU ISOLATE THE ELECTRICAL CIRCUITS UPON WHICH WORK

R IS IN PROGRESS.

1. Deactivation

A. Reason for the Job.
R To make sure an isolation (shut-off) valve will open and shut when the
R respective ISOL VALVE flowbar is inoperative.

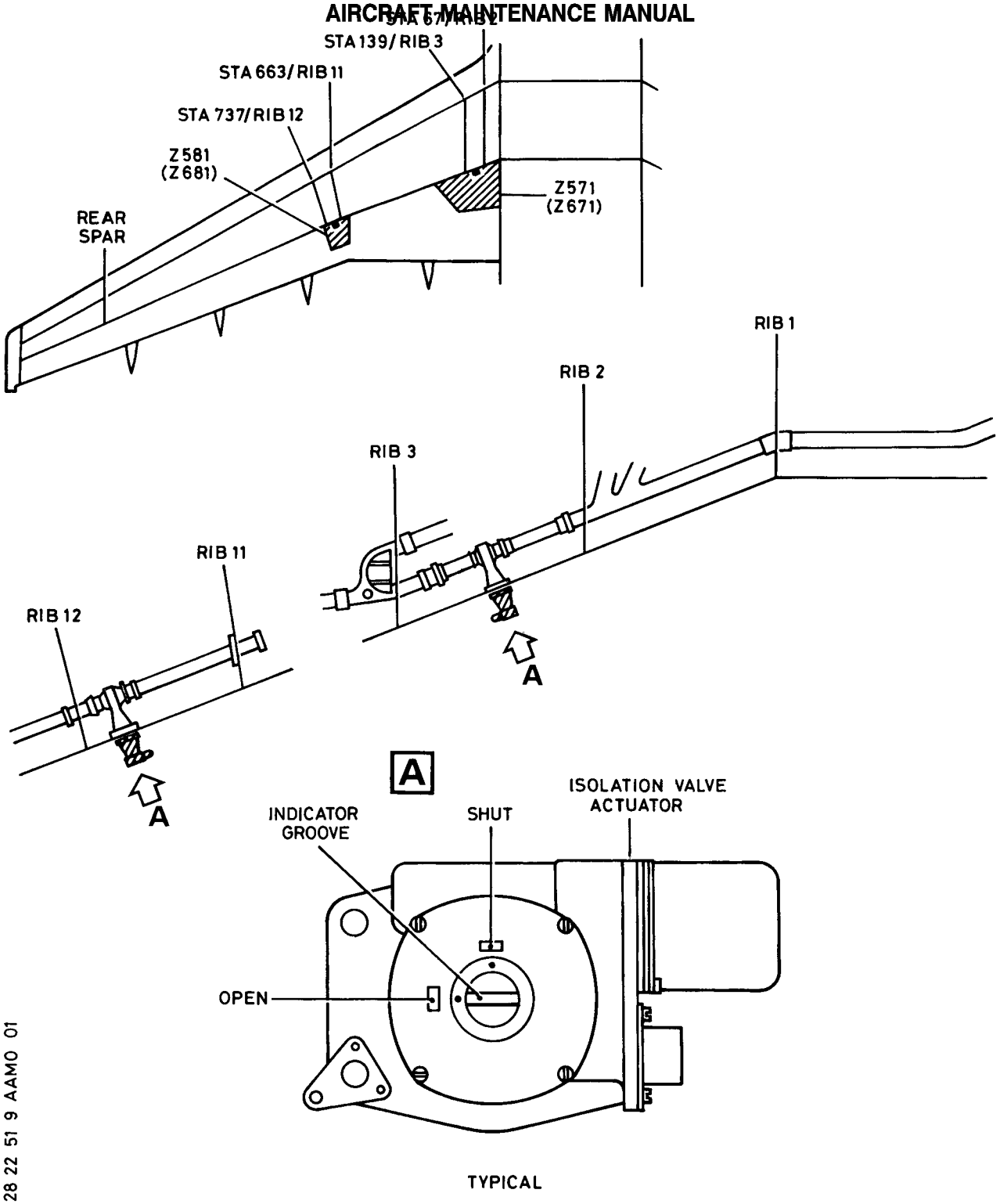
B. Equipment and Materials

ITEM	DESIGNATION
A.	Access Platform 4m (12 ft)
B.	Access Platform 2m (6.5 ft)
Referenced Procedures	
- 24-41-00, P. Block 301	AC External Power Control
- 28-00-00, P. Block 301	Fuel - General
- 32-12-11, P. Block 301	Main Gear Main Door

C. Procedure
(Ref. Fig. 901)
(1)Job Set-Up

CAUTION : ISOLATION VALVES MUST NOT BE SUBJECTED TO INTERMITTENT OPERATION FOR MORE THAN 30 SECONDS. ALLOW MOTORS TO COOL AFTER SEVERAL OPERATIONS.

(a)Outer Tank Isolation Valve
- Position access platform.
- Open access doors 581(681)AB to gain access to the isolation



Isolation Valves - Visual Check
Figure 901

R

valve actuators located at the rear spar, between STA663/RIB11 and STA737/RIB12.
- Energize the aircraft electrical network (Ref. 24-41-00, P. Block 301).

R - Make sure these circuit breakers are closed.

	PANEL	SERVICE	IDENT.	LOCATION
R		- for outer tank isolation valve - left wing		
R	132VU	FUEL/ISOL VALVE/L OUTR TK/SUPPLY	1QB	324/L53
R	132VU	FUEL/ISOL VALVE/L OUTR & INR TK FLASHER	51QB	324/L54
R		- for outer tank isolation valve - right wing		
R	132VU	FUEL/ISOL VALVE/R OUTR TK/SUPPLY	2QB	324/L58
R	132VU	FUEL/ISOL VALVE/R OUTR & INR TK FLASHER	52QB	324/L57

(b)Inner Tank Isolation Valve
- Open the main landing gear bay doors (Ref. 32-12-11, P. Block 301).
- Position access platform to gain access to the isolation valve actuators located at the rear spar between STA67/RIB 2 and STA139/RIB 3.
- Energize the aircraft electrical network (Ref. 24-41-00, P. Block 301).
- Make sure these circuit breakers are closed:

	PANEL	SERVICE	IDENT.	LOCATION
R		- for inner tank isolation valve - left wing		
R	132VU	FUEL/ISOL VALVE/L INR TK/SUPPLY	3QB	324/L55
R	132VU	FUEL/ISOL VALVE/L OUTR & INR TK FLASHER	51QB	324/L54
R		- for inner tank isolation valve - right wing		
R	132VU	FUEL/ISOL VALVE/R INR TK/SUPPLY	4QB	324/L56
R	132VU	FUEL/ISOL VALVE/R OUTR & INR TK FLASHER	52QB	324/L57

(2)Test
(a)Outer Tank Isolation Valves

ACTION	RESULT
1. On panel 430VU: - raise switch guards - press (in) appropriate OUTER TK ISOL VALVE pushbutton switch	At rear spar between RIB 11 and 12 - isolation valve spherical plug rotates and stops in OPEN position
2. At rear spar between RIB 11 and 12 - make sure OUTER TK ISOL VALVE visual position indicator shows OPEN - raise switch guards - release (out) appropriate OUTER TK ISOL VALVE pushbutton switch	 - isolation valves spherical plug rotates and stops

ACTION	RESULT
	in SHUT position
3. At rear spar between RIB 11 and 12 R - make sure OUTER TK ISOL VALVE visual position indicator shows SHUT - raise switch guards - press (in) appropriate OUTER TK ISOL VALVE pushbutton switch	- isolation valves spherical plug rotates and stops in OPEN position
4. At rear spar between RIB 11 and 12 R - make sure OUTER TK ISOL VALVE visual position indicator shows OPEN	

(b)Inner Tank Isolation Valves

ACTION	RESULT
1. On panels 430VU: - raise switch guards R - push (in) the appropriate R INNER TK ISOL VALVE pushbutton R switch.	At rear Spar between RIBS 2 and 3: - the isolation valves spherical plug rotates and stops in the OPEN position
2. At rear spar between RIBS 2 and 3 R - make sure INNER TK ISOL VALVE visual position indicator shows OPEN - raise switch guards - release (out) appropriate INNER TK ISOL VALVE pushbutton switch	- isolation valves spherical plug rotates and stops in SHUT position
3. At rear spar between RIBS 2 and 3 R - make sure INNER TK ISOL VALVE visual position indicator shows SHUT - raise switch guards - press (in) appropriate INNER TK R ISOL VALVE pushbutton switch R	- isolation valves spherical plug rotates and stops in OPEN position
4. At rear spar between RIBS 2 and 3 - check INNER TK ISOL VALVE visual position indicator shows OPEN	

(3)Close-Up

R (a)De-energize the aircraft electrical network (Ref. 24-41-00,

P. Block 301).
(b)Install access doors 581(681)AB for outer tanks.
(c)Remove access platform.
(d)Close the main landing gear doors (Ref. 32-12-11, P. Block 301) (Inner tanks).
(e)De-energize the aircraft electrical network and disconnect electrical ground power (Ref. 24-41-00, P. Block 301).
(f)Install a temporary notice in flight compartment to warn flight crew that isolation valve flowbar indication is inoperative.

2. Reactivation

A. Make wing isolation valve flowbars operational as follows:
(1)Troubleshoot to identify cause of flowbar malfunction (Ref. TSM 28-22-00) and rectify.
(2)Remove the warning notice from the flight compartment.
(3)Make an appropriate entry in the aircraft technical log.

ISOLATION VALVE ACTUATOR - REMOVAL/INSTALLATION

WARNING : LANDING GEAR - MAKE CERTAIN GROUND SAFETIES AND CHOCKS ARE IN POSITION.

FLIGHT CONTROLS - MAKE CERTAIN GROUND SAFETIES AND NOTICES ARE IN POSITION.

OBSERVE THE SAFETY PRECAUTIONS IN 28-00-00, P. BLOCK 301.

MAKE CERTAIN THAT FIRE FIGHTING EQUIPMENT IS AVAILABLE AND ADEQUATE.

BEFORE PRESSURIZING FUEL SYSTEMS, MAKE CERTAIN THAT FUEL SYSTEM UNDER MAINTENANCE HAS BEEN ISOLATED.

BEFORE POWER IS SUPPLIED TO THE AIRCRAFT, MAKE CERTAIN THAT ELECTRICAL CIRCUITS UPON WHICH WORK IS IN PROGRESS ARE ISOLATED.

1. Equipment and Materials

ITEM	DESIGNATION
R A.	Access Platform 3 m (10 ft)
B.	Circuit Breaker Safety Clips and Tags
Referenced Procedures	
- 20-28-11, P. Block 1	Electrical Bonding
- 28-00-00, P. Block 301	Fuel - General
- 28-22-00, P. Block 501	Tank Isolation System
- 32-12-11, P. Block 301	Main Gear Main Door

2. Procedure

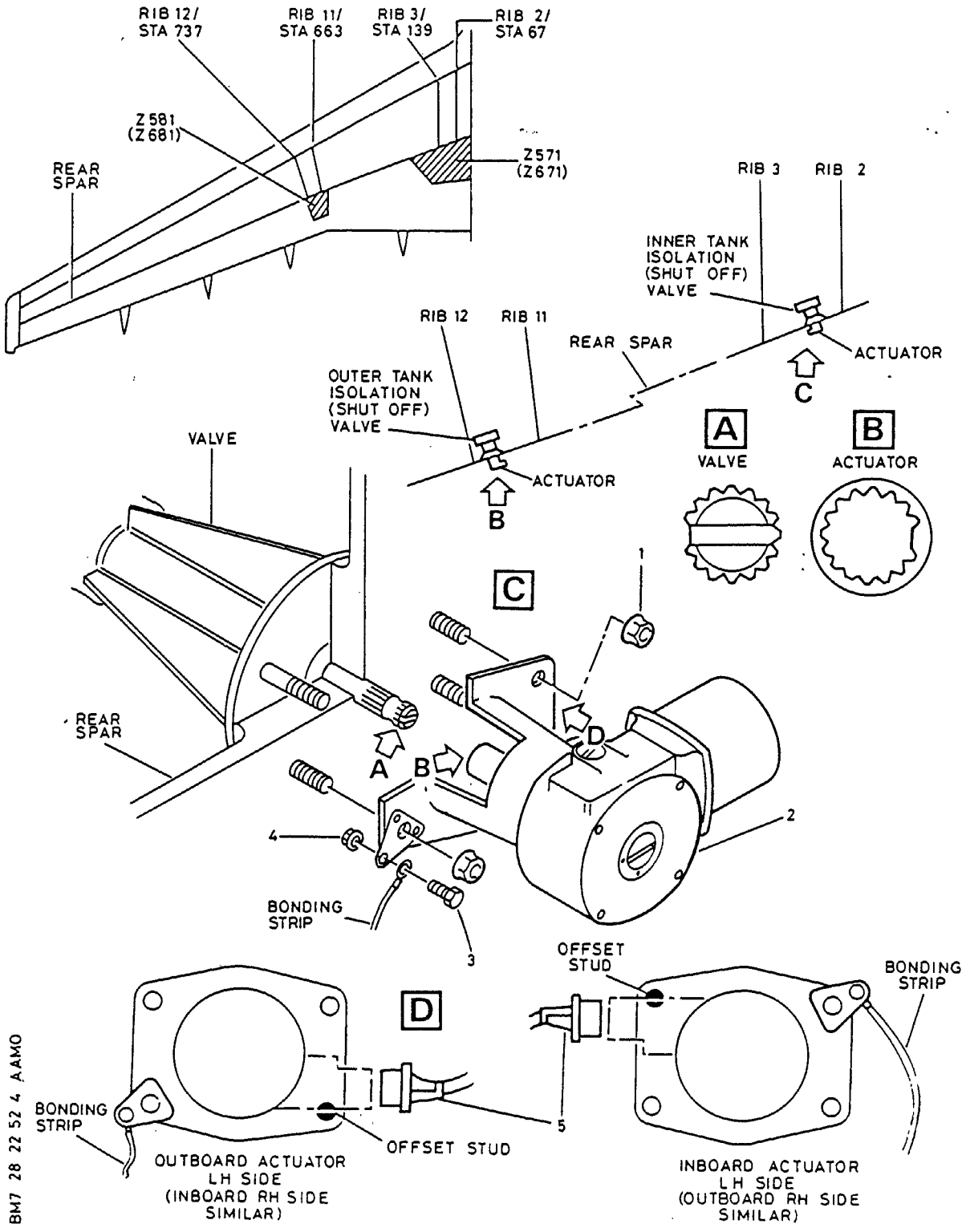
(Ref. Fig. 401)

A. Job Set-Up

(1)Position access platform.

(2)Open, safety and tag the following circuit breakers:

PANEL	SERVICE	IDENT.	LOCATION
	- For left outer tank isolation valve		
132VU	FUEL/ISOL VALVE/L OUTR/TK SUPPLY	1QB	324/L53
	- For right outer tank isolation valve		
132VU	FUEL/ISOL VALVE/R OUTR/TK SUPPLY	2QB	324/L58
	- For left inner tank isolation valve		
132VU	FUEL/ISOL VALVE/L/INR TK/SUPPLY	3QB	324/L55
	- For right inner tank isolation valve		
132VU	FUEL/ISOL VALVE/R/INR/INR TK/SUPPLY	4QB	324/L56



Isolation Valve Actuator - Wing Tanks
Figure 401

R (3)To get access to the outer-tank isolation-valve actuator, remove the access door 581(681)AB.
R
R
R (4)Get access to the inner-tank isolation-valve actuator through the main
R landing gear bay (Ref. 32-12-11, P. Block 301).

B. Removal
R (1)Disconnect and install a cap to the electrical connector (5).
R (2)Remove the nut (4) and the screw (3) and disconnect the bonding lead
R from the actuator (2).
R (3)Remove the nuts (1) and remove the actuator (2).

C. Installation
(1)Note position of offset stud, then check that splines on valve spindle are correctly aligned to engage actuator shaft.

NOTE : The diametrical groove on the end of the valve spindle indicates the position of the valve spherical plug.

(2)Install actuator (2) and secure with four nuts (1).
(3)Connect bonding lead to actuator (2) with screw (3) and nut (4) (Ref. 20-28-11, P. Block 1).
(4)Remove caps from electrical connector and check for correct condition. Connect electrical connector (5).

D. Test
(1)Remove safety clips and tags and close the following circuit breakers:
- For left outer tank isolation valve, 1QB
- For right outer tank isolation valve, 2QB
- For left inner tank isolation valve, 3QB
- For right inner tank isolation valve, 4QB

(2)Perform an Operational Test on the relevant isolation valve (Ref. 28-22-00, P. Block 501).

E. Close-Up
(1)Make certain that working area is clean and clear of tools and miscellaneous items of equipment.
(2)Close access door.
(3)Remove access platform.

R TRIM TANK ISOLATION VALVE (280507) - REMOVAL/INSTALLATION

R WARNING : LANDING GEAR - MAKE SURE THAT THE GROUND SAFETIES AND CHOCKS ARE IN
R POSITION.

R FLIGHT CONTROLS - MAKE SURE THAT THE GROUND SAFETIES AND NOTICES ARE
R IN POSITION.

R OBSERVE THE SAFETY PRECAUTIONS IN 28-00-00, P. BLOCK 301 AND 28-10-00,
P. BLOCK 301.

R MAKE SURE THAT FIRE FIGHTING EQUIPMENT IS AVAILABLE AND ADEQUATE.

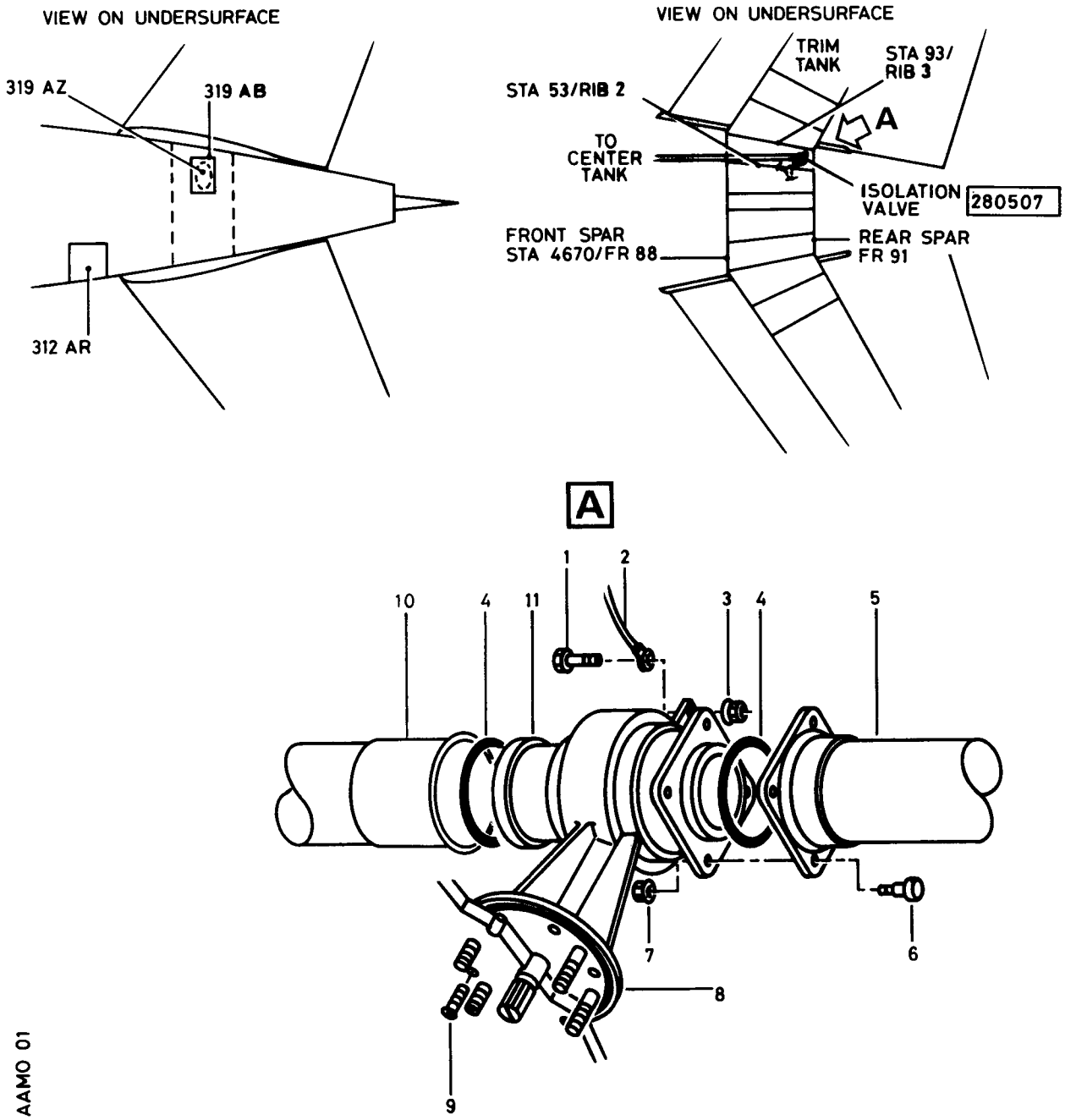
R BEFORE POWER IS SUPPLIED TO THE AIRCRAFT, MAKE SURE THAT THE
ELECTRICAL CIRCUITS UPON WHICH WORK IS IN PROGRESS ARE ISOLATED.

1. Equipment and Materials

ITEM	DESIGNATION
A.	Spark-proof Lamp
B.	Container
C.	O-rings
D.	Blanking Caps/Plugs
E. Material No. 01-001	Fuels (Ref. 20-31-00)
Referenced Procedures	
- 20-28-11, P. Block 1	Electrical Bonding
- 28-00-00, P. Block 301	Fuel - General
- 28-10-00, P. Block 301	Storage
- 28-11-33, P. Block 401	Manhole Cover - Trim Tank
- 28-13-00, P. Block 501	External Ventilating System
- 28-22-55, P. Block 401	Actuator - Isolation Valve, Trim Tank
- 28-22-56, P. Block 401	Offset Drive Unit - Isolation Valve, Trim Tank
- 28-25-00, P. Block 301	Refuel/Defuel System
- 28-22-00, P. Block 501	Tank Isolation System

2. Procedure
(Ref. Fig. 401)

A. Job Set-Up
(1)Defuel the trim tank or transfer fuel from the trim tank into the center tank (Ref. 28-25-00, P. Block 301).
(2)Remove the trim tank isolation valve actuator (Ref. 28-22-55, P. Block 401).
(3)Remove the trim tank isolation valve offset drive unit (Ref. 28-22-56, P. Block 401).
(4)Remove the manhole cover 319AZ (Ref. 28-11-33, P. Block 401).



Isolation Valve (280507)
Figure 401

R

B. Removal
(1)Remove the nut (3) and the bolt (1) and disconnect the bonding strap (2).
(2)Remove the nuts (7) and the bolts (6).
(3)Place the container below the fuel line couplings. Disconnect and remove the pipe assembly (10) from the valve (11). Disconnect the elbow assembly (5) from the valve (11). Recover and remove the residual fuel.
(4)Discard the O-rings (4) at the disconnected pipe assembly and the elbow assembly.
(5)Remove the screws (9) and withdraw the valve (11). Discard the O-ring (8).
(6)Clean and inspect the component interface and the line end-fittings. Cap the open line ends and the valve orifices.

C. Preparation for Installation
(1)Make sure that the interface of the trim tank and the valve is clean and in the correct condition.

D. Installation
(1)Remove the caps from the line ends and the valve orifices.
(2)Wet the O-ring (8) with fuel (Material No. 01-001) and install in the groove on the mounting flange of the valve (11).
(3)Install the valve (11) and secure with the screws (9).
(4)Wet the O-rings (4) with fuel (Material No. 01-001) and install on the elbow (5) and the pipe assembly (10).
(5)Secure the elbow assembly flange (5) to the valve (11) with the bolts (6) and the nuts (7).
(6)Locate the pipe assembly (10) onto the valve (11).
(7)Connect the bonding strap (2) using the bolt (1) and the nut (3) (Ref. 20-28-11, P. Block 1).
(8)Install the trim tank isolation valve offset drive unit (Ref. 28-22-56, P. Block 401).
(9)Install the trim tank isolation valve actuator (Ref. 28-22-55, P. Block 401).

E. Test
R (1)Do an operational test of the trim tank isolation valve (Ref. 28-22-00,
R P. Block 501). During the transfer of fuel, make a check of the isolation valve and all the disturbed pipelines for leakage.
(2)Do a leak test of the trim tank isolation valve O-ring seals (Ref. 28-13-00, P. Block 501).

F. Close-Up
(1)Install the manhole cover 319AZ (Ref. 28-11-33, P. Block 401).

ISOLATION VALVE (280507) - TRIM TANK - DEACTIVATION/REACTIVATION

Ref: MMEL Sect. 1-28, Item 37

CAUTION : THIS PROCEDURE TO BE USED IN ACCORDANCE WITH THE REQUIREMENTS OF THE MMEL.

R WARNING : LANDING GEAR - MAKE SURE THAT THE GROUND SAFETIES AND CHOCKS ARE IN POSITION.

R FLIGHT CONTROLS - MAKE SURE THAT THE GROUND SAFETIES AND NOTICES ARE
R IN POSITION.

R YOU MUST OBEY THE SAFETY PRECAUTIONS IN 28-00-00, P. BLOCK 301 AND
R 28-10-00, P. BLOCK 301.

R MAKE SURE THAT THE FIRE FIGHTING EQUIPMENT IS AVAILABLE AND ADEQUATE.

R MAKE SURE THAT YOU ISOLATE THE ELECTRICAL CIRCUITS UPON WHICH WORK
R IS IN PROGRESS.

1. Deactivation

A. Reason for the Job

R (1)To make sure that the inoperative isolation valve is in the shut
R position.

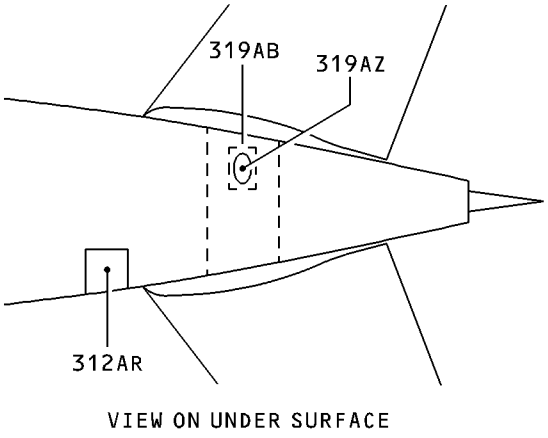
B. Equipment and Materials

ITEM	DESIGNATION
	Access Platform 8 m (26 ft)
A.	Warning Notice Informing Crew that Isolation Valve is Locked SHUT Mechanically
B. D97B00-001	Actuator - Mechanical
C.	Lockwire, Corrosion Resistant Steel 0.8 mm (0.032 in.)
D.	Blanking caps
Referenced Procedures	
- 20-28-11, P. Block 1	Electrical Bonding
- 28-00-00, P. Block 301	Fuel - General
- 28-10-00, P. Block 301	Storage
- 28-22-54, P. Block 401	Isolation Valve - Trim Tank
- 28-22-55, P. Block 401	Isolation Valve Actuator - Trim Tank
- 28-22-56, P. Block 401	Offset Drive Unit - Isolation Valve, Trim Tank
R - 28-25-00, P. Block 301	Refuel/Defuel System
- 55-00-00, P. Block 301	Stabilizers - General

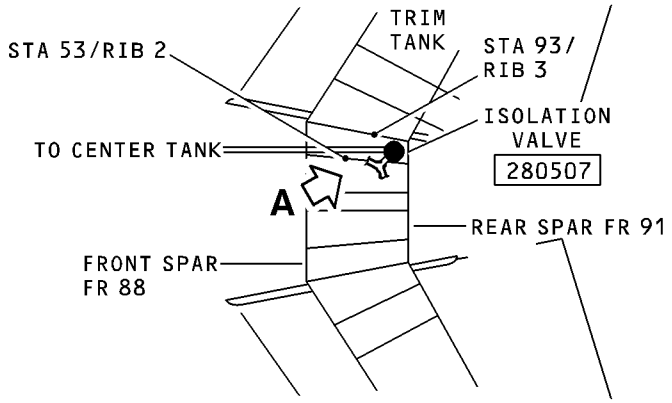
C. Procedure

(Ref. Fig. 901)

(1)Position the access platform.



VIEW ON UNDER SURFACE



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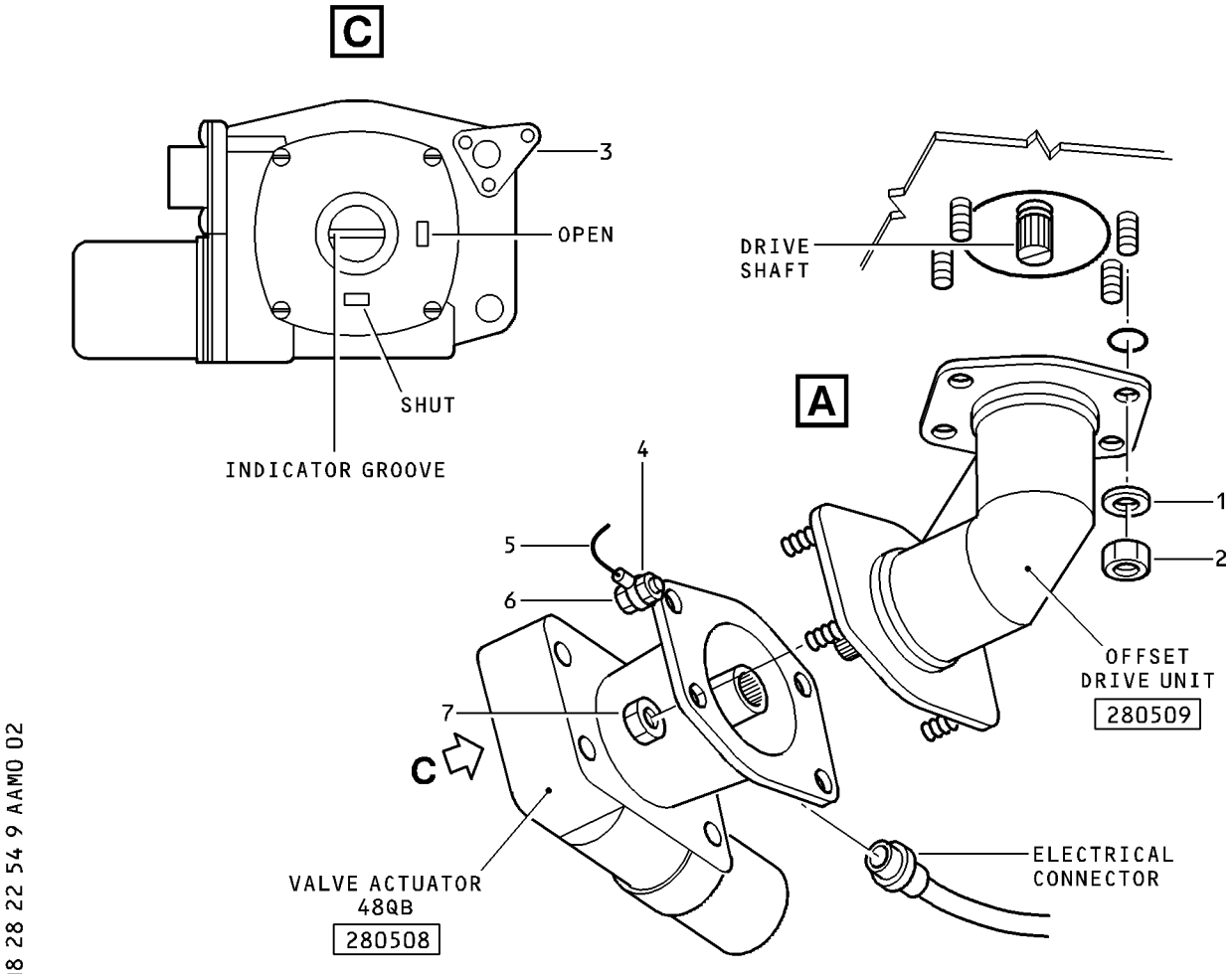

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Isolation Valve (280507) - Deactivation
Figure 901

R

(2)Open the access door 312AR.

CAUTION : BEFORE YOU SHUT THE ISOLATION VALVE, MAKE SURE THAT THE TRIM TANK IS EMPTY OR THAT FUEL IN THE TRIM TANK IS LIMITED TO 1996 kg (4400 lb).

(3)If necessary, defuel or transfer the fuel from the trim tank (Ref. 28-25-00, P. Block 301).

R (4)Remove the components that follow and stow them securely on the
R aircraft:
R (a)Remove the trim tank isolation valve actuator (Ref. 28-22-55,
R P. Block 401). Stow the electrical connector securely.
R (b)Remove the offset drive unit (Ref. 28-22-56, P. Block 401).
R (5)Make sure that the isolation valve is fully shut. If necessary,
R manually rotate the shaft of the isolation valve to the fully shut
R position. If the isolation valve is jammed in the open position or will
R not shut fully, the isolation valve must be replaced (Ref. 28-22-54,
R P. Block 401).

CAUTION : WHEN YOU DO THE OPERATIONS THAT FOLLOW, TAKE CARE NOT TO ROTATE THE VALVE SHAFT OR DAMAGE THE SHAFT SPLINES.

R
R
R (6)Install the mechanical actuator PN. D97B00-001 onto the isolation valve
R using the washers (1) and nuts (2). Make sure that the isolation valve
R is still in the shut position. Make sure that the control lever on the
R actuator is as close as possible to the raised stop.
R (7)Safety the control lever (on the mechanical actuator) with lockwire.
R (8)Secure the bonding strap (5) onto the bonding tag on the mechanical
R actuator with the bolt (6) and the nut (4) (Ref. 20-28-11,
R P. Block 1).

D. Close-Up

(1)Make sure that the work area is clean and clear of tools and other equipment.
(2)Put the trimmable horizontal stabilizer and the vertical stabilizer in the correct condition for operation (Ref. 55-00-00, P. Block 301).
(3)Close the access door 312AR.
(4)Remove the access platform.
R (5)Stow the isolation valve actuator and the offset drive unit on the
R aircraft.

R NOTE : These components must stay with the aircraft to be available for
R the reactivation procedure.

R (6)Put a temporary warning placard in the flight compartment to tell the flight crew that the trim tank isolation valve is locked in the closed position.
R (7)Make sure these circuit breakers are open, safetied and tagged:

PANEL	SERVICE	IDENT.	LOCATION
132VU	FUEL/TRIM TANK/ISOL VALVE	45QB	325/K52

R (8)Make an entry in the aircraft technical log.

2. Reactivation

R A. Reactivation of the trim tank isolation valve.
R (1)Remove the bonding strap (5) from the bonding tag on the mechanical
R actuator PN. D97B00-001.
R (2)Remove the nuts (2), the washers (1) and remove the mechanical actuator
R from the isolation valve.
R (3)Install the offset drive unit (Ref. 28-22-56, P. Block 401).
R (4)Install the isolation valve actuator (Ref. 28-22-55, P. Block 401).

R B. Put the isolation valve in a serviceable condition.
(1)Do the troubleshooting procedure to identify the cause of the isolation
R valve malfunction and if necessary, replace the defective component(s):
(a)If the valve is defective, replace the valve (Ref. 28-22-54,
P. Block 401).
(b)If the actuator is defective, replace the actuator (Ref. 28-22-55,
P. Block 401).
(c)If the offset drive unit is defective, replace the offset drive unit
(Ref. 28-22-56, P. Block 401).

R C. Close-Up
R (1)Remove the warning placard from the flight compartment.
R (2)Make an entry in the aircraft technical log.

WARNING : LANDING GEAR - MAKE CERTAIN GROUND SAFETIES AND CHOCKS ARE IN POSITION.

FLIGHT CONTROLS - MAKE CERTAIN GROUND SAFETIES AND NOTICES ARE IN POSITION.

OBSERVE SAFETY PRECAUTIONS IN 28-00-00, P. BLOCK 301 AND 28-10-00, P. BLOCK 301.

MAKE CERTAIN FIRE FIGHTING EQUIPMENT IS AVAILABLE AND ADEQUATE.

BEFORE POWER IS SUPPLIED TO THE AIRCRAFT - MAKE CERTAIN THAT ELECTRICAL CIRCUITS UPON WHICH WORK IS IN PROGRESS ARE ISOLATED.

1. Equipment and Materials

ITEM	DESIGNATION
A.	Access Platform 8 m (26 ft)
B.	Warning Notices Prohibiting Movement of Fuel
C.	Spark-proof Lamp
D.	Blanking Caps/Plugs
E.	Circuit Breaker Safety Clip and Tag
Referenced Procedures	
- 20-28-11, P. Block 1	Electrical Bonding
- 24-41-00, P. Block 301	AC External Power Control
- 28-00-00, P. Block 301	Fuel - General
- 55-00-00, P. Block 301	Stabilizers - General

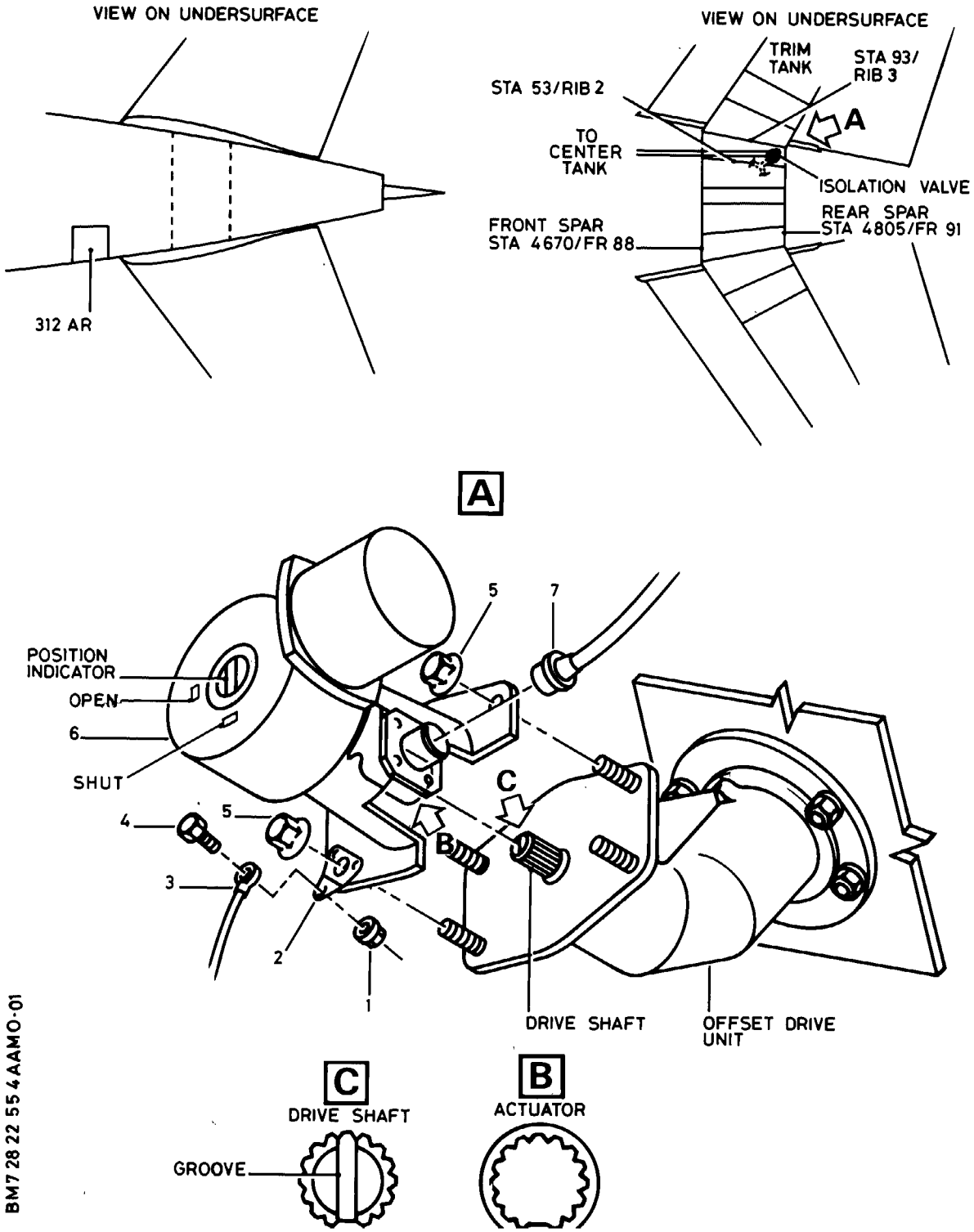
2. Procedure

(Ref. Fig. 401)

A. Job Set-Up
(1)Open access door 144DR.
(a)Display the warning notice on the refuel panel 110VU.
(2)Close access door 144DR.

NOTE: The trim tank isolation valve shuts automatically as soon as the refuel panel access door 144DR is closed.

(3)Display the warning notice on the overhead panel 430VU.
(4)Open, safety and tag the following circuit breaker:



Isolation Valve Actuator - Installation
Figure 401

PANEL	SERVICE	IDENT.	LOCATION
132VU	FUEL/TRIM TANK/ISOL VALVE	45QB	325/K52

(5)Position the access platform.
(6)Open access door 312AR.
(7)Make the trimmable horizontal stabilizer (THS) and the vertical stabilizer safe (Ref. 55-00-00, P. Block 301).

B. Removal
(1)Gain access to the trim tank isolation valve actuator and disconnect the electrical connector (7) from the actuator (6). Cap the electrical connectors.
(2)Remove the nut (1) and the bolt (4) and disconnect the bonding strap (3) from the tag (2).
(3)Remove the nuts (5) and remove the actuator (6) from the offset drive unit.

C. Preparation for Installation
(1)Make sure that the interface of the offset drive unit and the actuator (6) is clean and in the correct condition.

D. Installation

CAUTION: DURING THE FOLLOWING OPERATIONS TAKE CARE NOT TO DAMAGE THE SHAFT SPLINES.

(1)Check the position of the drive shaft on the offset drive unit. Make sure that the groove in the end of the shaft is positioned vertically. If necessary, turn the shaft until the groove is in the vertical position (the valve shut, against the stop).
(2)Make sure that the position indicator on the actuator (6) indicates shut.
(3)Install the actuator (6) onto the attachment studs of the offset drive unit and engage the drive shaft in the actuator housing.
(4)Install and tighten the nuts (5).
(5)Connect the bonding strap (3) to the tag (2) using the bolt (4) and the nut (1), (Ref. 20-28-11, P. Block 1).
(6)Remove the protective caps and connect the electrical connector (7) to the actuator (6).

E. Preparation for Test
(1)Energize the aircraft electrical network (Ref. 24-41-00, P. Block 301).
R (2)Make sure that the circuit breakers that follow, are closed.

PANEL	SERVICE	IDENT.	LOCATION
22VU	FUEL/TRIM TANK/FWD XFR AUX VALVE	2QL	201/J21
132VU	FUEL/TRIM TANK CGCC	6GU	325/K51
132VU	FUEL/TRIM TK/FWD XFR MAIN VALVE	1QL	325/K53

R (3) On panel 430VU, make sure that:
R (a) Both the TRIM TK PUMP p/bsw's are released (out) and both the OFF legends are on.
R (b) The TRIM TK ISOL VALVE p/bsw is released (out) and:
1 The OFF legend is on.
2 The green flowbar is off.
R (4) On panel 132VU, remove the safety clip and tag and close the circuit breaker 45QB.
R (5) Open the access door 144DR.

NOTE : Do not close the access door or operate the access door microswitch until the isolation valve test is completed (Ref. Para F.).

(a) Remove the warning notice from the refuel/defuel panel 110VU.
R (6) Remove the warning notice from the overhead panel 430VU.

F. Test

ACTION	RESULT
1. On panel 430VU: - raise the guard and press (in) the TRIM TK ISOL VALVE pushbutton switch	On panel 430VU: - the TRIM TK ISOL VALVE pushbutton switch OFF legend goes off - the flowbar flashes while the valve is in transit to the OPEN position - when the valve is fully open the flowbar comes on steady On the valve actuator: - the indicator groove shows OPEN (horizontal)
2. On panel 430VU: - release (out) the TRIM TK ISOL VALVE pushbutton switch and lower the guard	On panel 430VU: - the TRIM TK ISOL VALVE pushbutton switch OFF legend comes on

ACTION	RESULT
	- the flowbar flashes while the valve is in transit to the SHUT position - when the valve is fully SHUT the flowbar goes off On the valve actuator: - the indicator groove shows SHUT (vertical)

G. Close-Up
(1)Close access door 144DR.

NOTE: The trim tank isolation valve shuts automatically as soon as the refuel panel access door 144DR is closed.

(2)De-energize the aircraft electrical network (Ref. 24-41-00, P. Block 301).
(3)Make sure that the working area is clean and clear of tools and miscellaneous items of equipment.
(4)Return the trimmable horizontal stabilizer (THS) and the vertical stabilizer to the normal operating condition (Ref. 55-00-00, P. Block 301).
(5)Close access door 312AR.
(6)Remove the access platform.

R TRIM TANK ISOLATION VALVE OFFSET DRIVE UNIT (280509)
R REMOVAL/INSTALLATION

R WARNING : LANDING GEAR - MAKE SURE THAT THE GROUND SAFETIES AND CHOCKS ARE
R IN POSITION.

R FLIGHT CONTROLS - MAKE SURE THAT THE GROUND SAFETIES AND NOTICES
R ARE IN POSITION.

R OBEY THE SAFETY PRECAUTIONS IN 28-00-00, P. BLOCK 301 AND 28-10-00,
R P. BLOCK 301.

R MAKE SURE THAT THE FIRE FIGHTING EQUIPMENT IS AVAILABLE AND
R SUFFICIENT.

R MAKE SURE THAT ALL THE CIRCUITS IN MAINTENANCE ARE ISOLATED BEFORE
R YOU SUPPLY ELECTRICAL POWER TO THE AIRCRAFT.

1. Equipment and Materials

ITEM	DESIGNATION
R A.	'O' Rings
R B. Material No. 01-001	Fuels (Ref. 20-31-00)
Referenced Procedures	
- 28-00-00, P. Block 301	Fuel - General
- 28-10-00, P. Block 301	Storage
- 28-22-55, P. Block 401	Actuator - Trim Tank Isolation Valve

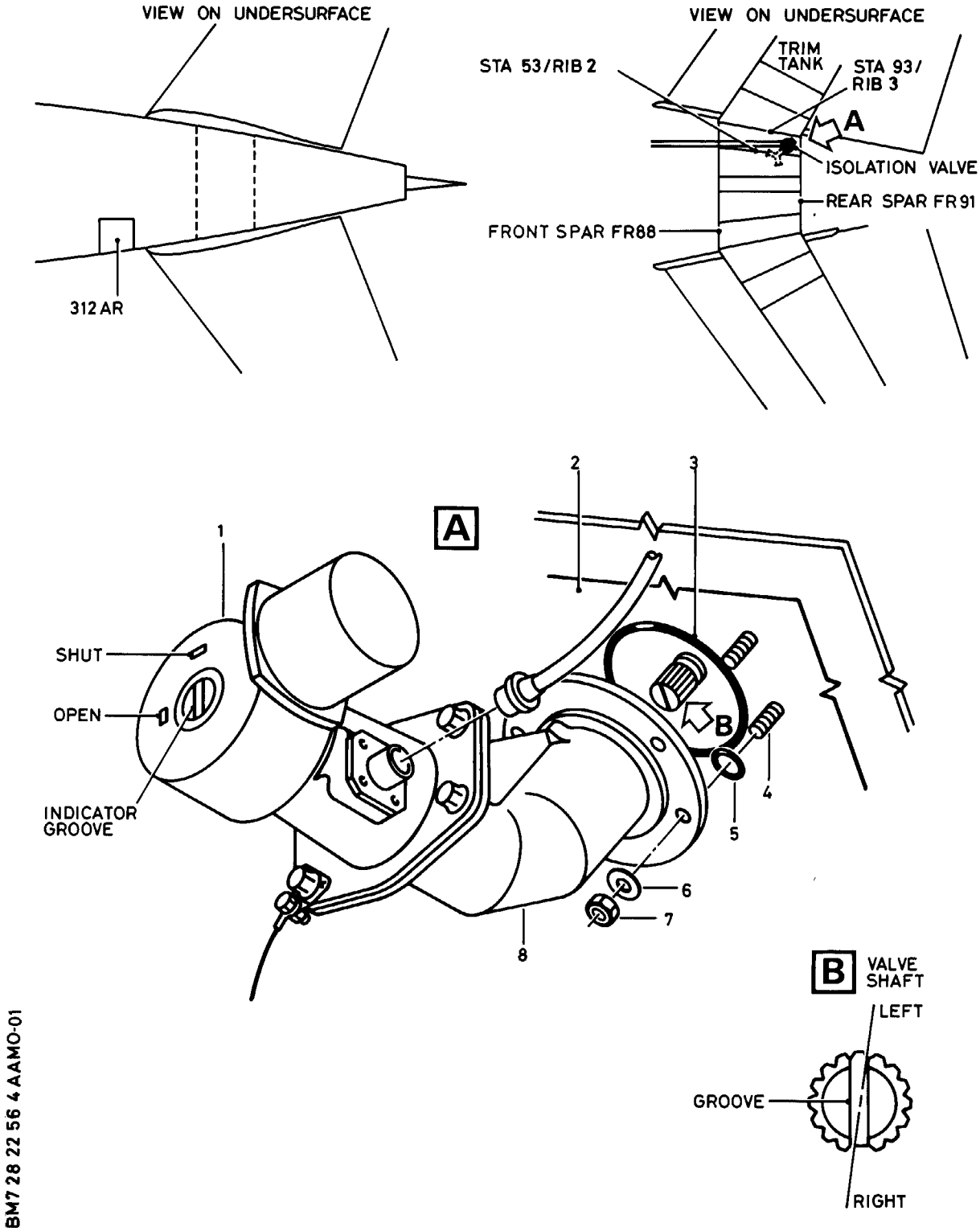
2. Procedure
(Ref. Fig. 401)

A. Job Set-Up
R (1)Remove the trim-tank isolation-valve actuator (1) (Ref. 28-22-55, P. Block 401).

B. Removal
R (1)Remove the nuts (7) and the washers (6) and remove the offset drive unit (8) from the attachment-studs (4).
R (2)Remove the O-ring (3) from the groove in the flange of the offset drive unit (8). Discard the O-ring (3).
R (3)Remove the O-rings (5) from the attachment studs (4). Discard the O-rings (5).

R NOTE : The vapor seal dish (2) will remain in position, attached by other components and pipework.

C. Preparation for Installation



Offset Drive Unit - Installation
Figure 401

R (1)Make sure that the interface of the offset drive unit (8) and the vapor
R seal dish (2) is clean and in the correct condition.

D. Installation (Ref. Fig. 401)

R (1)If necessary, turn the isolation valve shaft counter-clockwise or
R clockwise to put the end groove in the right/left position across the
R aircraft.

R NOTE : The isolation valve will now be in the shut position.

R (2)Lubricate the new O-ring (3) with fuel (Material No. 01-001) and install
R it in the groove on the flange of the offset-drive unit (8).
R (3)Lubricate the new O-rings (5) with fuel (Material No. 01-001) and install
R on the attachment studs (4).

R **CAUTION : DURING THE OPERATIONS THAT FOLLOW TAKE CARE NOT TO DAMAGE THE**
R **DRIVE SHAFT SPLINES.**

R (4)Align the offset drive unit (8) with the master spline on the isolation
R valve shaft and install the offset drive unit (8) onto the attachment
R studs (4).
R (5)Install the washers (6) and the nuts (7).
R (6)Install the trim-tank isolation-valve actuator (1) (Ref. 28-22-55,
P. Block 401).

G. Close-Up

R (1)Make sure that the work area is clean and clear of tools and
miscellaneous items of equipment.

CROSSFEED SYSTEM - DESCRIPTION AND OPERATION

1. General

(Ref. Fig. 001)

The crossfeed system comprises of a line which connects the left and right engine feed lines in the inner tanks. The line passes through the center tank and incorporates a crossfeed valve. The valve, installed in the center tank on the rear spar, is driven by a double motor actuator. In normal flight the valve is closed.

During emergency conditions, with the integrated drive generator failed, the standby generator comes on-line to supply only the minimum essential load. The crossfeed valve automatically motors to the OPEN position and allows fuel feed to meet engine requirements. The system is used to rectify lateral fuel imbalance and to feed fuel from the left or right supply systems to the opposite engine in the event of failure.

2. Component Location

R (Ref. Fig. 002)

R	FIN	FUNCTIONAL DESIGNATION	PANEL	ZONE	ACCESS DOOR	ATA REF.
R	280040	VALVE - CROSSFEED FUEL		141	147AZ	28-23-11
R	1QE	C/B - FUEL/X FEED VALVE/MOTOR 2	132VU	212	324/L61	
R	2QE	C/B - FUEL/X FEED VALVE/MOTOR 1	132VU	212	324/L60	
R	3QE	C/B - FUEL/X FEED VALVE/POS/ANN	132VU	212	324/L59	
	4QE	P/B SW - FUEL, X FEED	430VU	210		
	7QE	ACTR - CROSSFEED VALVE FUEL		147	734	28-23-12

(Ref. Fig. 003)

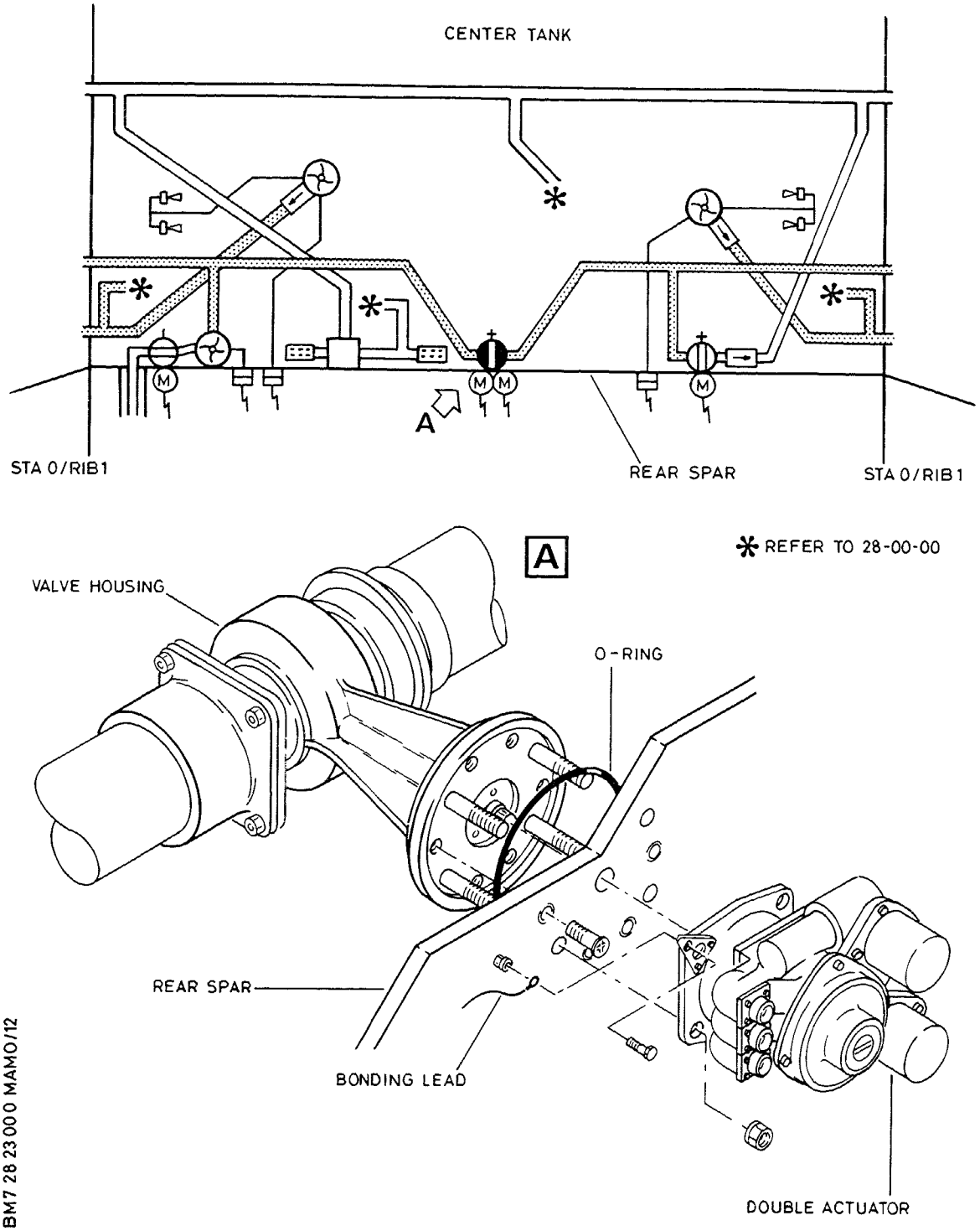
3. Description

A. Crossfeed Valve

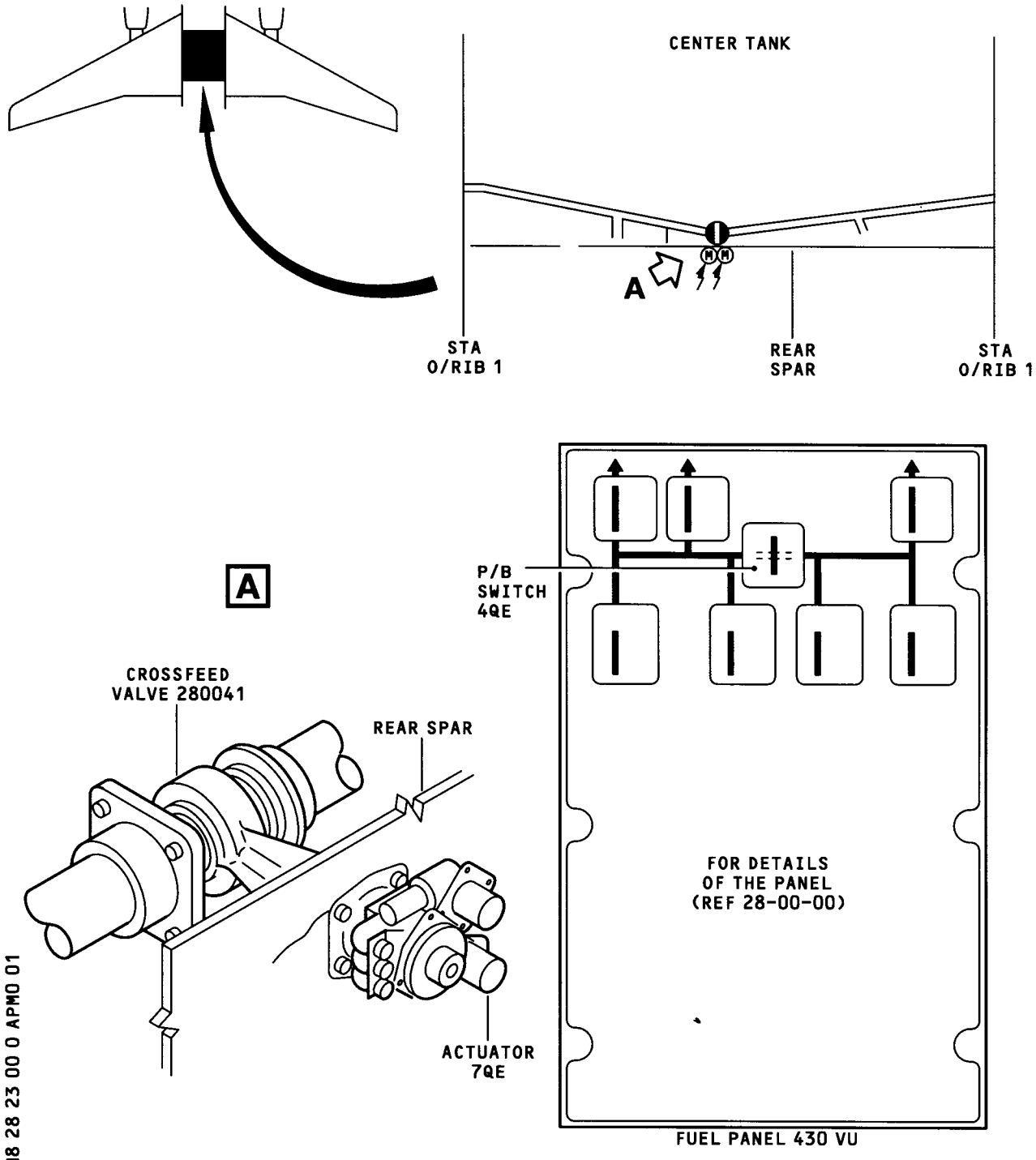
The valve, which is flange-mounted in the center tank on the rear spar, is an electrically-actuated spherical-plug type and comprises a body, with line attachments, spherical plug and control spindle. The control spindle protrudes through the rear spar and the electrical actuator is mounted outside the tank.

The mounting of the valve and actuator is such that reactive loads are not transmitted to the fuel lines.

The actuator comprises two electric motors driving a common gear box to provide 90 deg. spherical plug travel. Microswitches stop the motors at the end of travel and complete the position indication circuits. The electric motors drive the epicyclic reduction gear which allows either motor to drive the valve when the other is not electrically powered or is mechanically incapable of rotating. Final drive is through a locking mechanism (autoloc)

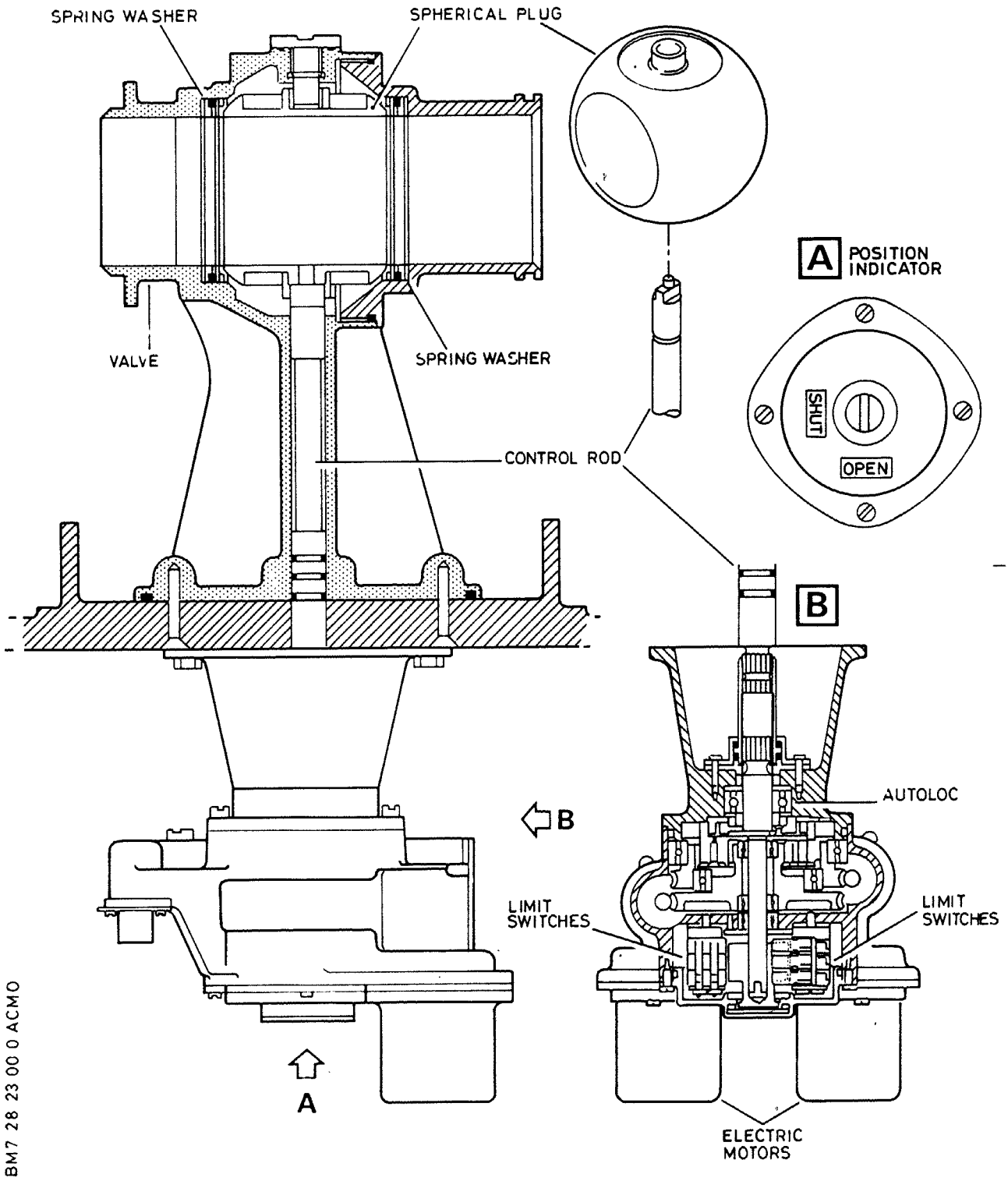


Crossfeed Valve - Installation
Figure 001



Crossfeed System - Component Location
Figure 002

R



Crossfeed Valve - Details
Figure 003

which disengages the output shaft from the reduction gear when the motors are signalled to stop by the limit microswitches.

4. Control and Indication

A. Control Panel
(Ref. Fig. 004)

**ON A/C 001-003,

The crossfeed valve is controlled by a X FEED P/BSW on FUEL panel 430VU. With the P/BSW released (out) and the valve closed, the green flowbar is crossline. When the switch is pushed (in), the valve opens and the green flowbar is in-line. During valve transit the flowbars are off.

B. Control and Indication Circuits

**ON A/C ALL

Post SB 24-2041 For A/C 001-003,

The crossfeed valve is controlled by a X FEED P/BSW on FUEL panel 430VU. With the P/BSW released (out) and the valve closed, the green flowbar is crossline. When the switch is pushed (in), the valve opens and the green flowbar is in-line. During valve transit the flowbars are off.

R The crossfeed valve can also open automatically. This occurs if the X feed
R valve P/BSW is released (out) and the OVRD SUPPLY P/BSW 1 and 2 on the panel 424VU is pushed (in) (Ref. 24-25-00, P. Block 1).

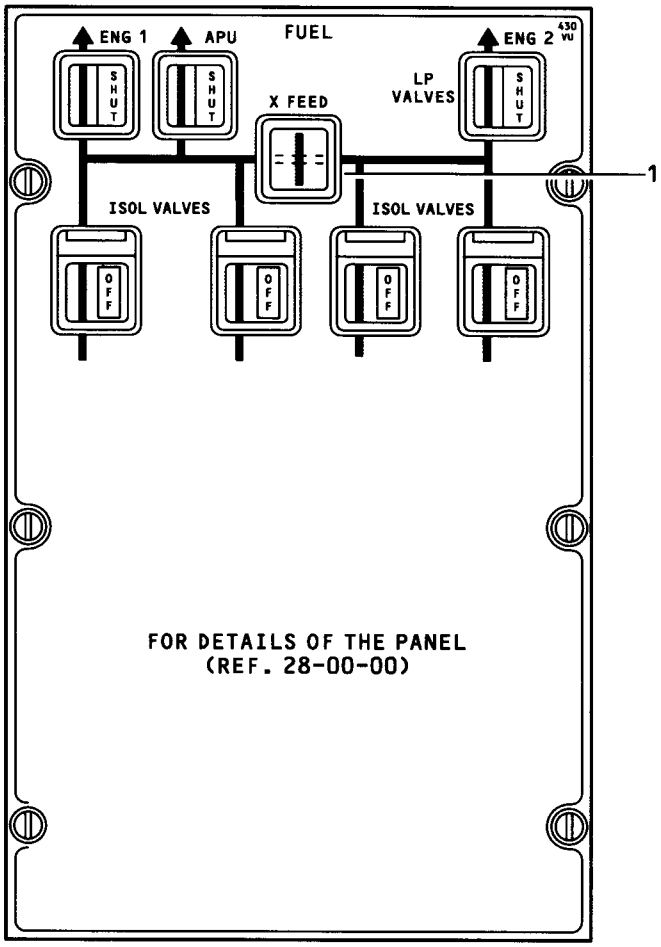
NOTE : The X feed P/BSW green in-line flowbars will come on.

B. Control and Indication Circuits

**ON A/C ALL

(Ref. Fig. 005)
The cross feed valve is driven by two electric motors which are supplied from separate power sources.

FUEL PANEL 430 VU



1. X FEED VALVE P/BSW.
   THE P/BSW RELEASED (OUT):
   - THE VALVE IS CLOSED
   - THE GREEN CROSSLINE FLOWBAR IS ON.

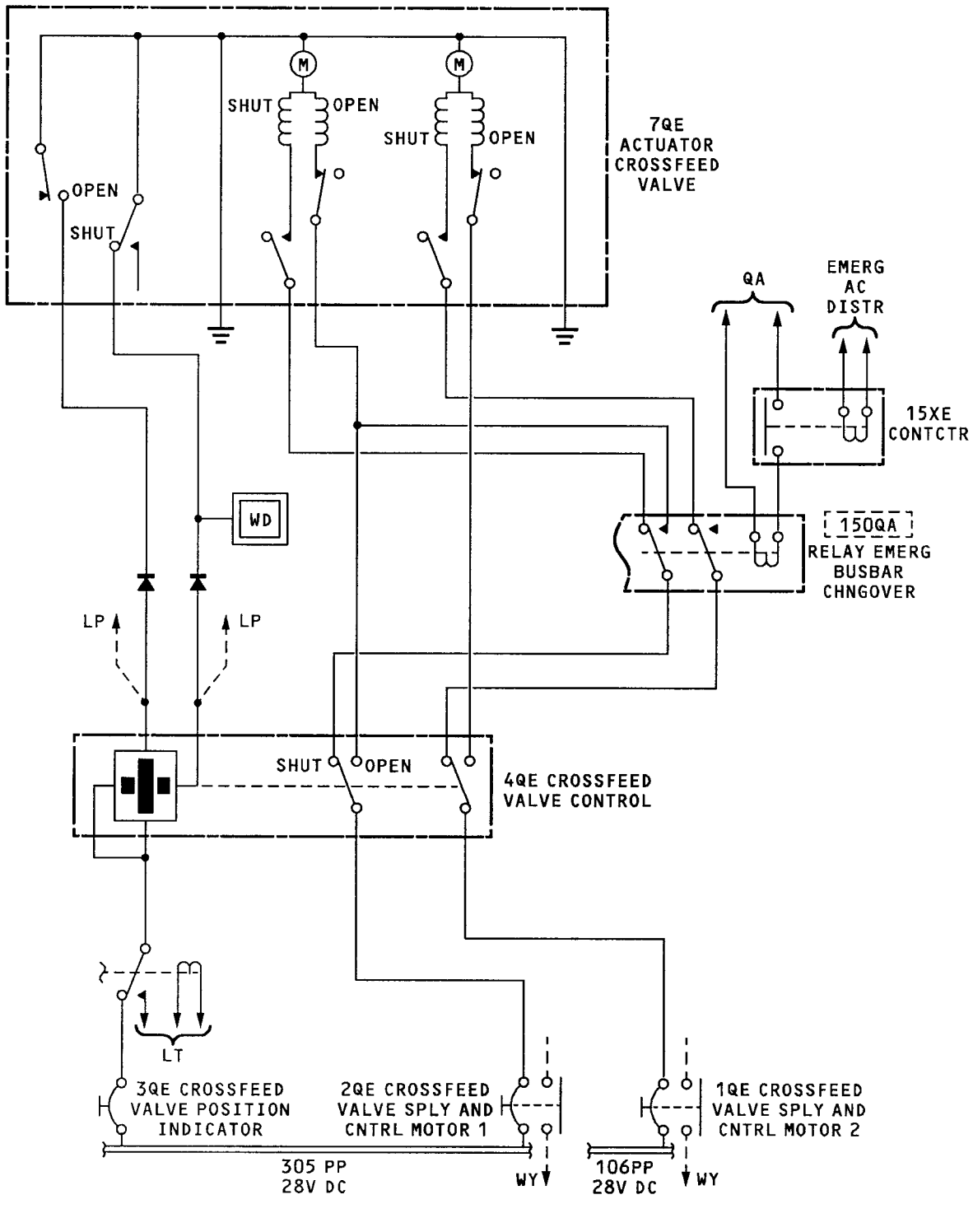
   WHEN THE P/BSW IS PUSHED (IN):
   - THE VALVE OPENS
   - THE GREEN FLOWBAR IS OFF DURING VALVE OPERATION
   - THE GREEN INLINE FLOWBAR COMES ON WHEN THE VALVE IS FULLY OPEN.

   - THE GREEN FLOWBAR IS OFF DURING WHEN THE P/BSW IS RELEASED (OUT):
   - THE VALVE CLOSES
   - THE GREEN FLOWBAR IS OFF DURING VALVE OPERATION
   - THE GREEN CROSSLINE FLOWBAR COMES ON WHEN THE VALVE IS FULLY CLOSED.

BM8 28 23 00 0 BAM0 01

Fuel Panel 430VU - Crossfeed Valve
Control and Indication
Figure 004

R



Crossfeed System - Circuit Diagram
Figure 005

R

WARNING: MAKE SURE THAT ALL THE CIRCUITS IN MAINTENANCE ARE ISOLATED BEFORE YOU SUPPLY ELECTRICAL POWER TO THE AIRCRAFT.

MAKE SURE THAT YOU HAVE THE CORRECT FIRE FIGHTING EQUIPMENT AVAILABLE.

OBEY THE FUEL SAFETY PROCEDURES IN 28-00-00, P. BLOCK 301.

DO NOT TRANSMIT WITH THE HIGH FREQUENCY (HF) TRANSMITTER DURING REFUEL, DEFUEL OR FUEL TRANSFER OPERATIONS.

1. Operational Test on Crossfeed Valve

A. Reasons for the Job

(1)To prove operation and indication of the crossfeed valve.

(2)To check fuel flow with valve in open and closed position.

B. Equipment and Materials

ITEM	DESIGNATION
A.	Access Platform 4 m (13 ft)
B.	Circuit Breaker Safety Clips and Tags
Referenced Procedures	
- 12-11-28, P. Block 301	Fuel Tank Replenishing
- 24-41-00, P. Block 301	AC External Power Control
- 28-00-00, P. Block 301	Fuel General
- 28-25-00, P. Block 301	Refuel/Defuel System
- 32-12-11, P. Block 301	Main Gear Main Door

C. Procedure

(1)Job Set-Up

(a)Make certain that the following circuit breakers are closed:

	PANEL	SERVICE	IDENT.	LOCATION
R	132VU	FUEL/X FEED VALVE/POS ANN	3QE	324/L59
R	132VU	FUEL/X FEED VALVE/MOTOR 1	2QE	324/L60
R	132VU	FUEL/X FEED VALVE/MOTOR 2	1QE	324/L61
R	132VU	FUEL/FUELLING/TRANSFER VALVE	2QU	321/P55
R	132VU	FUEL/FUELLING/CTL & REFUEL VALVE	1QU	321/P56
R	132VU	FUEL/FUELLING/HI LVL	6QJ	321/P57
R	132VU	FUEL/FQI/SUPPLY & IND	1QT	321/P59
R	132VU	FUEL/FQI/CHAN SUPPLY 1	3QT	321/P60
R	132VU	FUEL/FQI/CHAN SUPPLY 2	4QT	321/P61
R	132VU	FUEL/LP VALVES/ENG 1 MOTOR 1	1QG	323/M53
R	132VU	FUEL/LP VALVES/ENG 2 MOTOR 1	2QG	323/M54
R	132VU	LIGHTING/INTERIOR LT/ANN LT DIM	197LT	324/L84
R	132VU	LIGHTING/INTERIOR LT/ANN LT DIM	198LT	324/L83
R	132VU	ANTI-ICE/WINDOW HEAT/L SIDE WINDOW	7DG	324/L64
R	132VU	FUEL/AUTO FEED CTL	65QA	323/M55

	PANEL	SERVICE	IDENT.	LOCATION
R	132VU	FUEL/AUTO FEED WARN	66QA	322/N55
R	132VU	FUEL/ISOL VALVE/L OUTER AND INR TK FLASHER	51QB	324/L54
R	132VU	FUEL/ISOL VALVE/R OUTER AND INR TK FLASHER	52QB	324/L57
R	132VU	ANTI-ICE/WING ANTI-ICE/APU BOOST SIGNAL	54DM	322/N64
R	132VU	FUEL/TRIM TANK/FWD XFR MAIN VALVE	1QL	325/K53
R	132VU	FUEL/TRIM TANK/AFT L AND R XFR VALVE	4QL	325/K56
R	132VU	FUEL/INNER PUMPS/EMER SUPPLY	149QA	324/L52
R	132VU	FUEL/FUELLING/OVERFLOW AND CALIBRATION	5QJ	321/P58

(b)Open LH (RH) main landing gear door (Ref. 32-12-11, P. Block 301).
(c)Position access platform to gain access to the crossfeed valve actuator, on the rear spar.
(d)Energize the aircraft electrical network and make sure that the electronics racks are ventilated (Ref. 24-41-00, P. Block 301).
(e)Activate the ECAM display units as follows:
1 On the flight-compartment center pedestal, press (in) the ECAM SGU 1 and 2 P/BSWs.
2 Turn the ECAM LEFT and RIGHT DISPLAY switches clockwise to switch on the display and adjust the brightness to the required level.
3 Press (in) the FUEL P/BSW to call up the fuel page.

(2)Test valve operation and indication

NOTE : The crossfeed valve actuator has two motors.

	ACTION	RESULT
	1. On panel 436VU: - place ANN LT switch in TEST position.	On panel 430VU: - both X FEED pushbutton switch flowbars come on.
	- place ANN LT switch in BRIGHT position.	- in-line flowbar goes off - crossline flowbar stays on.
R	2. On the panel 472VU: R - place ANN LT switch in TEST R position.	On the panel 472VU: - the CB MONITOR OPEN and INHIBIT legends come on.
R	R - place ANN LT switch in READ R position.	- the CB MONITOR OPEN and INHIBIT legends go off.
R	3. On panel 132VU: - open, safety and tag circuit breaker 1QE (324/L61).	- valve motor 2 isolated.
		On panel 472VU:

ACTION	RESULT
	- the associated **CB MONITOR** **OPEN** legend comes on.
4. On panel 430VU: - press (in) **X FEED** pushbutton switch.	Crossfeed valve opened by motor 1. On panel 430VU: - crossline flowbar goes off - valve opens - in-line flowbar comes on. In zone 140: - mechanical indicator on valve actuator indicates valve **OPEN**. On the left **ECAM** display unit the message **FUEL X-FEED** comes on. On the right **ECAM** display unit the the **FUEL** page shows crossfeed valve open.
- release (out) **X FEED** pushbutton switch.	Crossfeed valve shut by motor 1. On panel 430VU: - in-line flowbar goes off - valve closes - crossline flowbar comes on. In zone 140: - mechanical indicator on valve actuator indicates valve shut. On the left **ECAM** display unit the message **FUEL X-FEED** goes off. On the right **ECAM** display unit the the **FUEL** page shows crossfeed valve closed.
5. Not applicable.	
6. On panel 132VU: - close circuit breaker **1QE(324/L61)**.	- valve motor 2 returned to operating condition.

ACTION	RESULT
	On panel 472VU: - the associated **CB MONITOR OPEN** legend goes off.
7. On panel 132VU: - open, safety and tag circuit breaker 2QE (324/L60).	- valve motor 1 isolated.
	On panel 472VU: - the associated **CB MONITOR OPEN** legend comes on.
8. Not applicable.	
9. On panel 430VU: - press **X FEED** pushbutton switch.	Crossfeed valve opened by motor 2.
	On panel 430VU: - crossline flow bar goes off - valve opens - in-line flowbar comes on.
	In zone 140: - mechanical indicator on valve actuator indicates valve **OPEN**.
	On the left **ECAM** display unit the message **FUEL X-FEED** comes on.
	On the right **ECAM** display unit the the **FUEL** page shows crossfeed valve open.
- release (out) **X FEED** pushbutton switch.	Crossfeed valve shut by motor 2.
	On panel 430VU: - in-line flowbar goes off - valve closes - crossline flowbar comes on.
	In zone 140: - mechanical indicator on valve actuator indicates valve **SHUT**.
	On the left **ECAM** display unit the message **FUEL X-FEED** goes off.

ACTION	RESULT
	On the right ECAM display unit the the FUEL page shows crossfeed valve closed.
10. Not applicable.	
11. On panel 132VU: - close circuit breaker 2QE (324/L60).	- valve motor 1 returned to operating condition. On panel 472VU: - the associated CB MONITOR OPEN legend goes off.
12. Not applicable.	
13. On panel 430VU: - press (in) X FEED pushbutton switch.	Crossfeed valve opened by motors 1 and 2. On panel 430VU: - crossline flowbar goes off - valve opens - in-line flowbar comes on. In zone 140: - mechanical indicator on valve actuator indicates valve OPEN. On the left ECAM display unit the message FUEL X-FEED comes on. On the right ECAM display unit the the FUEL page shows crossfeed valve open.
- release (out) X FEED pushbutton switch.	Crossfeed valve closed by motors 1 and 2. On panel 430VU: - in-line flowbar goes off - valve closes - crossline flowbar comes on. In zone 140: - mechanical indicator on valve actuator indicates valve SHUT. On the left ECAM display unit the

ACTION	RESULT
	message FUEL X-FEED goes off. On the right ECAM display unit the the FUEL page shows crossfeed valve closed.

WARNING : ACCIDENTAL REARWARD TRANSFER CAN MOVE C OF G AFT OF SAFE LIMIT. MAKE SURE THAT ALL TRIM TANK VALVES ARE SHUT.

(3)Test valve for fuel flow in open and closed positions.
(a)The LH wing inner or outer tank must be the donor tank.

NOTE : During fuel transfer from the LH wing into the RH wing, fuel passes through the crossfeed valve, the transfer valve and finally, the refuel/defuel valve(s). However, when fuel is transferred from the RH wing, the crossfeed valve is not used.

(b)Make sure that the donor tank contains at least 500 kg (1100 lb) of fuel. If necessary, refuel or transfer fuel (Ref. 12-11-28 or 28-25-00, P. Block 301.

NOTE : This test requires the transfer of 200 kg (440 lb) of fuel from the LH wing to the RH wing.

(c)Open the access door 144DR to energize the refuel/defuel panel 110VU.

R (d)Make sure that the circuit breakers that follow are closed:

R	PANEL	SERVICE	IDENT.	LOCATION
R	101VU	FUEL/L/INNER/TK/PUMP 2/SUPPLY	1QA	ESS/B01
R	101VU	FUEL/L/OUTER/TK/PUMP 2/SUPPLY	3QA	GEN1/A20
R	101VU	FUEL/L/OUTER/TK/PUMP 1/SUPPLY	5QA	GEN2/A17
R	101VU	FUEL/L/INNER/TK/PUMP 1/SUPPLY	7QA	GEN2/A23

R (e)Test.

ACTION	RESULT
1. On panel 110VU: - Raise the switch guard and put the TRANSF. VALVE switch in the OPEN position. - Raise the guard and put the MODE SELECTOR/SELECT switch in the REFUEL position. - Raise the guard and put the R INNER TK or R OUTER TK	On Panel 110VU: - the TRANSF. VALVE OPEN indicator light comes on.

ACTION	RESULT
REFUEL-DEFUEL-VALVES switch (receiver) in the OPEN position.	
- Raise the guards and put the REFUEL-DEFUEL-VALVES switches of the tanks not in use, in the SHUT position.	
2. On panel 430VU:	On Panel 430VU:
- Push (in) the LH OUTR or INR TK PUMP P/BSW's.	- the OFF legend goes off in each switch and the associated LH OUTR or INR TK PUMP runs.
- Push (in) the X FEED P/BSW.	- the crossfeed valve opens and the in-line flowbar comes on
	- the FQI shows fuel transfer between the LH wing donor tank and the RH wing receiver tank(s).
- Release (out) the X FEED P/BSW.	- the crossfeed valve closes and the crossline flowbar comes on
	- the FQI shows fuel transfer has stopped.
- Release (out) the LH OUTR or INR TK PUMP P/BSW's.	- the LH outer or inner tank pumps stop running and the associated OFF legends in each switch come on.
3. On panel 110VU:	
- Put all the REFUEL-DEFUEL-VALVES switches in the NORMAL/NORM and guarded position.	
- Put the MODE SELECTOR/SELECT switch in the OFF and guarded position.	
- Put the TRANSF. VALVE switch in the CLOSED and guarded position.	- the TRANSF. VALVE OPEN indicator light goes off.
- Close the access door 144DR.	- refuel/defuel panel 110VU, is de-energized.

(4)Close-Up.

(a)Make sure that the work area is clean and clear of tools and miscellaneous items of equipment.
(b)Refuel or defuel the aircraft to the required fuel load (Ref. 12-11-28 or 28-25-00, P. Block 301).
(c)Remove the access platform.
(d)Close the LH (RH) main-landing-gear bay door(s) (Ref. 32-12-11, P. Block 301).
(e)On the flight-compartment center pedestal, turn the ECAM LEFT and RIGHT DISPLAY rotary switches to OFF.
(f)Release (out) the ECAM SGU 1 and 2 P/BSWs.
(g)De-energize the aircraft electrical network (Ref. 24-41-00, P. Block 301).

R WARNING : LANDING GEAR - MAKE SURE THAT THE GROUND SAFETIES AND THE CHOCKS ARE
R IN POSITION.

R FLIGHT CONTROLS - MAKE SURE THAT THE GROUND SAFETIES AND THE NOTICES
R ARE IN POSITION.

R OBSERVE THE SAFETY PRECAUTIONS IN 28-00-00, P. BLOCK 301 AND
R 28-10-00, P. BLOCK 301.

R BEFORE YOU SUPPLY POWER TO THE AIRCRAFT, MAKE SURE THAT ALL THE
R ELECTRICAL CIRCUITS IN MAINTENANCE ARE ISOLATED.

R BEFORE YOU PRESSURIZE THE SYSTEM, MAKE SURE THAT THE FUEL SYSTEM IN
R MAINTENANCE HAS BEEN ISOLATED.

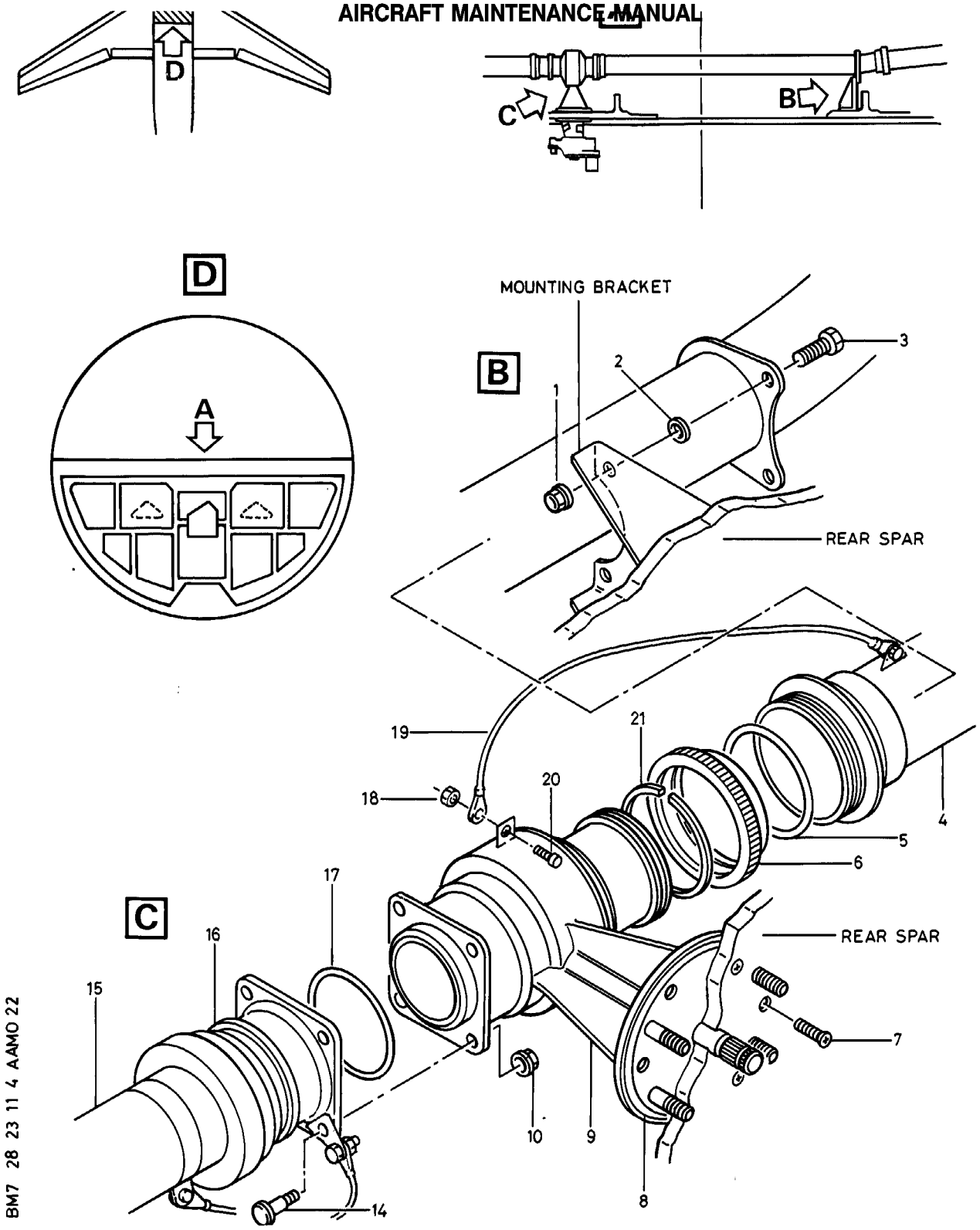
R MAKE SURE THAT YOU HAVE THE CORRECT FIRE FIGHTING EQUIPMENT.

1. Equipment and Materials

	ITEM	DESIGNATION
R	A.	Access Platform 2.5 m (8 ft)
R	B.	Blanking Caps
R	C.	Circuit Breaker Safety Clips and Tags.
R	D.	Container
R	E.	O-rings
	F. Material No. 01-001	Fuels (Ref. 20-31-00)
	G. Material No. 16-006	Structure Paints (Ref. 20-31-00)
	Referenced Procedures	
R	- 12-11-28, P. Block 301	Replenishing of Fuel Tanks
	- 20-28-11, P. Block 1	Electrical Bonding
	- 24-41-00, P. Block 301	AC External Power Control
	- 28-00-00, P. Block 301	Fuel-General
	- 28-10-00, P. Block 301	Storage
R	- 28-11-29, P. Block 401	Manhole Cover - Center Tank
R	- 28-23-12, P. Block 401	Crossfeed Valve Actuator
R	- 28-25-00, P. Block 301	Refuel/Defuel System
	- 32-12-11, P. Block 301	Main Gear Main Door

2. Procedure

A. Job Set-Up
R (1)Refuel, defuel or transfer fuel (Ref. 12-11-28 or 28-25-00,
R P. Block 301) to get the fuel state that follows:
R
R
R
R
R



Crossfield Valve - Installation
Figure 401

L OUTR	L INR	CTR	R INR	R OUTR
0	0	0	0	2000 kg (4400 lb)

(2)Open the LH main-landing-gear door (Ref. 32-12-11, P. Block 301).
(3)Put the access platform in position.
(4)Remove the crossfeed valve actuator (Ref. 28-23-12, P. Block 401).
(5)Energize the aircraft electrical network (Ref. 24-41-00, P. Block 301).
(6)On panel 430VU, release (out) the four wing tank ISOL VALVE P/BSWs.
Make sure that:
- the in-line flowbars go off
- the OFF legends come on.
(7)Open, safety and tag the circuit breakers that follow:

PANEL	SERVICE	IDENT.	LOCATION
132VU	FUEL/ISOL VALVE/L/INR TK SUPPLY	3QB	324/L55
132VU	FUEL/ISOL VALVE/L OUTR/TK SUPPLY	1QB	324/L53
132VU	FUEL/ISOL VALVE/R/INR TK SUPPLY	4QB	324/L56
132VU	FUEL/ISOL VALVE/R OUTR TK SUPPLY	2QB	324/L58

(8)Make sure that the circuit breakers that follow are open, safetied and tagged:

PANEL	SERVICE	IDENT.	LOCATION
132VU	FUEL/X FEED VALVE/MOTOR 2	1QE	324/L61
132VU	FUEL/X FEED VALVE/MOTOR 1	2QE	324/L60
132VU	FUEL/X FEED VALVE/POS ANN	3QE	324/L59

NOTE : These circuit breakers were opened during the crossfeed valve actuator removal procedure (ref. para. 2. A. (4)).

(9)De-energize the aircraft electrical network (Ref. 24-41-00, P. Block 301).
(10)Remove the manhole cover 147AZ (Ref. 28-11-29, P. Block 401).
(11)Obey the safety precautions and get access to the crossfeed valve (9) inside the center tank. Put the container below the crossfeed valve (9) to catch any residual fuel.

B. Removal (Ref. Fig. 401)
(1)Remove the nut (18) and the bolt (20) and remove the bonding strip (19) from the tag on the crossfeed valve (9).
(2)Remove the nuts (10) and the bolts (14) that attach the crossfeed valve (9) to the center union (16). Note the position of the bonding strip tag on the center union (16).
(3)Move the center union (16) and the line (15) away from the crossfeed

R valve (9). Put a blanking cap on the open line end.
R (4)Unscrew the ring nut (6). Remove the nuts (1), the bolts (3) and the
R washers (2) that attach the line (4) to the mounting bracket. Move the
R line away from the crossfeed valve (9). Put a blanking cap on the open
R line end.
R (5)Remove the screws (7) that attach the crossfeed valve (9) to the rear
R spar. Remove the crossfeed valve (9) from the tank and remove and
R discard the seals (5), (8) and (17).
R (6)If a new crossfeed valve (9) is to be installed, remove and keep the
R circlip (21) and the ring nut (6). Put blanking caps on the valve
R openings.

C. Preparation of Replacement Component

R (1)Do a manual check of the operation of the crossfeed valve (9). Let the
R crossfeed valve (9) stay closed.
R (2)Install the ring nut (6) and the circlip (21) on the crossfeed
R valve (9).

D. Installation

R (1)Clean the interfaces between the crossfeed valve (9) and the rear spar.
R (2)Remove the blanking caps from the crossfeed valve (9).
R (3)Lubricate the new O-ring seals (5, 8 and 17) with fuel (Material
R No. 01-001) and install on the crossfeed valve (9).
R (4)Install the crossfeed valve (9), in the closed position, on the tank rear
R spar and secure with the screws (7). Tighten the screws in a
R diametrical sequence.
R (5)Remove the blanking caps from the fuel lines (4) and (15).
R (6)Secure the fuel line (15) to the crossfeed valve (9) with the bolts (14)
R and the nuts (10).
R (7)Attach the fuel line (4) to the crossfeed valve (9) with the ring
R nut (6).
R (8)Attach the fuel line (4) to the mounting bracket with the bolts (3), the
R washers (2) and the nuts (1).
R (9)Attach the bonding strips (19) to the tag on the crossfeed valve (9)
R with the bolt (20) and the nut (18) (Ref. 20-28-11, P. Block 1).
R (10)Move the disturbed pipelines to their mid-travel positions.
R (11)Apply the paint (Material No. 16-006) to nuts and bolt heads/tails.

R E. Test

R (1)Make sure that these circuit breakers are closed:

	PANEL	SERVICE	IDENT.	LOCATION
	132VU	FUEL/FUELLING/XFR VALVE	2QU	321/P55
	132VU	FUEL/LP VALVES/ENG 2/MOTOR 1	2QG	322/N54
R	132VU	FUEL/L INR TK/PUMP 1/CTL	67QA	322/N56
R	132VU	FUEL/R INR TK/PUMP 1/WARN	14QA	322/N57
	132VU	FUEL/LP VALVES/ENG 1/MOTOR 1	1QG	323/M53
R	132VU	FUEL/L INR TK/PUMP 1/WARN	15QA	323/M56
R	132VU	FUEL/R INR TK/PUMP 1/CTL	62QA	323/M87
	133VU	ENGINES/ENG 1/FUEL HP VALVE/WARN	1KC	333/T68
	133VU	ENGINES/ENG 1/FUEL HP VALVE/CTL	3KC	333/T69

PANEL	SERVICE	IDENT.	LOCATION
133VU	ENGINES/ENG 2/FUEL HP VALVE/CTL	4KC	333/T70
133VU	ENGINES/ENG 2/FUEL HP VALVE/WARN	2KC	335/R73

R (2)On panel 132VU, remove the safety clips and tags and close the circuit breakers 1QB, 2QB, 3QB and 4QB.
R (3)Energize the aircraft electrical network (Ref. 24-41-00, P. Block 301).
R (4)On panel 430VU, push (in) the four wing tank ISOL VALVE P/BSWs. Make sure that the OFF legends go off.
R (5)Open the access door 144DR.

R WARNING : OBEY THE FUEL SAFETY PROCEDURES. THIS WILL PREVENT INJURY OR DAMAGE.

R (6)Get access to the crossfeed valve (9). Put the container below the crossfeed valve (9).
R (7)Transfer 1000 kg (2200 lb) of fuel to the two inner tanks from the RH outer tank (Ref. 28-25-00, P. Block 301).

R NOTE : When you transfer the fuel from the RH outer tank into the inner tanks, the fuel line (4) will be pressurized with fuel up to the crossfeed valve (9).

R (8)During the fuel transfer examine the crossfeed valve (9) for leakage. No leakage is permitted.
R (9)On panel 110VU, make sure that:
R - the TRANSF. VALVE switch is set to the CLOSED position and guarded
R - the OPEN indicator light is OFF.
R (10)Close the access door 144DR.
R (11)On panel 9VU, make sure that the HP VALVE ENG 1 and HP VALVE ENG 2 are in the FUEL OFF position.
R (12)Do the leakage test that follows:

ACTION	RESULT
R 1.On panel 430VU: R - push (in) the L INR TK PUMP 2 and the R INR TK PUMP 1 P/BSWs.	On panel 430VU: - the L INR TK PUMP 2 and the R INR TK PUMP 1 P/BSW OFF legends, go off - the pumps run.
R 2. Examine the crossfeed valve (9) and all of the disturbed pipelines for leakage.	No leaks are permitted.
R 3.On panel 430VU: R - release (out) the L INR TK PUMP 2 and the R INR TK PUMP 1 P/BSWs.	On panel 430VU: - the L INR TK PUMP 2 and the R INR TK PUMP 1 P/BSW OFF legends, come on - the pumps stop.

R F. Close-Up
R (1)De-energize the aircraft electrical network (Ref. 24-41-00, P. Block 301).
R (2)Install the crossfeed valve actuator and do the test (Ref. 28-23-12, P. Block 401).

R NOTE : The circuit breakers 1QE, 2QE and 3QE will now be closed.

R (3)Remove the container from below the crossfeed valve (9).
R (4)Make sure that the work area is clean and clear of tools and all other items of equipment.
R (5)Install the manhole cover 147AZ (Ref. 28-11-29, P. Block 401).
R (6)Remove the access platform.
R (7)Close the LH main-landing-gear door (Ref. 32-12-11, P.Block 301).
R (8)On panel 132VU, remove the safety clips and the tags and close the circuit breakers 1QE, 2QE and 3QE.
R (9)Make sure that the aircraft electrical network is de-energized (Ref. 24-41-00, P. Block 301).
R (10)Remove the items that follow:
R - the ground handling and maintenance equipment
R - the standard and special tools
R - the ground power and replenishing equipment
R - the access equipment and miscellaneous items.

CROSSFEED VALVE - DEACTIVATION/REACTIVATION

Ref. MMEL Sect. 1-28, Item 9

WARNING : LANDING GEAR - MAKE CERTAIN GROUND SAFETIES AND CHOCKS ARE IN POSITION.

FLIGHT CONTROLS - MAKE CERTAIN GROUND SAFETIES AND NOTICES ARE IN POSITION.

OBSERVE THE SAFETY PRECAUTIONS IN 28-00-00, P. BLOCK 301.

MAKE CERTAIN THAT FIRE FIGHTING EQUIPMENT IS AVAILABLE AND ADEQUATE.

CAUTION : THIS PROCEDURE IS TO BE USED IN ACCORDANCE WITH THE REQUIREMENTS OF THE MMEL FOLLOWING CROSSFEED FLOW BAR INDICATION FAILURE.

1. Deactivation

A. Reason for the Job

R (1)X FEED flow bar may be inoperative provided operation of crossfeed valve
R is verified.

B. Equipment and Materials

ITEM	DESIGNATION
A.	Access Platform 2m (6.5 ft)
B.	Temporary Placard - X FEED Flow Bar Inoperative
Referenced Procedures	
- 24-41-00, P. Block 301	AC External Power Control
- 28-00-00, P. Block 301	Fuel - General
- 32-12-11, P. Block 301	Main Gear Main Door

C. Procedure

R (Ref. Fig. 901)

(1) Job Set-Up.

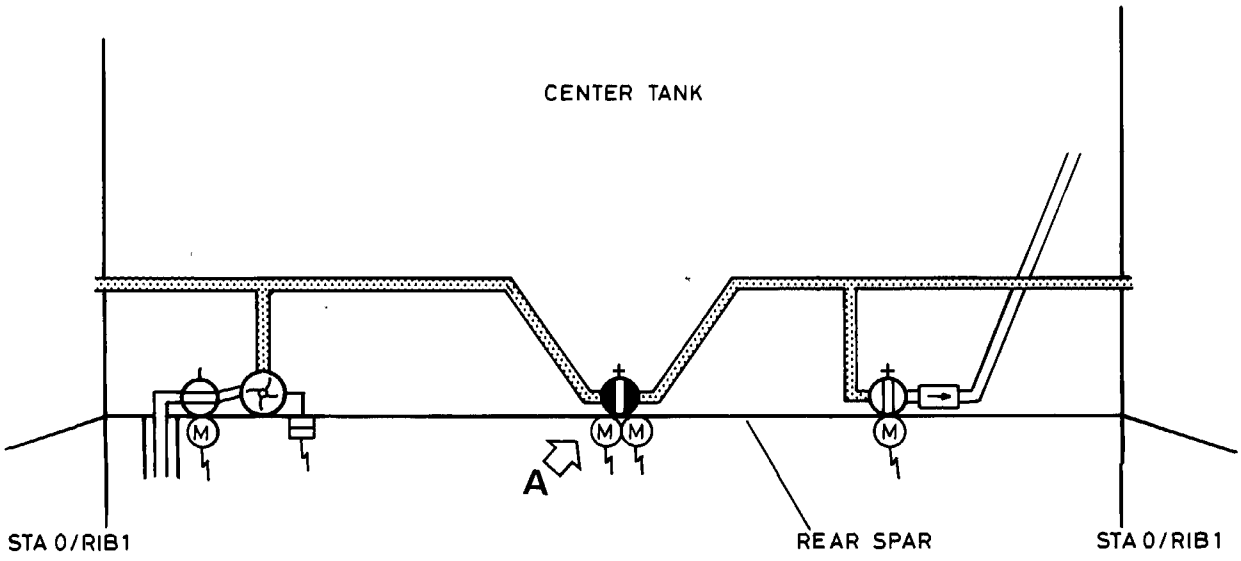
(a)Open a main gear main door (Ref. 32-12-11, P. Block 301).

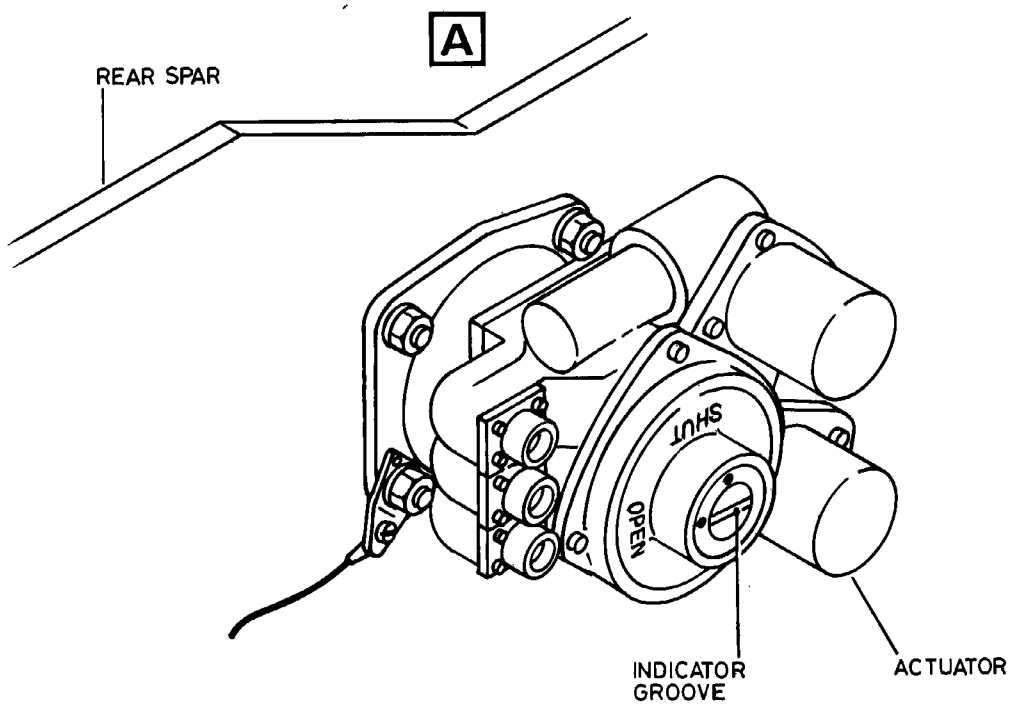
(b)Position access platform to gain access to the crossfeed valve actuator on the rear spar.

(c)Energize the aircraft electrical network (Ref. 24-41-00, P. Block 301).

(d)Make certain that the following circuit breakers are closed:

PANEL	SERVICE	IDENT.	LOCATION
132VU	FUEL/X FEED VALVE/MOTOR 2	1QE	324/L61
132VU	FUEL/X FEED VALVE/MOTOR 1	2QE	324/L60
132VU	FUEL/X FEED VALVE/POS ANN	3QE	324/L59





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Crossfeed Valve - Mechanical Indication
Figure 901

(2)Test

ACTION	RESULT
1. On panel 430VU	At rear spar
- Make certain that X FEED pushbutton switch is released (out)	- crossfeed valve actuator, indicator groove is in SHUT position
- press X FEED pushbutton switch	- crossfeed valve actuator, indicator groove is in OPEN position
- release X FEED pushbutton switch	- crossfeed valve actuator, indicator groove is in SHUT position

(3)Close-Up
(a)Make certain that working area is clean and clear of tools and miscellaneous items of equipment.
(b)Remove access platform.
(c)Close main gear main doors (Ref. 32-12-11, P. Block 301).
(d)De-energize the aircraft electrical network (Ref. 24-41-00, P. Block 301).
(e)Install a temporary placard in flight compartment to warn flight crew that X FEED valve flow bar indication is inoperative.
(f)Make an appropriate entry in the aircraft technical log.

2. Reactivation

A. Make X FEED flow bar fully operational as follows:
(1)Troubleshoot to identify cause of X FEED flow bar malfunction (Ref. TSM 28-23-00).
(2)Replace or rectify cause of malfunction.
(3)Carry out test to confirm flow bar serviceability (Ref. Para. 1. C. step (2)).
(4)Remove temporary notice from flight compartment, warning flight crew of inoperative flow bar indication.
(5)Make appropriate entry in aircraft technical log.

CROSSFEED VALVE ACTUATOR REMOVAL/INSTALLATION

WARNING : LANDING GEAR - MAKE CERTAIN GROUND SAFETIES AND CHOCKS ARE IN POSITION.

FLIGHT CONTROLS - MAKE CERTAIN GROUND SAFETIES AND NOTICES ARE IN POSITION.

OBSERVE THE SAFETY PRECAUTIONS IN 28-00-00, P. BLOCK 301.

MAKE CERTAIN THAT FIRE FIGHTING EQUIPMENT IS AVAILABLE AND ADEQUATE.

BEFORE POWER IS SUPPLIED TO THE AIRCRAFT MAKE CERTAIN THAT ELECTRICAL CIRCUITS UPON WHICH WORK IS IN PROGRESS ARE ISOLATED.

1. Equipment and Materials

ITEM	DESIGNATION
A.	Access Platform 2.50 m (8.2 ft)
B.	Circuit Breaker Safety Clips and Tags
Referenced Procedures	
- 20-28-11, P. Block 1	Electrical Bonding
- 24-41-00, P. Block 301	AC External Power Control
- 28-00-00, P. Block 301	Fuel - General
- 28-23-00, P. Block 501	Crossfeed System
- 32-12-11, P. Block 301	Main Gear Main Door

2. Procedure

A. Job Set-Up

(1)Open LH main landing gear door (Ref. 32-12-11, P. Block 301).

(2)Position access platform.

(3)Energize the aircraft electrical network (Ref. 24-41-00, P. Block 301).

(4)On panel 430VU. Check the following control setting:

- CROSSFEED VALVE - Closed

(5)Open, safety and tag the following circuit breakers:

PANEL	SERVICE	IDENT.	LOCATION
132VU	FUEL/X FEED VALVE/MOTOR 2	1QE	324/L61
132VU	FUEL/X FEED VALVE/MOTOR 1	2QE	324/L60
132VU	FUEL/X FEED VALVE/POS ANN	3QE	324/L59

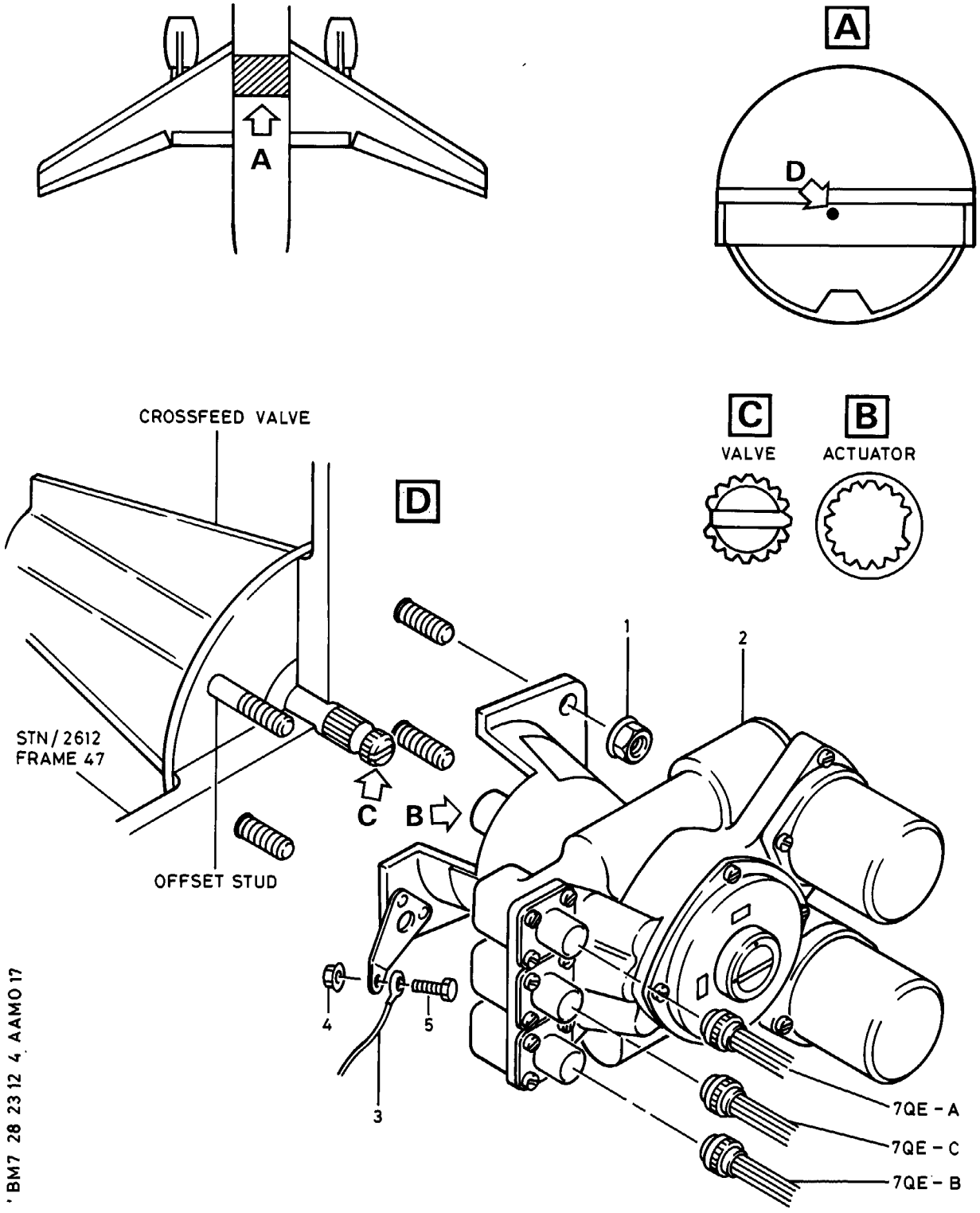
B. Removal

(Ref. Fig. 401)

(1)Disconnect the three electrical connectors from the crossfeed valve actuator (2).

(2)Remove nut (4), bolt (5) and disconnect bonding strip (3) from tag on crossfeed valve actuator (2).

(3)Remove nuts (1) securing crossfeed valve actuator to rear spar and



Crossfeed Valve Actuator - Installation
Figure 401

remove actuator.

C. Preparation of Replacement Component
(1)Make certain actuator and rear spar interfaces are clean and in correct condition.

D. Installation
(1)Make certain the crossfeed valve is in the closed position.
(2)Install crossfeed valve actuator (2) onto its attachment studs on the rear spar. Secure the crossfeed valve actuator to the rear spar with nuts (1). Tighten the nuts.

NOTE : A master spline on the crossfeed valve shaft and crossfeed valve actuator hub, together with an offset stud on the crossfeed valve, prevent incorrect assembly.

(3)Connect bonding strip (3), install bolt (5) and nut (4) to tag on crossfeed valve actuator (2), (Ref. 20-28-11, P. Block 1).
(4)Connect electrical connectors to crossfeed valve actuator (2).
(5)Close circuit breakers 1QE, 2QE and 3QE.

E. Test
(1)Carry out operational test of crossfeed valve actuator (Ref. 28-23-00, P. Block 501).

F. Close-Up
(1)Make certain that work area is clean and clear of tools and miscellaneous equipment.
(2)Remove access platform.
(3)Close LH main landing gear door (Ref. 32-12-11, P. Block 301).
(4)De-energize aircraft electrical network
(5)Remove all ground handling and maintenance equipment, standard and special tools, together with replenishing equipment, all access equipment and miscellaneous items.

LP FUEL FIRE SHUT OFF CONTROL - DESCRIPTION AND OPERATION

1. General

(Ref. Fig. 001)

The LP (Low Pressure) fuel fire shut off control system comprises a twin motor spherical-plug type valve positioned in each engine feed line where it passes through the front spar between STA409(RIB7) and STA482(RIB8). The LP valve, which is mounted on the forward face of the front spar, is normally in the open position. Operation of the engine fire handle closes the valve and isolates the engine from the feed line.

2. Component Location

R **ON A/C 001-100,

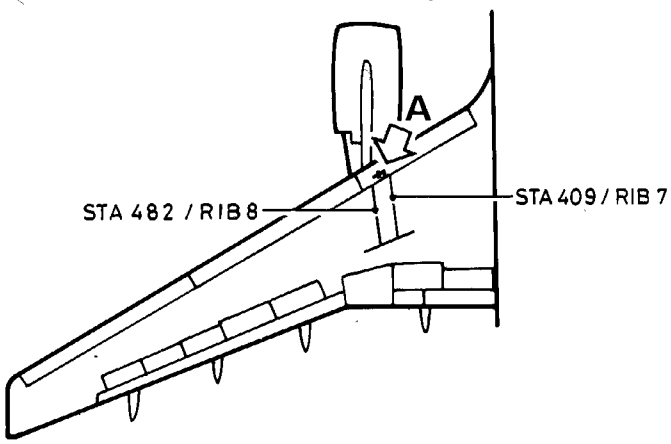
(Ref. Fig. 002)

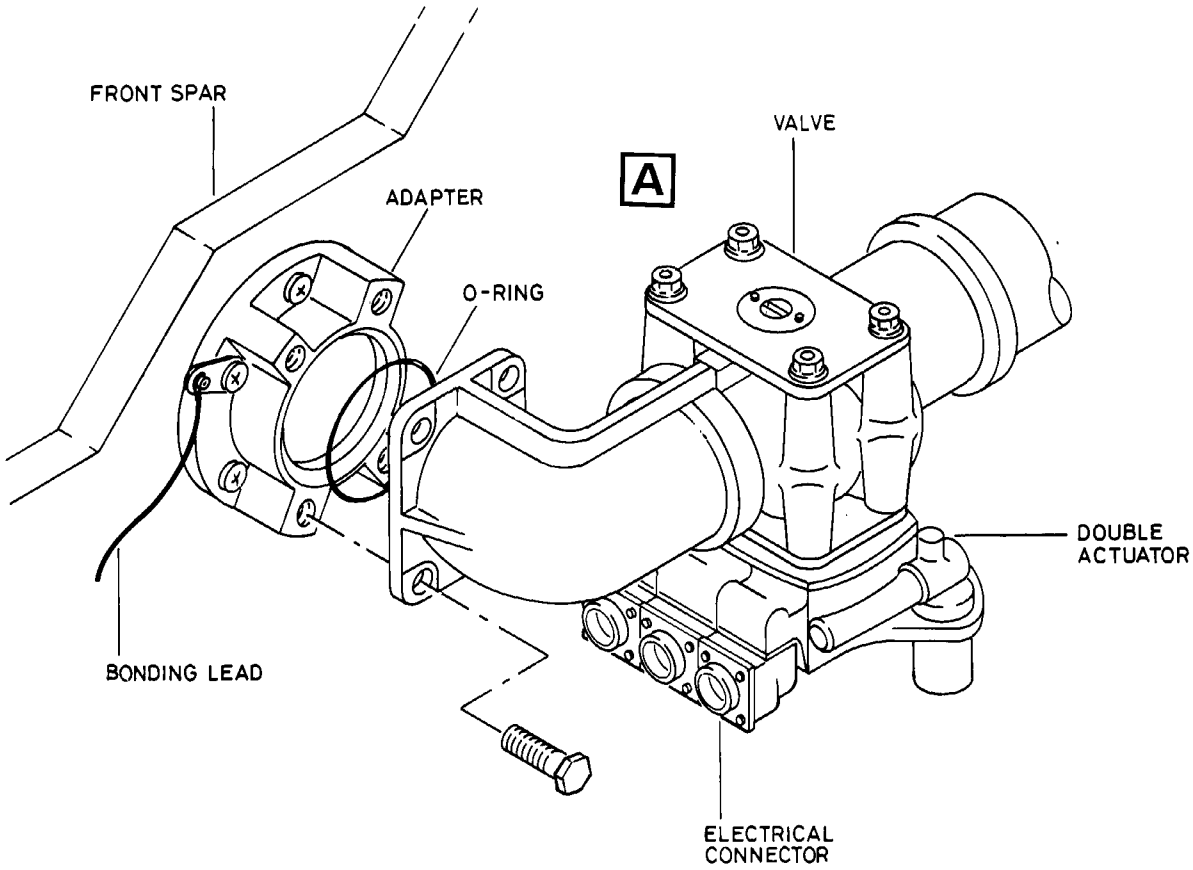
R **ON A/C 101-200,

R (Ref. Fig. 003)

R **ON A/C ALL

FIN	FUNCTIONAL DESIGNATION	PANEL	ZONE	ACCESS DOOR	ATA REF
280301	VALVE - LP FUEL 1		512	512JB	28-24-31
280302	VALVE - LP FUEL 2		612	612JB	28-24-31
1QG	C/B - FUEL/LP VALVES/ENG 1/MOTOR 1	132VU	212	323/M53	28-00-00
2QG	C/B - FUEL/LP VALVES/ENG 2/MOTOR 1	132VU	212	322/N54	28-00-00
3QG	C/B - FUEL/LP VALVES/MOTOR 2/ENG 1	22VU	210	201/J19	28-00-00
4QG	C/B - FUEL/LP VALVES/MOTOR 2/ENG 2	22VU	210	201/J20	28-00-00
5QG	C/B - FUEL/LP VALVES/ENG 1/POS ANN	132VU	212	322/N53	28-00-00
6QG	C/B - FUEL/LP VALVES/ENG 2/POS ANN	132VU	212	323/M54	28-00-00
7QG	ANNUNCIATOR - FUEL, LP VALVES, ENG 1	430VU	210		
8QG	ANNUNCIATOR - FUEL, LP VALVES, ENG 2	430VU	210		
9QG	RLY - ENG 1 LP VALVE OPNG INHI MOTOR 1	105VU	122	132AZ	
10QG	RLY - ENG 2 LP VALVE OPNG INHI MOTOR 1	105VU	122	132AZ	
11QG	RLY - ENG 1 LP VALVE OPNG INHI MOTOR 2	105VU	122	132AZ	
12QG	RLY - ENG 2 LP VALVE OPNG INHI MOTOR 2	105VU	122	132AZ	
13QG	ACTUATOR - LP VALVE FUEL 1		512	512JB	28-24-31
14QG	ACTUATOR - LP VALVE FUEL 2		612	612JB	28-24-31
15QG	FAULT ANNUNCIATOR - LP VALVE ENG 1	472VU	212		
16QG	FAULT ANNUNCIATOR - LP VALVE ENG 2	472VU	212		
19QG	DIODE - MOTOR 1 SHUT SUPPLY ENG 1	105VU	122	132AZ	
20QG	DIODE - MOTOR 1 SHUT SUPPLY ENG 2	105VU	122	132AZ	
21QG	DIODE - MOTOR 2 SHUT SUPPLY ENG 1	105VU	122	132AZ	
22QG	DIODE - MOTOR 2 SHUT SUPPLY ENG 2	105VU	122	132AZ	





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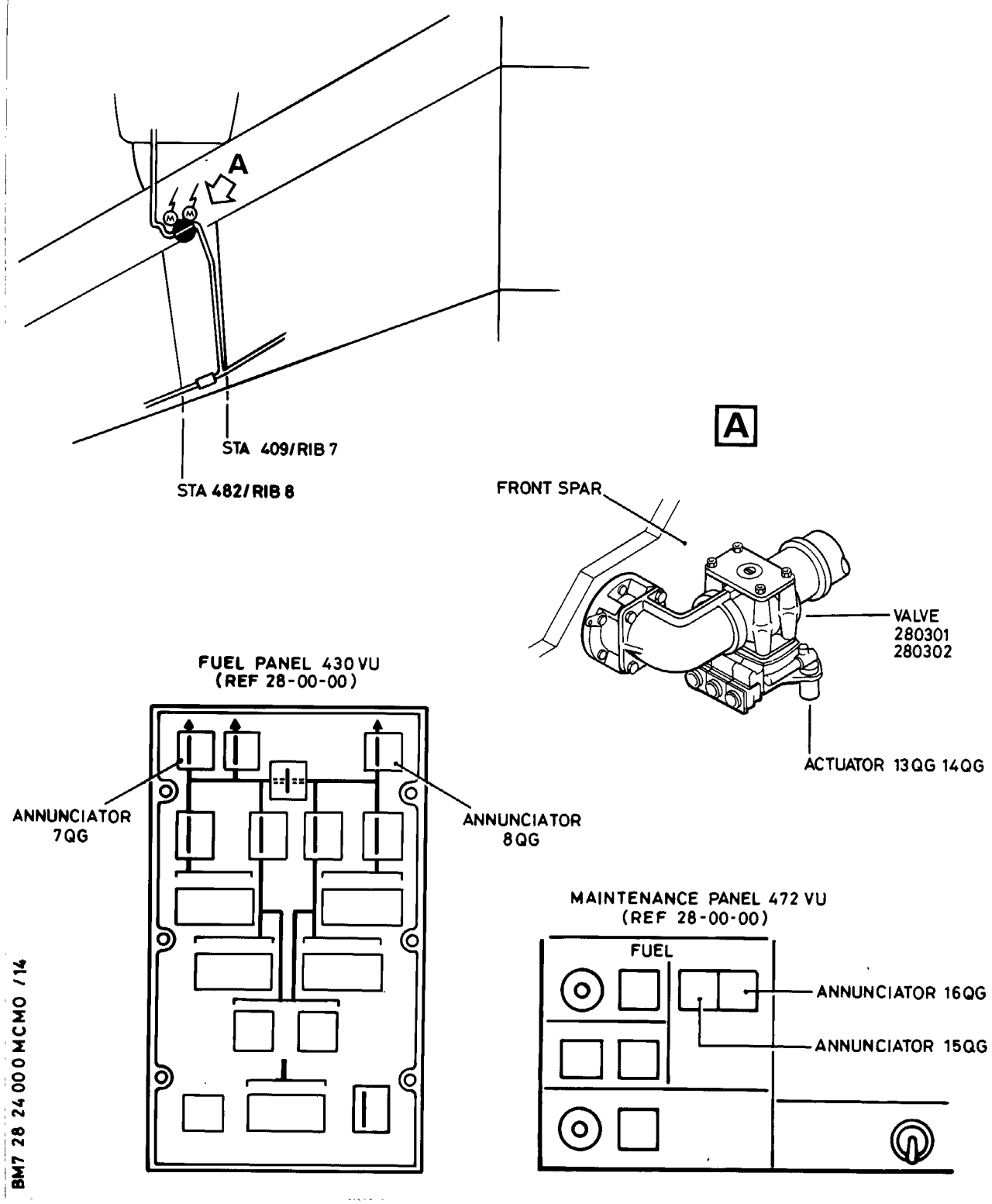
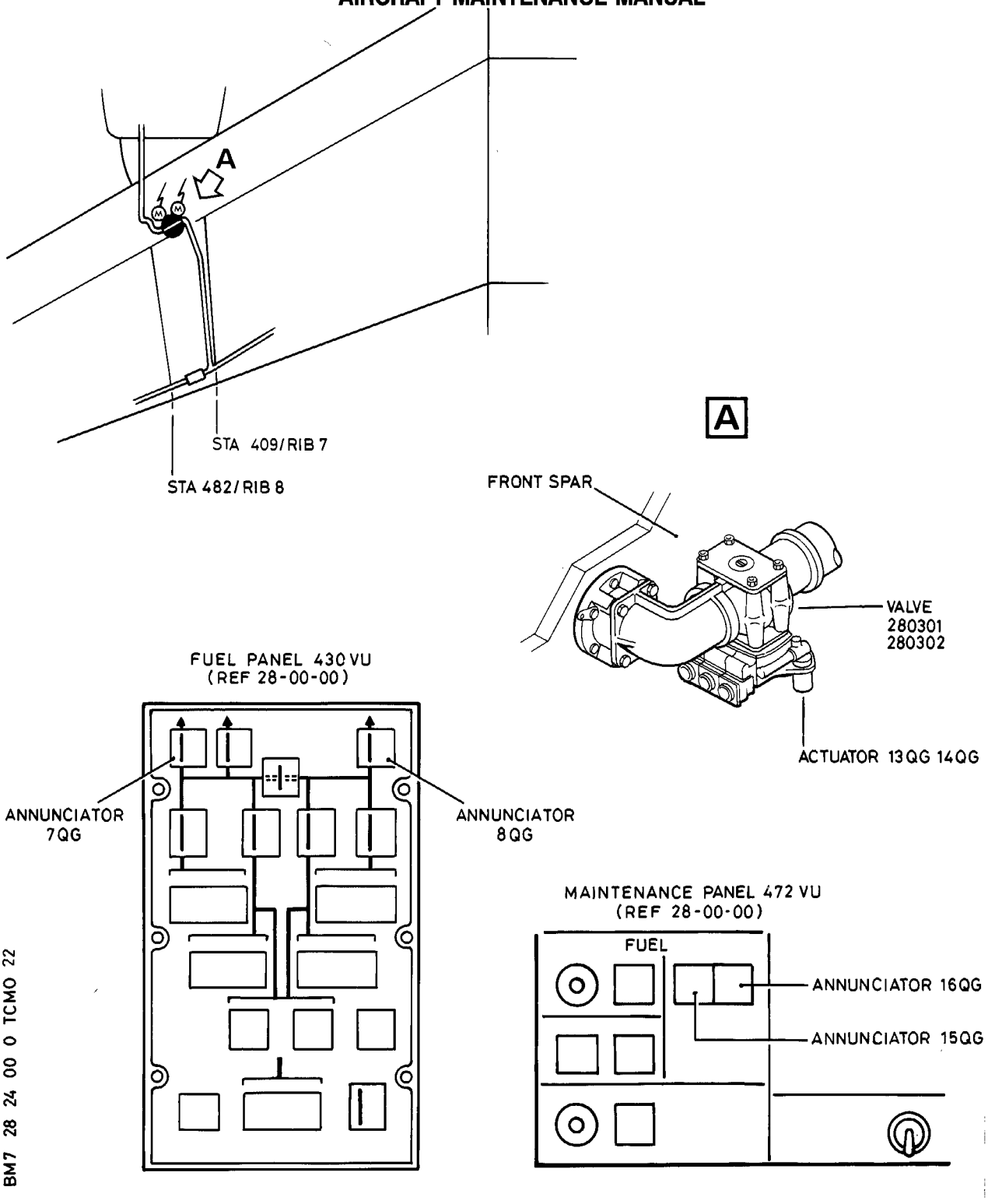
LP Valve - Installation
Figure 001



LP System - Component Location
Figure 002



LP System - Component Location
Figure 003

3. Description

A. LP Valve

(Ref. Fig. 004)

The LP valve, which is flange mounted by the inlet port to an adapter on the front spar, is an electrically-actuated spherical-plug type and comprises a cast body with line attachment, spherical plug and control spindle. The actuator comprises two electric motors driving a common gearbox to provide 90 deg. spherical-plug travel. Microswitches stop the motors at the end of travel and complete the position indication circuits. The motors drive the reduction gear which allows either motor to drive the valve when the other is not electrically powered or is mechanically incapable of rotating. Final drive is through locking mechanism (autoloc) which disengages the output shaft from the reduction gear when the motors are signalled to stop by the limit switches. The mounting of the valve is such that reactive loads are not transmitted to the fuel lines.

4. Control and Indication

(Ref. Fig. 005)

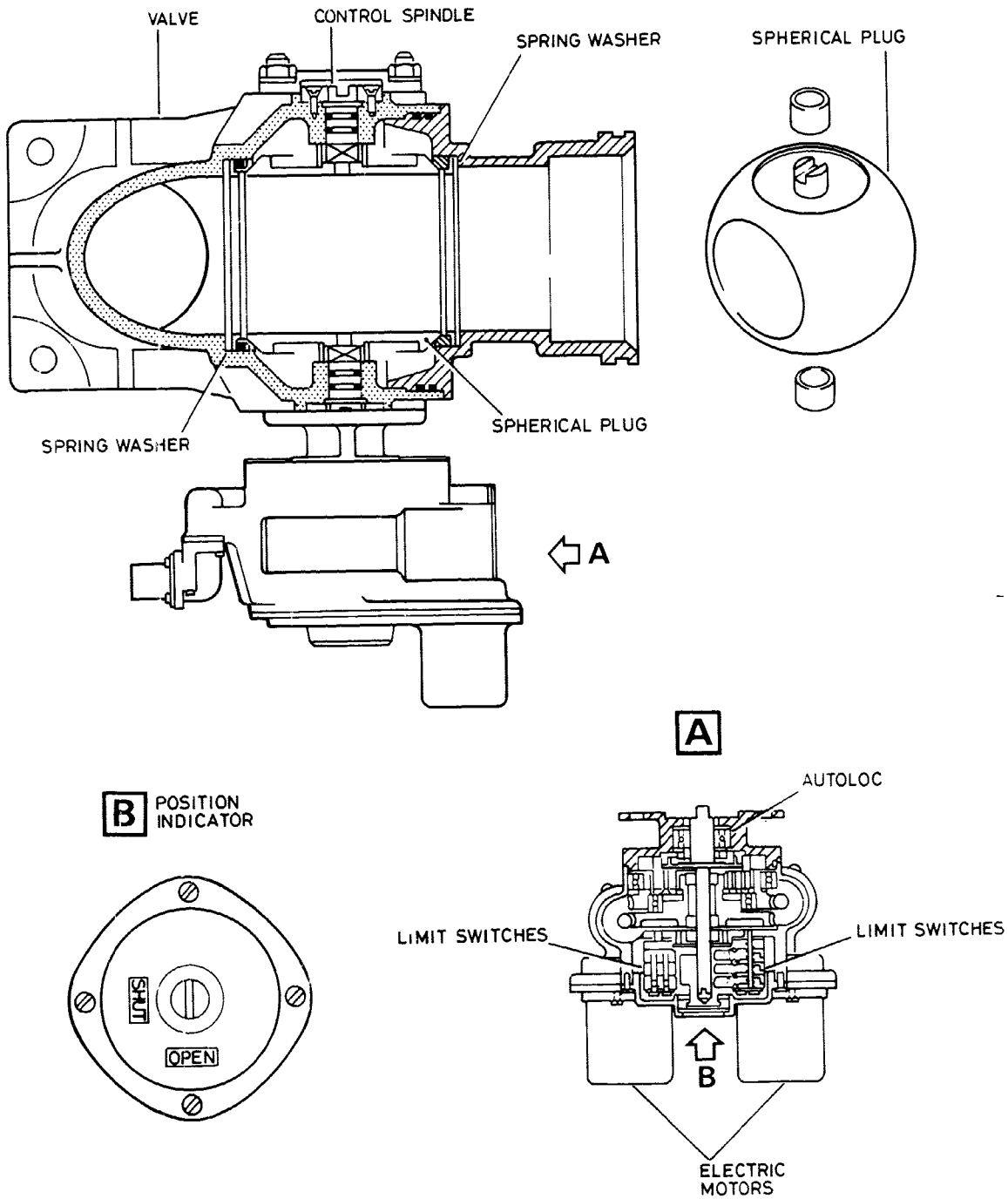
(Ref. Fig. 006)

(Ref. Fig. 007)

Each LP valve is electrically controlled by operation of the fire handle for the appropriate engine. Valve position indication is given by **LP VALVES** annunciators on fuel panel **430VU**. With the valves in the normal open position each annunciator flowbar comes on, in line, and the **SHUT** legend is off. With either valve closed (fire handle pulled) the related annunciator **SHUT** legend comes on and the flowbar is off. During transit, valve indication is off.

Each valve is driven by both electric motors supplied from separate power sources. Isolate relays are incorporated in the supplies to motors 1 and 2. Each relay is provided to isolate the valve opening supply to the associated motor if the contact in the fire handle switch fails to break when the handle is operated. In this event the valve is closed by one motor only, and to indicate this condition the **LP VALVE ENG 1** or **ENG 2** fault annunciator (panel **472VU**) **FAULT** legend comes on. The annunciator also comes on if either relay fails, indicating that the protection against a failed fire handle contact is no longer present.

On failure of a relay the valve is closed by the two motors.



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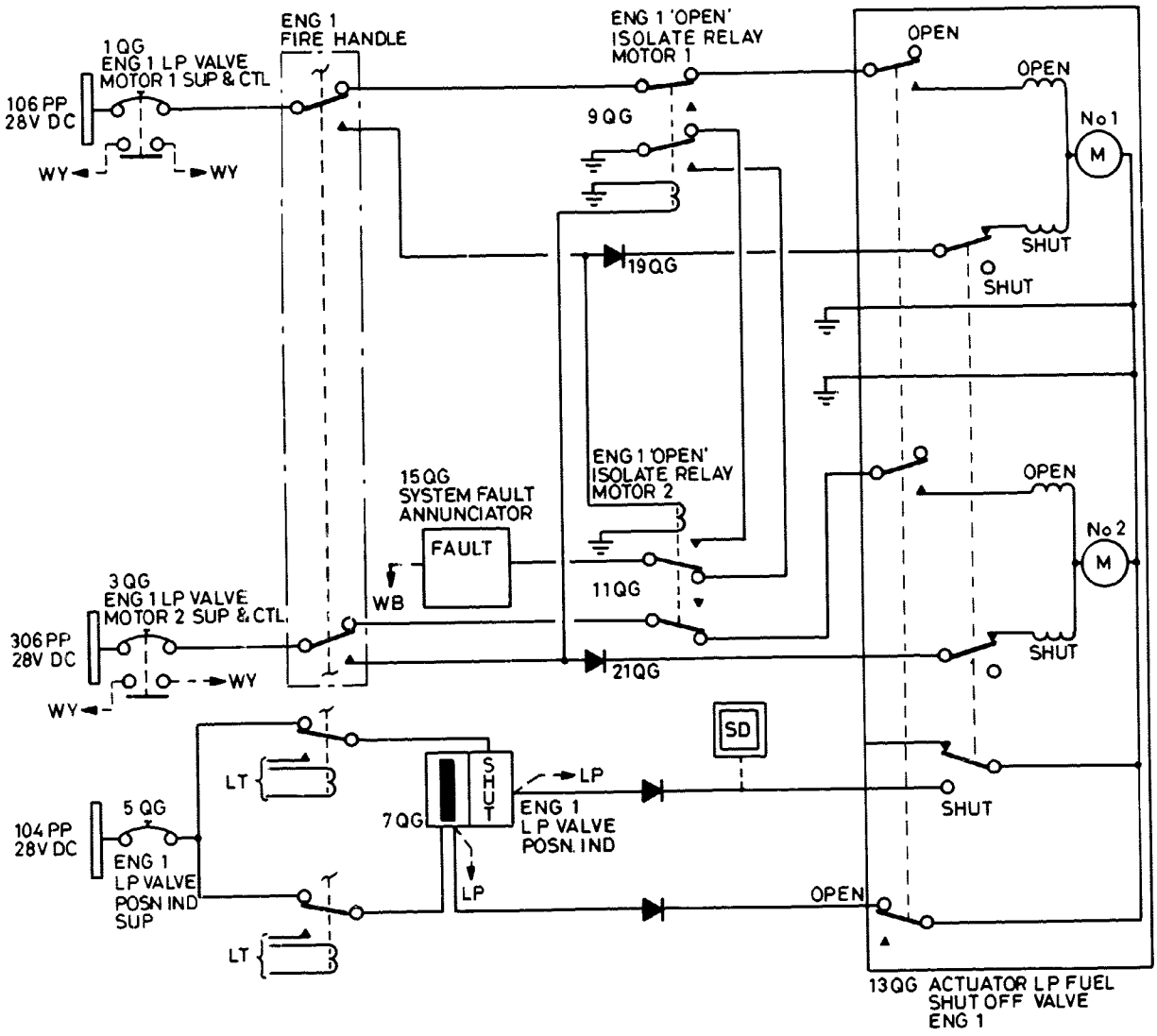
LP Valve
Figure 004



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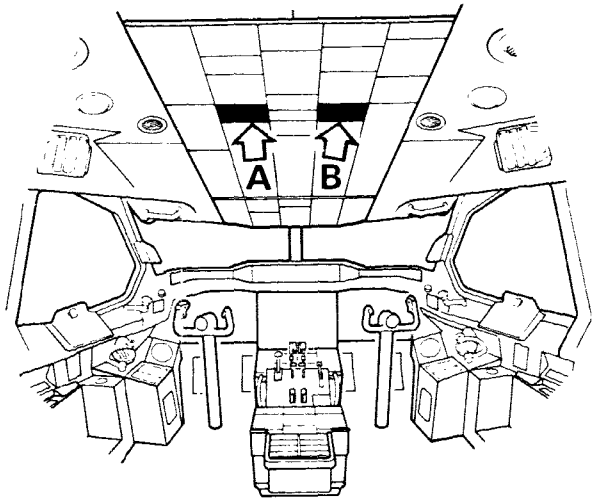
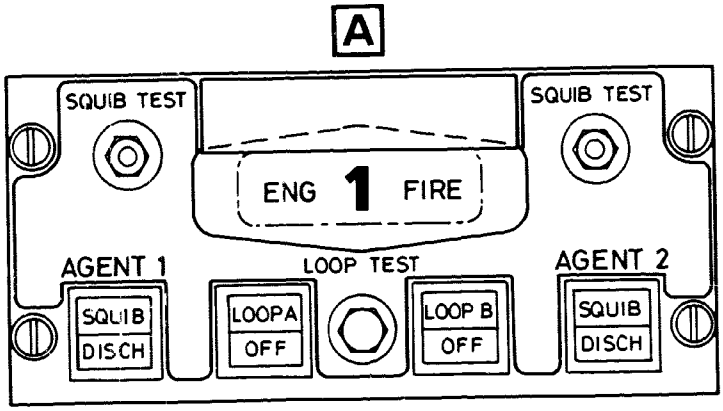
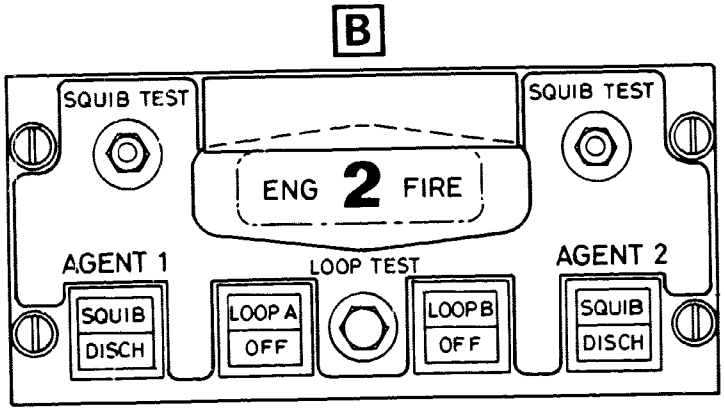
ENGINE 1 LP FUEL FIRE SHUT OFF VALVE SHOWN
ENGINE 2 LP FUEL FIRE SHUT OFF VALVE SIMILAR

		ENGINE 2
BUSBARS	MOTOR 1 SUPPLY & CONTROL	104 PP
	MOTOR 2 SUPPLY & CONTROL	306 PP
	LP VALVE POSN IND SUP	106 PP

LP Fuel Fire Shut Off Valve - Circuit Diagram
Figure 005







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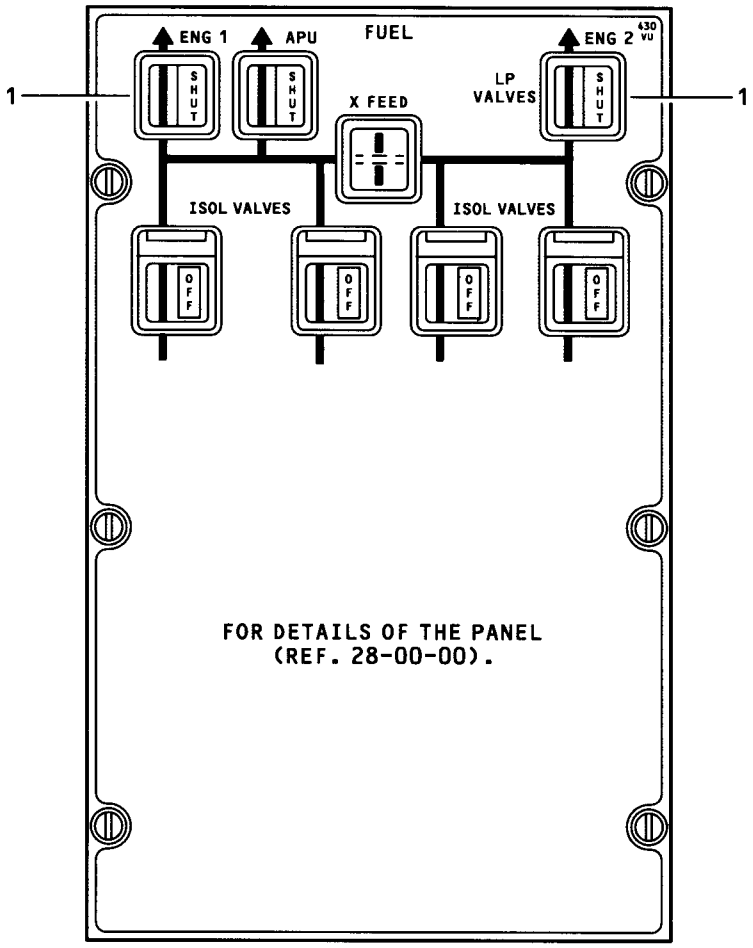
Engine Fire Controls
Figure 006

FUEL PANEL 430 VU



1. LP VALVES ANNUNCIATORS, SHOW THE POSITION OF THE RELATED ENGINE LP VALVES.

   LP VALVE OPEN, FIRE HANDLE IN NORMAL POSITION:
   - THE GREEN FLOWBAR IS ON.

   LP VALVE CLOSED, FIRE HANDLE PULLED:
   - THE GREEN FLOWBAR IS OFF
   - THE SHUT LEGEND IS ON.

   DURING VALVE OPERATION THE GREEN FLOWBAR IS OFF.

   NOTE:
   FOR APU ANNUNCIATOR DETAILS (REF. 49-30-00).

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Flight-Compartment Fuel-Control-Panel
Figure 007

WARNING : LANDING GEAR - MAKE SURE THAT THE GROUND SAFETIES AND CHOCKS ARE IN POSITION.

FLIGHT CONTROLS - MAKE SURE THAT THE GROUND SAFETIES AND NOTICES ARE IN POSITION.

OBSERVE THE SAFETY PRECAUTIONS IN 28-00-00, P. BLOCK 301.

MAKE SURE THAT THE FIRE FIGHTING EQUIPMENT IS AVAILABLE AND ADEQUATE.

MAKE SURE THAT YOU ISOLATE THE ELECTRICAL CIRCUITS UPON WHICH WORK IS IN PROGRESS.

DO NOT OPERATE THE MICROPHONE BUTTONS ON HF TRANSMISSION DURING REFUELING/DEFUELING OR GROUND MAINTENANCE-FUEL TRANSFER OPERATIONS.

1. Operational Test - LP Valve

A. Reason for the Job

R NOTE : Refer to the MPD TASK: 282400-02-1

R (1)Operational check of LP fuel fire shut off valves using each individual motor in turn and check correct operation of motors supply "open" isolate relays ("LP VALVES ENG 1 AND 2/FAULT" M.F.A. on lateral panel.

B. Equipment and Materials

ITEM	DESIGNATION
A.	Access Platform 4m (13ft)
B.	Circuit Breaker Safety Clips and Tags
Referenced Procedures	
- 24-41-00, P. Block 301	AC External Power Control
- 28-00-00, P. Block 301	Fuel - General

C. Procedure

(1)Job Set-Up

(a)Make certain that the following circuit breakers are open, safetied and tagged:

PANEL	SERVICE	IDENT.	LOCATION
133VU	ENGINES/ENG 1&2/FIRE EXTING/ SQUIB A/BTL 1	1WE	335/R71
133VU	ENGINES/ENG 1&2/FIRE EXTING/ SQUIB A/BTL 2	3WE	335/R72
22VU	FIRE EXTING/ENG 1&2/SQUIB B/ BTL 1	5WE	207/C19

PANEL	SERVICE	IDENT.	LOCATION
22VU	FIRE EXTING/ENG 1&2/SQUIB B/ BTL 2	7WE	207/C20

(b)Make certain that the following circuit breakers are closed:

PANEL	SERVICE	IDENT.	LOCATION
22VU	FUEL/LP VALVES/MOTOR 2/ENG 1	3QG	201/J19
22VU	FUEL/LP VALVES/MOTOR 2/ENG 2	4QG	201/J20
132VU	FUEL/LP VALVES/ENG 1/POS ANN	5QG	322/N53
132VU	FUEL/LP VALVES/ENG 2/MOTOR 1	2QG	322/N54
132VU	FUEL/LP VALVES/ENG 1/MOTOR 1	1QG	323/M53
132VU	FUEL/LP VALVES/ENG 2/POS ANN	6QG	323/M54

(c)Position the access platform.
(d)Open the access door 512(612) JB.
(e)Energize the aircraft electrical network (Ref. 24-41-00, P. Block 301).
(f)Check that the ENG 1 FIRE and ENG 2 FIRE handles are pushed (in). Lift the tabs (that lock the ENG 1 FIRE and ENG 2 FIRE handles) and break the sealing wires.

(2)Do a detailed visual inspection of the LP valve for corrosion (Ref. 28-24-31, P. Block 601).

(3)Test

ACTION	RESULT
1. On panel 472VU: - place ANN LT switch in TEST position - place switch in READ position press MFA reset buttons on panels 470VU, 471VU and 472VU.	- all indicator lights on panel 472VU come on - fuel lights go off
2. On panel 430VU: - make certain that LP VALVES ENG 1 (ENG 2) flowbar is in-line.	
3. On panel 22VU: - open FUEL/LP VALVES/MOTOR 2/ ENG 1 circuit breaker 3QG (line 201/J19) or FUEL/LP VALVES/ MOTOR 2/ENG 2 circuit breaker 4QG (line 201/J20).	Motor 2 of engine 1 (engine 2) LP valve is electrically isolated
4. On LP Valve: - disconnect the electrical connector 13QG-B (14QG-B) from motor 2 of	

ACTION	RESULT
engine 1 (engine 2).	
5. On flight compartment overhead panel 20VU: - pull ENG 1 (ENG 2) FIRE handle	Engine 1 (engine 2) LP valve is closed by motor 1. On panel 430VU: - while valve is in transit, LP VALVES ENG 1 (ENG 2) annunciator is blank - when valve is closed annunciator SHUT legend comes on. On panel 472VU: - FUEL/LP VALVE/ENG 1 (ENG 2) annunciator FAULT legend comes on.
- reset ENG 1 (ENG 2) FIRE handle	Engine 1 (Engine 2) LP valve opens On panel 430VU: - while valve is in transit, LP VALVES ENG 1 (ENG 2) annunciator is blank - when valve is open, annunciator flowbar comes on.
6. On panel 472VU: - press MFA RESET switch	- resets fault annunciator circuit - FAULT legend goes off.
NOTE: Operation of MFA RESET switch will eradicate all circuit fault indications on panel 472VU.	
7. On LP Valve: - connect electrical connector 13QG-B (14QG-B) to motor 2 of engine 1 (engine 2).	
8. On panel 22VU: - close FUEL/LP VALVES/MOTOR 2 ENG 1 circuit breaker 3QG (line 201/J19) or FUEL/LP VALVES/ MOTOR 2/ENG 2 circuit breaker 4QG (line 201/J20).	LP valve motor 2 of engine 1 (engine 2) electrically reinstated.
9. On panel 132VU: - open FUEL/LP VALVES/ENG 1/ MOTOR 1 circuit breaker 1QG (line 323/M53) or FUEL/LP VALVES/ENG 2/MOTOR 1 circuit	- LP valve motor 1 of engine 1 (engine 2) electrically isolated.

ACTION	RESULT
breaker 2QG (line 322/N54).	
10. On LP Valve: - disconnect the elector connector 13QG-A (14QG-A) from motor 1 of engine 1 (engine 2).	
11. On flight compartment overhead panel 20VU: - pull ENG 1 (ENG 2) FIRE handle.	Engine 1 (engine 2) LP valve is closed by motor 2 On panel 430VU: - while valve is in transit LP VALVES ENG 1 (ENG 2) annunciator is blank - when valve is closed annunciator SHUT legend comes on. On panel 472VU: - FUEL/LP VALVE/ENG 1 annunciator FAULT legend comes on.
12. On flight compartment overhead panel 20VU: - reset ENG 1 (ENG 2) FIRE handle.	- engine 1 (engine 2) LP valve opens. On panel 430VU: - while valve is in transit LP VALVES ENG 1 (ENG 2) annunciator goes blank - when valve is open annunciator flowbar comes on.
13. On panel 472VU: - press MFA RESET switch.	- resets fault annunciator circuit - FAULT legend goes off.
NOTE : Operation of MFA RESET switch will eradicate all circuit fault indications on panel 472VU.	
14. On LP Valve: - connect electrical connector 13QG-A (14QG-A) to motor 1 of engine 1 (engine 2).	
15. On panel 132VU: - close FUEL/LP VALVE/ENG 1 MOTOR 1 circuit breaker 1QG (line 323/M53) or FUEL/LP VALVES/ENG 2/MOTOR 1 circuit breaker 2QG (line 322/N54).	- LP valve motor 1 of engine 1 (engine 2) electrically reinstated.

ACTION	RESULT
16. On panel 472VU: - place **ANN LT** switch to **OFF** position. (4) Close-Up (a) Remove the safety clips and tags and close the circuit breakers **1WE, 3WE, 5WE** and **7WE**. (b) Lower the tabs (that lock the **ENG 1 FIRE** and **ENG 2 FIRE** handles) and safety with new sealing wire. (c) De-energize the aircraft electrical network (Ref. 24-41-00, P. Block 301). (d) Make sure that the work area is clean and clear of tools and all other items of equipment. (e) Close the access door 512(612) JB. (f) Remove the access platform.	

2. Operational Test - LP Valve Indication

A. Reason for the Job

R NOTE : Refer to the MPD TASK: 282400-01-1

R (1)Cross check valve position indication in flight compartment with mechanical position indicator on valve body.

B. Equipment and Materials

ITEM	DESIGNATION
A.	Access platform 2.5 m (8 ft)
Referenced Procedures	
- 24-41-00, P. Block 301	AC External Power Control
- 28-00-00, P. Block 301	Fuel - General

C. Procedure

(1)Job Set-Up

(a)Make certain that the following circuit breakers are open, safetied and tagged.

PANEL	SERVICE	IDENT.	LOCATION
133VU	ENGINES/ENG 1&2/FIRE EXTING/ SQUIB A/BTL 1	1WE	335/R71
133VU	ENGINES/ENG 1&2/FIRE EXTING/ SQUIB A/BTL 2	3WE	335/R72
22VU	FIRE EXTING/ENG 1&2/SQUIB B/ BTL 1	5WE	207/C19
22VU	FIRE EXTING/ENG 1&2/SQUIB B/ BTL 2	7WE	207/C20

(b)Make certain that the following circuit breakers are closed:

PANEL	SERVICE	IDENT.	LOCATION
22VU	FUEL/LP VALVES/MOTOR 2/ENG 1	3QG	201/J19
22VU	FUEL/LP VALVES/MOTOR 2/ENG 2	4QG	201/J20
132VU	FUEL/LP VALVES/ENG 1/MOTOR 1	1QG	323/M53
132VU	FUEL/LP VALVES/ENG 2/MOTOR 1	2QG	322/N54
132VU	FUEL/LP VALVES/ENG 1/POS ANN	5QG	322/N53
132VU	FUEL/LP VALVES/ENG 2/POS ANN	6QG	323/M54

(c)Energize the aircraft electrical network (Ref. 24-41-00, P. Block 301).

(d)Position the access platform.

(e)Open the access door 512(612) JB.

(2)Test

ACTION	RESULT
1. On panel 472VU: - place ANN LT switch in TEST position - place switch in READ position - press MFA reset buttons on panels 470VU, 471VU and 472VU	- all indicator lights on panel 427VU come on - fuel lights go off.
2. On panel 430VU: - make certain that LP VALVES ENG 1(ENG 2) flowbar is in line	
3. On panel 20VU: - pull ENG 1 (ENG 2) fire	On panel 430VU: - while valve is in transit. LP VALVES ENG 1 (ENG 2) annunciator is blank - when valve is closed annunciator SHUT legend comes on. In relevant zone: - mechanical indicator on valve actuator is in SHUT position.
4. On panel 20VU: - reset ENG 1 (ENG 2) FIRE handle - place ANN LT switch in OFF position	On panel 430VU: - while valve is in transit LP VALVES ENG 1 (ENG 2) annunciator is blank. - when valve is open, annunciator flowbar comes on. In relevant zone: - mechanical indicator on valve actuator is in OPEN position.

R (3)Close-up
R (a)Remove the safety clips and tags and close the circuit breakers 1WE, 3WE, 5WE and 7WE.
R (b)De-energize the aircraft electrical network (Ref. 24-41-00, P. Block 301).
R (c)Close the access door 512(612) JB.
R (d)Remove the access platform.

3. Operational Test - Leakage (Engine Removed)

A. Reason for the Job

R NOTE : Refer to the MPD TASK: 282400-01-1

R (1)Operational check of LP fuel fire shut off valve for evidence of
R external and internal leakage with booster pumps on.

B. Equipment and Materials

ITEM	DESIGNATION
A.	Access Platform 2.5 m (8 ft)
B.	Warning Notice - Prohibiting Operation of ENG 1 (ENG 2) FIRE handle
C.	Container Fuel
Referenced Procedures	
- 24-41-00, P. Block 301	AC External Power Control
- 28-00-00, P. Block 301	Fuel - General

C. Procedure

(1)Job Set-Up

(a)On flight compartment overhead panel:
- make certain that ENG 1 (ENG 2) FIRE handle is pulled and fitted with warning notice prohibiting use.

(b)Make certain that the following circuit breakers are open, safetied and tagged:

PANEL	SERVICE	IDENT.	LOCATION
22VU	FUEL/LP VALVES/MOTOR 2/ENG 1	3QG	201/J19
22VU	FUEL/LP VALVES/MOTOR 2/ENG 2	4QG	201/J20
22VU	FIRE EXTING/ENG 1&2/SQUIB B/BTL 1	5WE	207/C19
22VU	FIRE EXTING/ENG 1&2/SQUIB B/BTL 2	7WE	207/C20
133VU	ENGINES/ENG 1&2/FIRE EXTING/SQUIB A/ BTL 1	1WE	335/R71
133VU	ENGINES/ENG 1&2/FIRE EXTING/SQUIB A/ BTL 2	3WE	335/R72
132VU	FUEL/LP VALVES/ENG 1/MOTOR 1	1QG	323/M53
132VU	FUEL/LP VALVES/ENG 2/MOTOR 1	2QG	322/N54

(c)Make certain that the following circuit breakers are closed:
- for engine 1

PANEL	SERVICE	IDENT.	LOCATION
132VU	FUEL/L INR TK/PUMP 1/CTL	69QA	322/N60
132VU	FUEL/L INR TK/PUMP 2/WARN	11QA	322/N61
132VU	FUEL/L INR TK/PUMP 1/WARN	17QA	323/M60
132VU	FUEL/L INR TK/PUMP 2/CTL	59QA	323/M61
132VU	FUEL/ISOL VALVE/L INR TK/SUPPLY	3QB	324/L55
132VU	FUEL/LP VALVES/ENG 1/POS ANN	5QG	322/N53
132VU	FUEL/X FEED VALVE/POS ANN	3QE	324/L59
132VU	FUEL/X FEED VALVE/MOTOR 1	2QE	324/L60
132VU	FUEL/X FEED VALVE/MOTOR 2	1QE	324/L61

- for engine 2

PANEL	SERVICE	IDENT.	LOCATION
132VU	FUEL/R INR TK/PUMP 1/CTL	60QA	322/N62
132VU	FUEL/R INR TK/PUMP 2/WARN	18QA	322/N63
132VU	FUEL/R INR TK/PUMP 1/WARN	12QA	323/M62
132VU	FUEL/R INR TK/PUMP 2/CTL	70QA	323/M63
132VU	FUEL/ISOL VALVE/R INR TK/SUPPLY	4QB	324/L56
132VU	FUEL/LP VALVES/ENG 2/POS ANN	6QG	323/M54
132VU	FUEL/X FEED VALVE/POS ANN	3QE	324/L59
132VU	FUEL/X FEED VALVE/MOTOR 1	2QE	324/L60
132VU	FUEL/X FEED VALVE/MOTOR 2	1QE	324/L61

(d)Energize the aircraft electrical network and make certain that electronics racks are ventilated (Ref. 24-41-00, P. Block 301).
(e)On panel 430VU:
- make certain that LP VALVES ENG 1 (ENG 2) annunciator SHUT legend is on, and that X FEED valve annunciator flowbar is crossline
- make certain that isolation valve(s) is(are) on line.

(f)Position access platform next to engine pylon.
(g)Position container then remove blanking cap from fuel feed line in pylon. Allow all residual fuel to drain from line and leave line-end open.
(h)Make certain inner left (right) tank contains at least 1000 kg fuel.
(j)Remove the access door 512(612) JB.

(2)Test

ACTION	RESULT
1. On panel 430VU: - make certain all PUMP pushbutton switches are released - press left (right) INNER TK PUMP 1 and 2 pushbutton switches.	On panel 430VU: - OFF legends are on - pumps operate. Fuel feed line to LP valve is pressurized. On panel 430VU: - left (right) INNER TK PUMP 1 and

ACTION	RESULT
	2 switch OFF legends go off.
2. Maintain fuel pressure for at least five minutes: Make sure that no fuel leaks from the open end of fuel line in pylon. - Examine the LP valve externally for leaks.	On LP valve Engine 1 (Engine 2): - the leak rate must not be greater than five drops per minute.
3. On panel 430VU: - release left (right) INNER TK PUMP 1 and 2 pushbutton switches.	- OFF legends come on - pumps stop.

(3)Close-Up
(a)Cap the open end of the fuel line in the pylon, then remove the container.
(b)Make sure that the work area is clean and clear of tools and all other items of equipment.
(c)Install the access door 512(612) JB.
(d)Remove the access platform.
(e)Remove the safety clips and tags and close the circuit breakers 3QG, 4QG, 5WE, 7WE, 1WE, 3WE, 1QG and 2QG.
(f)De-energize the aircraft electrical network (Ref. 24-41-00, P. Block 301).

4. Operational Test - Leakage (Engine Installed)

A. Reason for the Job

R NOTE : Refer to the MPD TASK: 282400-01-1

R (1)Check LP fuel fire shut off valve for evidence of external and internal leakage with booster pumps on.

B. Equipment and Materials

ITEM	DESIGNATION
A.	Access Platform 2.5 m (8 ft)
B.	Warning Notice - Prohibiting Operation of ENG 1 (ENG 2) FIRE handle
C.	Container Fuel
D.	Cap-Blanking
Referenced Procedures	
- 24-41-00, P. Block 301	AC External Power Control
- 28-00-00, P. Block 301	Fuel - General
- 73-12-04, P. Block 401	Main Fuel Supply Line - Removal/Installation

C. Procedure

(1)Job Set-Up

(a)On flight compartment overhead panel:
- make sure that ENG 1 (ENG 2) FIRE handle is pulled and fitted with warning notice which tells personnel not to use.

(b)Make sure that the circuit breakers that follow are open,safetied and tagged:

PANEL	SERVICE	IDENT.	LOCATION
22VU	FUEL/LP VALVES/MOTOR 2/ENG 1	3QG	201/J19
22VU	FUEL/LP VALVES/MOTOR 2/ENG 2	4QG	201/J20
22VU	FIRE EXTING/ENG 1&2/SQUIB B/BTL 1	5WE	207/C19
22VU	FIRE EXTING/ENG 1&2/SQUIB B/BTL 2	7WE	207/C20
133VU	ENGINES/ENG 1&2/FIRE EXTING/SQUIB A/ BTL 1	1WE	335/R71
133VU	ENGINES/ENG 1&2/FIRE EXTING/SQUIB A/ BTL 2	3WE	335/R72
132VU	FUEL/LP VALVES/ENG 1/MOTOR 1	1QG	323/M53
132VU	FUEL/LP VALVES/ENG 2/MOTOR 1	2QG	322/N54

(c)Make sure that the circuit breakers that follow are closed:
- for engine 1

PANEL	SERVICE	IDENT.	LOCATION
132VU	FUEL/L INR TK/PUMP 1/CTL	69QA	322/N60
132VU	FUEL/L INR TK/PUMP 2/WARN	11QA	322/N61

PANEL	SERVICE	IDENT.	LOCATION
132VU	FUEL/L INR TK/PUMP 1/WARN	17QA	323/M60
132VU	FUEL/L INR TK/PUMP 2/CTL	59QA	323/M61
132VU	FUEL/ISOL VALVE/L INR TK/SUPPLY	3QB	324/L55
132VU	FUEL/LP VALVES/ENG 1/POS ANN	5QG	322/N53
132VU	FUEL/X FEED VALVE/POS ANN	3QE	324/L59
132VU	FUEL/X FEED VALVE/MOTOR 1	2QE	324/L60
132VU	FUEL/X FEED VALVE/MOTOR 2	1QE	324/L61

- for engine 2

PANEL	SERVICE	IDENT.	LOCATION
132VU	FUEL/R INR TK/PUMP 1/CTL	60QA	322/N62
132VU	FUEL/R INR TK/PUMP 2/WARN	18QA	322/N63
132VU	FUEL/R INR TK/PUMP 1/WARN	12QA	323/M62
132VU	FUEL/R INR TK/PUMP 2/CTL	70QA	323/M63
132VU	FUEL/ISOL VALVE/R INR TK/SUPPLY	4QB	324/L56
132VU	FUEL/LP VALVES/ENG 2/POS ANN	6QG	323/M54
132VU	FUEL/X FEED VALVE/POS ANN	3QE	324/L59
132VU	FUEL/X FEED VALVE/MOTOR 1	2QE	324/L60
132VU	FUEL/X FEED VALVE/MOTOR 2	1QE	324/L61

(d)Put the access platform in position next to the engine pylon.
(e)Get access to the Main Fuel Supply Line and disconnect it at the lower end (Ref.AMM 73-12-04, P. Block 401).
(f)Put a Cap-Blanking on the disconnected end of the Fuel Supply Line.
(g)Energize the aircraft electrical network and make sure the electronic racks are ventilated (Ref. 24-41-00, P. Block 301).
(h)On panel 430VU:
- make sure that LP VALVES ENG 1 (ENG 2) annunciator SHUT legend is on, and that X FEED valve annunciator flowbar is crossline.
- make sure that isolation valve(s) is(are) on line.
(j)Position the container-fuel below fuel supply line.
(k)Remove the Cap-Blanking from the fuel supply line. Allow all residual fuel to drain from line and leave line-end open.
(l)Make sure inner left (right) tank contains at least 1000 kg fuel.
(m)Remove the access door 512(612) JB.

(2)Test

ACTION	RESULT
1. On panel 430VU: - make sure all PUMP pushbutton switches are released	On panel 430VU: - OFF legends are on

ACTION	RESULT
- press left (right) INNER TK PUMP 1 and 2 pushbutton switches.	- pumps run. Fuel feed line to LP valve is pressurized. On panel 430VU: - left (right) INNER TK PUMP 1 and 2 switch OFF legends go off.
2. Maintain fuel pressure for at least five minutes: make sure that no fuel runs from the open end of fuel line in pylon. Examine LP valve externally for leaks.	On LP valve Engine 1 (Engine 2): - the leak rate must not be greater than five drops per minute.
3. On panel 430VU: - release left (right) INNER TK PUMP 1 and 2 pushbutton switches.	- OFF legends come on - pumps stop.

(3)Close-Up
(a)Put the Cap-Blanking on the fuel supply line.
(b)Remove the Container-Fuel.
(c)Remove the Cap-Blanking and connect the fuel supply line.
(Ref. 73-12-04, P. Block 401).
(d)Make sure that the work area is clean and clear of tools and all other items of equipment.
(e)Install the access door 512(612) JB.
(f)Remove the access platform.
(g)Remove the safety clips and tags and close the circuit breakers 3QG, 4QG, 5WE, 7WE, 1WE, 3WE, 1QG and 2QG.
(h)De-energize the aircraft electrical network (Ref. 24-41-00, P. Block 301).

R WARNING : THIS PROCEDURE USES A FUEL SYSTEM ITEM THAT IS IN A CATEGORY KNOWN AS
R A CRITICAL DESIGN CONFIGURATION CONTROL LIMITATION (CDCCL).
R CDCCL IDENTIFIES AN ITEM THAT CAN BE THE SOURCE OF A POSSIBLE FUEL
R TANK IGNITION. YOU MUST KEEP ALL CDCCL ITEMS IN THE APPROVED
R CONFIGURATION. DAMAGE, WEAR OR CHANGES TO A CDCCL ITEM CAN CAUSE A
R POSSIBLE FUEL TANK EXPLOSION.

R LANDING GEAR - MAKE SURE THAT THE GROUND SAFETIES AND CHOCKS ARE IN POSITION.

R FLIGHT CONTROLS - MAKE SURE THAT THE GROUND SAFETIES AND NOTICES ARE
R IN POSITION.

R OBEY THE SAFETY PRECAUTIONS IN 28-00-00, P. BLOCK 301.

R MAKE SURE THAT THE FIRE FIGHTING EQUIPMENT IS AVAILABLE AND ADEQUATE.

R MAKE SURE THAT YOU ISOLATE THE ELECTRICAL CIRCUITS UPON WHICH WORK IS
R IN PROGRESS.

DO NOT OPERATE THE MICROPHONE BUTTONS ON HF TRANSMISSION DURING REFUELING/DEFUELING OR GROUND MAINTENANCE - FUEL TRANSFER OPERATIONS.

1. Reason for the Job

A. Removal and Installation of Electrical Actuator (Ref. paragraph 2).

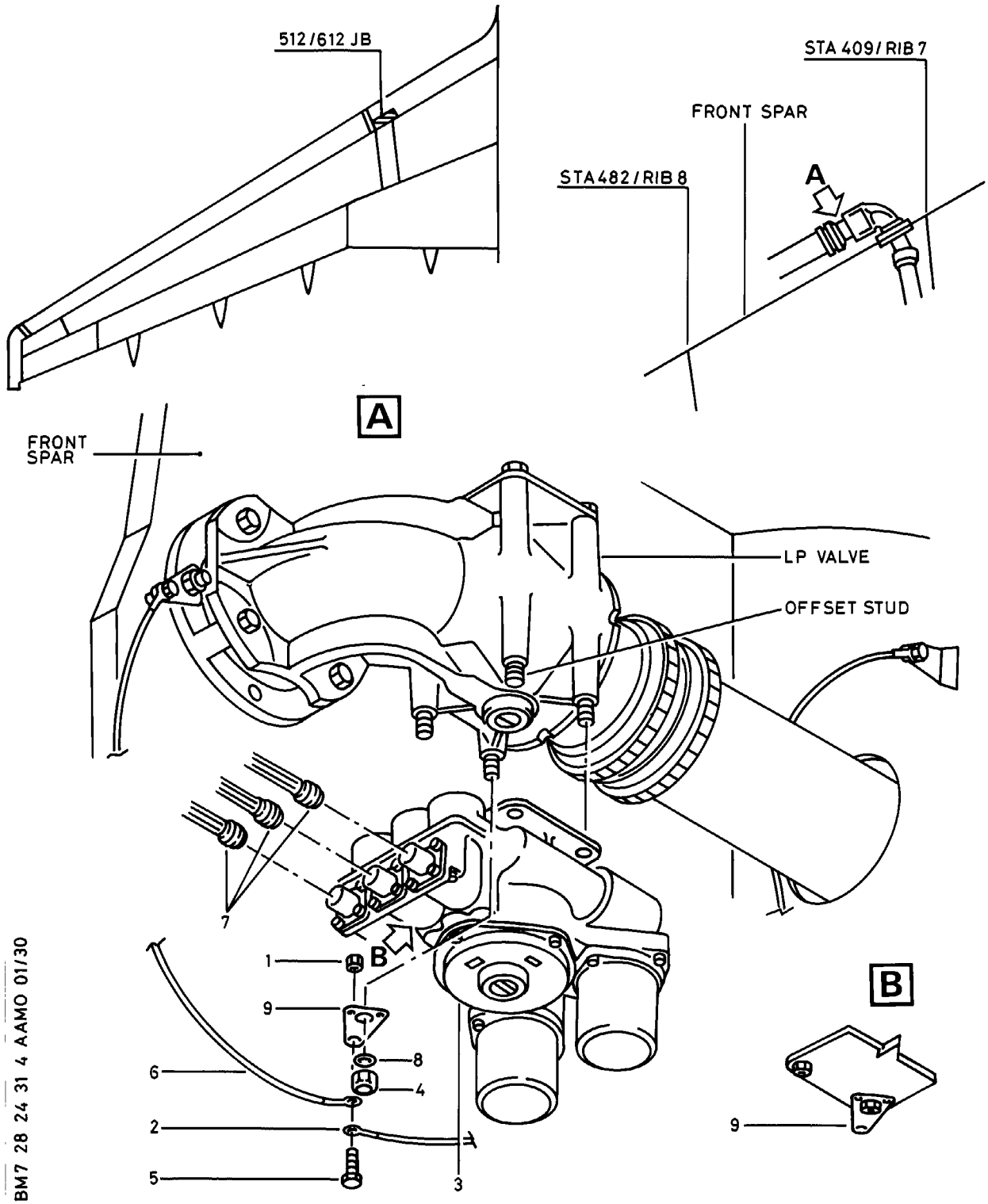
B. Removal and Installation of LP Valve and Electrical Actuator (Ref. paragraph 3).

2. Electrical Actuator

A. Equipment and Materials

ITEM	DESIGNATION
A.	Access Platform 4 m (13 ft)
B.	Circuit Breaker Safety Clips and Tags
C.	Blanking Caps
Referenced Procedures	
- 20-28-11, P. Block 1	Electrical Bonding
- 24-41-00, P. Block 301	AC External Power Control
- 28-00-00, P. Block 301	Fuel - General

B. Procedure
(Ref. Fig. 401)
(1)Job Set-Up
(a)Open, safety and tag the following circuit breakers:
- For LP valve actuator, engine 1



LP Valve Actuator - Installation
Figure 401

PANEL	SERVICE	IDENT.	LOCATION
22VU	FUEL/LP VALVES/MOTOR 2/ENG 1	3QG	201/J19
132VU	FUEL/LP VALVES/ENG 1/MOTOR 1	1QG	323/M53
132VU	FUEL/LP VALVES/ENG 1/POS ANN	5QG	322/N53

- For LP valve actuator, engine 2

PANEL	SERVICE	IDENT.	LOCATION
22VU	FUEL/LP VALVES/MOTOR 2/ENG 2	4QG	201/J20
132VU	FUEL/LP VALVES/ENG 2/POS ANN	6QG	323/M54
132VU	FUEL/LP VALVES/ENG 2/MOTOR 1	2QG	322/N54

(b)Position access platform.
(c)Open access door 512 (612) JB.

(2)Removal
(a)Disconnect electrical connectors (7). Cap free connectors (7) and fixed connectors on actuator (3).
(b)Remove nut (1) and screw (5) and disconnect bonding leads (2) and (6) from bonding tag (9).
(c)Remove nuts (4), washers (8), actuator (3).
(d)Clean and inspect component interface.

(3)Installation
(a)Note position of offset hole and stud.

CAUTION: AVOID DAMAGE TO VALVE SPINDLE.

(b)Make certain that position of valve spindle matches actuator. If necessary, manually rotate valve spindle to align with actuator.
(c)Install actuator (3) on studs, and secure with washers (8) and nuts (4).

R WARNING : THIS INSTRUCTION IS APPLICABLE TO A CRITICAL DESIGN
R CONFIGURATION CONTROL LIMITATION (CDCCL) ITEM. CAREFULLY OBEY
R ALL GIVEN INSTRUCTIONS WHEN YOU DO THIS STEP. IF YOU DO NOT
R OBEY THESE INSTRUCTIONS, A DANGEROUS CONDITION CAN OCCUR THAT
R CAN CAUSE A POSSIBLE FUEL TANK EXPLOSION.

(d)Connect bonding leads (2) and (6) to bonding tag (9) with screw (5) and nut (1) (Ref. 20-28-11, P. Block 1).
(e)Do an electrical continuity test of the two bonding leads (2) and (6) (Ref. 20-28-11, P. Block 1).

NOTE: Stud marked with red paint ensures electrical continuity between actuator (3) and LP valve.

(f)Remove caps and connect electrical connectors (7).

(4)Preparation for Test
(a)Open, safety and tag the following circuit breakers:

PANEL	SERVICE	IDENT.	LOCATION
22VU	FIRE EXTING/ENG 1 & 2/SQUIB B/BTL 1	5WE	207/C19
22VU	FIRE EXTING/ENG 1 & 2/SQUIB B/BTL 2	7WE	207/C20
133VU	ENGINES/ENG 1 & 2/FIRE EXTING/SQUIB A/BTL 1	1WE	335/R71
133VU	ENGINES/ENG 1 & 2/FIRE EXTING/SQUIB A/BTL 2	3WE	335/R72

(b)Remove safety clips and tags and close circuit breakers 3QG (4QG), 1QG (2QG), 5QG (6QG).
(c)Energize the aircraft electrical network and make certain that electronics racks are ventilated (Ref. 24-41-00, P. Block 301).
(d)On panel 430VU, make certain that ENG1 (ENG2) LP VALVES annunciator flowbar is on.
(e)Lift the tabs locking the ENG 1 and ENG 2 FIRE handles (break the sealing wires).

(5)Test

ACTION	RESULT
1. On panel 472VU: - place ANN LT switch in TEST position - place ANN LT switch in READ position	On panel 472VU: - all indicator lights come on - indicator lights go off
2. On panel 22VU: - open circuit breaker 3QG 201/J19(4QG,201/J20)	
3. On overhead panel 20VU; - pull ENG 1 (ENG 2) FIRE handle	- LP valve closes On panel 430VU: - LP VALVES ENG 1 (ENG 2) annunciator flowbar goes off, SHUT legend comes on On panel 472VU: - LP VALVE ENG 1(ENG 2) FAULT annunciator comes on
- place ENG 1 (ENG 2) FIRE handle in normal position	- LP valve opens On panel 430VU: - LP VALVES ENG 1 (ENG 2) annunciator SHUT legend goes off, flowbar comes on
4. On panel 22VU: - close circuit breaker 3QG (4QG)	
5. On panel 472VU:	

ACTION	RESULT
- press MFA RESET switch	- LP VALVE ENG 1(ENG 2) FAULT annunciator goes off
6. On panel 132VU: - open circuit breaker 1QG, 323/M53 (2QG, 322/N54)	
7. On overhead panel 20VU: - pull ENG 1 (ENG 2) FIRE handle	- LP valve closes On panel 430VU: - LP VALVES ENG 1(ENG 2) annunciator flowbar goes off, SHUT legend comes on On panel 472VU: - LP VALVE ENG 1(ENG 2) FAULT annunciator comes on
- place ENG 1 (ENG 2) FIRE handle in normal position	- LP valve opens On panel 430VU: - LP VALVES ENG 1 (ENG 2) annunciator SHUT legend goes off, flowbar comes on
8. On panel 132VU: - close circuit breaker 1QG(2QG)	
9. On panel 472VU: - press MFA RESET switch	- LP VALVE ENG 1(ENG 2) FAULT annunciator goes off
10. On overhead panel 20VU: - pull ENG 1(ENG 2) FIRE handle	- LP valve closes On panel 430 VU: - LP VALVES ENG 1 (ENG2) annunciator flowbar goes off, SHUT legend comes on on panel 472VU: - LP VALVE ENG 1(ENG 2) FAULT annunciator remains off
11. On overhead panel 20VU: - place ENG 1 (ENG 2) FIRE handle in normal position	- LP valve opens On panel 430 VU: - LP VALVES ENG 1 (ENG 2) annunciator SHUT legend goes off, flowbar comes on
12. On panel 472 VU: - place ANN LT switch in OFF position	

(6)Close-Up
(a)Remove safety clips and close circuit breakers 5WE, 7WE, 1WE, 3WE.
(b)De-energize the aircraft electrical network (Ref. 24-41-00, P. Block 301).
(c)Lock the ENG 1 FIRE and ENG 2 FIRE handles by lowering the tabs and installing new sealing wires.
(d)Make certain that working area is clean and clear of tools and miscellaneous items of equipment.
(e)Close access door 512 (612) JB.
(f)Remove access platform.

3. LP Valve

A. Equipment and Materials

ITEM	DESIGNATION
A.	Access Platform 4 m (13 ft)
B.	Circuit Breaker Safety Clips and Tags
C.	Container 2 US Gallons approx. (7.5 liters)
D.	O-rings
E.	Lockwire, Corrosion Resistant Steel, 0.8 mm (0.032 in)
F.	Blanking Caps
G. Material No. 01-001	Fuels (Ref. 20-31-00)
Referenced Procedures	
- 20-28-11, P. Block 1	Electrical Bonding
- 24-41-00, P. Block 301	AC External Power Control
- 28-00-00, P. Block 301	Fuel - General

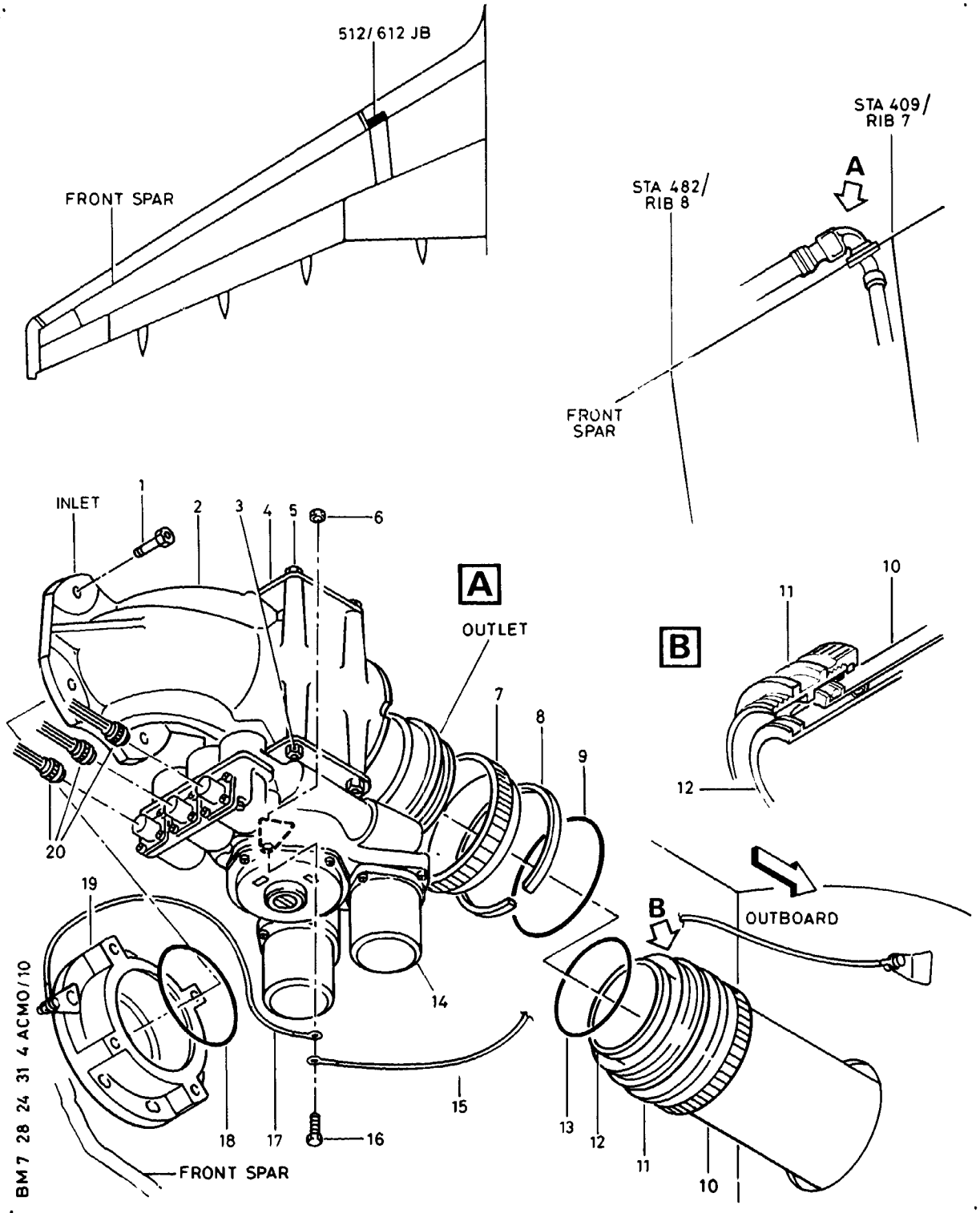
B. Procedure
(Ref. Fig. 402)

(1)Job Set-Up
(a)Energize the aircraft electrical network and make certain that electronics racks are ventilated (Ref. 24-41-00, P. Block 301).
(b)Make certain that the following circuit breakers are closed:
- For LP valve, engine 1

PANEL	SERVICE	IDENT.	LOCATION
132VU	FUEL/L INR TK/SUPPLY ISOL VALVE	3QB	324/L55
132VU	FUEL/L OUTR TK/SUPPLY ISOL VALVE	1QB	324/L53
132VU	FUEL/X FEED VALVE		Line 324

- For LP valve, engine 2

PANEL	SERVICE	IDENT.	LOCATION
132VU	FUEL/R INR TK/SUPPLY ISOL VALVE	4QB	324/L56
132VU	FUEL/R OUTR TK/SUPPLY ISOL VALVE	2QB	324/L58
132VU	FUEL/X FEED VALVE		Line 324



LP Valve - Installation
Figure 402

(c)On panel 430VU:
raise guards and release left (right) wing inner and outer tank ISOL VALVES pushbutton switches. Make certain that OFF legends come on and flowbars go off.
(d)On panel 430VU:
make certain that X FEED pushbutton switch is released (out) and flowbar is crossline.
(e)De-energize the aircraft electrical network (Ref. 24-41-00, P. Block 301).
(f)Open, safety and tag the following circuit breakers:
- For LP valve, engine 1

PANEL	SERVICE	IDENT.	LOCATION
22VU	FUEL/LP VALVES/MOTOR 2/ENG 1	3QG	201/J19
132VU	FUEL/L INR TK/SUPPLY ISOL VALVE	3QB	324/L55
132VU	FUEL/L OUTR TK/SUPPLY ISOL VALVE	1QB	324/L53
132VU	FUEL/LP VALVES/ENG 1/MOTOR 1	1QG	323/M53
132VU	FUEL/LP VALVES/ENG 1/POS ANN	5QG	322/N53
132VU	FUEL/X FEED VALVE		Line 324

- For LP valve, engine 2

PANEL	SERVICE	IDENT.	LOCATION
22VU	FUEL/LP VALVES/MOTOR 2/ENG 2	4QG	201/J20
132VU	FUEL/R INR TK/SUPPLY ISOL VALVE	4QB	324/L56
132VU	FUEL/R OUTR TK/SUPPLY ISOL VALVE	2QB	324/L58
132VU	FUEL/LP VALVES/ENG 2/POS ANN	6QG	323/M54
132VU	FUEL/LP VALVES/ENG 2/MOTOR 1	2QG	322/N54
132VU	FUEL/X FEED VALVE		Line 324

(g)Position access platform.
(h)Open access door 512 (612) JB.

(2)Removal
(a)Disconnect electrical connectors (20). Cap free connectors (20) and fixed connectors on actuator (14).
(b)Remove nut (6) and screw (16) and disconnect bonding leads (15) and (17).
(c)Remove lockwire from coupling nut (7).
(d)Slide connector (11) and conduit (10) outboard to limit of travel.

NOTE: Fuel line (12) and conduit (10) have axial float of 0.2 in (5.08 mm) minimum.

(e)Position container below LP valve (2) and unscrew coupling nut (7).
(f)Remove four bolts (1) and partially disengage outlet of LP valve (2), to drain off fuel.
(g)Disengage LP valve outlet and inlet, and remove LP valve (2) complete

with actuator (14).
(h)Remove and discard O-rings (9)(13)(18).
(j)If a replacement LP valve is to be installed:
1 Remove nuts and washers (3) and remove actuator (14) from LP valve (2).
2 Extract circlip (8) and remove coupling nut (7) from valve outlet.
(k)Clean and inspect component interface. Cap open line ends and valve orifices.

(3)Preparation of Replacement Component
(a)Install coupling nut (7) and circlip (8) on valve outlet.
(b)Make certain that blanking plate (4) is correctly positioned for LH or RH wing installation, as applicable. If necessary, remove nuts and washers (5), reposition blanking plate (4) and secure with nuts and washers (5).

NOTE: Actuator is always installed below LP valve.

(c)Align slot in LP valve spindle with actuator drive.
(d)Install actuator (14) on LP valve (2) and secure with four nuts and washers (3).

NOTE: Stud marked with red paint ensures electrical continuity between actuator (14) and LP valve (2).

(4)Installation
(a)Lubricate new O-rings (9)(13)(18) with Fuel (Material No. 01-001). Install:
- O-ring (18) on valve inlet
- O-ring (9) on valve outlet
- O-ring (13) on fuel line (12).
(b)Engage valve inlet with adapter (19) and valve outlet with fuel line (12) and connector (11). Install four bolts (1).
(c)Make certain that O-ring (9) is fully engaged with connector (11) when connector and conduit (10) are pushed fully outboard.
(d)Screw coupling nut (7) onto connector (11) and safety with lockwire. Make certain that conduit (10) has axial float of 0.2 in (5.08 mm) minimum and leave at mid-position.

R WARNING : THIS INSTRUCTION IS APPLICABLE TO A CRITICAL DESIGN
R CONFIGURATION CONTROL LIMITATION (CDCCL) ITEM. CAREFULLY OBEY
R ALL GIVEN INSTRUCTIONS WHEN YOU DO THIS STEP. IF YOU DO NOT
R OBEY THESE INSTRUCTIONS, A DANGEROUS CONDITION CAN OCCUR THAT
R CAN CAUSE A POSSIBLE FUEL TANK EXPLOSION.

(e)Connect bonding leads (15) and (17) with screw (16) and nut (6) (Ref. 20-28-11, P. Block 1).
(f)Do an electrical continuity test of the two bonding leads (15) and (17) (Ref. 20-28-11, P. Block 1).
(g)Remove caps and connect electrical connecters (20).

(5)Preparation for Test
(a)Remove safety clips and tags and close circuit breakers 3QG (4QG), 3QB (4QB), 1QB (2QB), 1QG (2QG), 5QG (6QG), 3QE, 2QE, 1QE.
(b)Make certain that the following circuit breakers are closed:
- For LP valve, engine 1

PANEL	SERVICE	IDENT.	LOCATION
133VU	ENGINES/ENG 1/FUEL HP VALVE/CTL	3KC	333/T69
133VU	ENGINES/ENG 1/FUEL HP VALVE/WARN	1KC	333/T68
132VU	FUEL/AUTO FEED/CTL	65QA	323/M55
132VU	FUEL/L INR TK/PUMP 1/CTL	69QA	322/N60
132VU	FUEL/L INR TK/PUMP 1/WARN	17QA	323/M60

- For LP valve, engine 2

PANEL	SERVICE	IDENT.	LOCATION
133VU	ENGINES/ENG 2/FUEL HP VALVE/WARN	2KC	335/R73
133VU	ENGINES/ENG 2/FUEL HP VALVE/CTL	4KC	333/T70
132VU	FUEL/AUTO FEED/WARN	66QA	322/N55
132VU	FUEL/R INR TK/PUMP 1/WARN	12QA	323/M62
132VU	FUEL/R INR TK/PUMP 1/CTL	60QA	322/N62

(c)Open, safety and tag the following circuit breakers:

PANEL	SERVICE	IDENT.	LOCATION
22VU	FIRE EXTING/ENG 1 & 2/SQUIB B/BTL 1	5WE	207/C19
22VU	FIRE EXTING/ENG 1 & 2/SQUIB B/BTL 2	7WE	207/C20
133VU	ENGINES/ENG 1 & 2/FIRE EXTING/SQUIB A/BTL 1	1WE	335/R71
133VU	ENGINES/ENG 1 & 2/FIRE EXTING/SQUIB A/BTL 2	3WE	335/R72

**ON A/C 001-100,

(d)On the flight compartment center pedestal, make sure that the HP VALVE ENG 1 (ENG 2) lever is in the FUEL OFF position.
(e)Energize the aircraft electrical network (Ref. 24-41-00, P. Block 301).
(f)Make sure that the LH (RH) inner tank contains at least 1000 Kg (2200 LB) of fuel.
(g)Lift the tabs locking the ENG 1 and ENG 2 FIRE handles (break the sealing wires).

**ON A/C 101-200,

(d)On the flight compartment center pedestal, make sure that the HP VALVE ENG 1 (ENG 2) lever is in the FUEL OFF position.

(e)Energize the aircraft electrical network (Ref. 24-41-00, P. Block 301).
(f)Make sure that the LH (RH) inner tank contains at least 2200 LB (1000 Kg) of fuel.
(g)Lift the tabs locking the ENG 1 and ENG 2 FIRE handles (break the sealing wires).

**ON A/C ALL

(6)Test

ACTION	RESULT
1. On overhead panel 20VU:	
- pull ENG 1 (ENG 2) FIRE handle	- LP valve closes On panel 430VU: - LP VALVES ENG 1 (ENG 2) annunciator flowbar goes off, SHUT legend comes on
- place ENG 1 (ENG 2) FIRE handle in normal position	- LP valve opens. On panel 430VU: - LP VALVES ENG 1 (ENG 2) annunciator SHUT legend goes off, flowbar comes on.
2. On panel 22VU:	
- remove safety clips and tags and close circuit breakers 5WE, 207/C19 (7WE, 207/C20)	
3. On panel 133VU:	
- remove safety clips and tags and close circuit breakers 1WE, 335/R71 (3WE,335/R72)	
4. On panel 430VU:	
- press left (right) wing tank ISOL VALVES pushbutton switches	- OFF legends go off - flowbars flash while valves are in transit, then remain on
- press left (right) INR TK PUMP 1 pushbutton switch	- pumps run - OFF legend goes off
Examine LP valve inlet and outlet for leaks.	No leaks permitted
After 10 minutes, at Zone 473/4 (483/4), check pylon drain outlet for evidence of leaks from fuel line connections into conduit.	No leaks permitted
5. On panel 430VU:	
- release left (right) INR TK PUMP 1	Pump stops

ACTION	RESULT
pushbutton switch	On panel 430VU: - OFF legend comes on

NOTE: If PUMP 1 is inoperative, test may be performed using any inner or center tank pump, with X FEED valve open as necessary.

(7)Close-Up
(a)De-energize the aircraft electrical network (Ref. 24-41-00, P. Block 301).
(b)Lock the ENG 1 FIRE and ENG 2 FIRE handles by lowering the tabs and installing new sealing wires.
(c)Make certain that working area is clean and clear of tools and miscellaneous items of equipment.
(d)Close access door 512 (612) JB.
(e)Remove access platform.

WARNING : LANDING GEAR - MAKE SURE THAT THE GROUND SAFETIES AND CHOCKS ARE IN POSITION.

FLIGHT CONTROLS - MAKE SURE THAT THE GROUND SAFETIES AND NOTICES ARE IN POSITION.

FLIGHT CONTROLS - MAKE SURE THAT THE TRAVEL RANGES OF THE CONTROL SURFACES ARE CLEAR.

HYDRAULICS - BEFORE YOU PRESSURIZE THE SYSTEM, MAKE SURE THAT THE CONTROL SURFACE POSITIONS AND THE FLIGHT CONTROL POSITIONS ARE THE SAME.

OBSERVE THE SAFETY PRECAUTIONS IN 28-00-00, P. BLOCK 301.

MAKE SURE THAT FIRE FIGHTING EQUIPMENT IS AVAILABLE AND ADEQUATE.

MAKE SURE THAT YOU ISOLATE THE ELECTRICAL CIRCUITS UPON WHICH WORK IS IN PROGRESS.

CAUTION : FRICTION BRAKES ARE INSTALLED ON THE SLAT CONTROL SYSTEM. IF MORE THAN THREE CONSECUTIVE SLAT EXTENSION/RETRACTION CYCLES ARE TO BE MADE, EITHER DISCONNECT THE FRICTION BRAKES (Ref. 27-86-13, P. BLOCK 401), OR WAIT 30 MINUTES BEFORE FURTHER OPERATIONS.

1. Reason for the Job

A. Detailed visual inspection of the LP Valve for corrosion.

2. Equipment and Materials

ITEM	DESIGNATION
A.	Access Platform 4 m (13ft)
B.	Circuit Breaker Safety Clips and Tags
Referenced Procedures - 28-00-00, P. Block 301	Fuel General

3. Procedure

(Ref. Fig. 601)

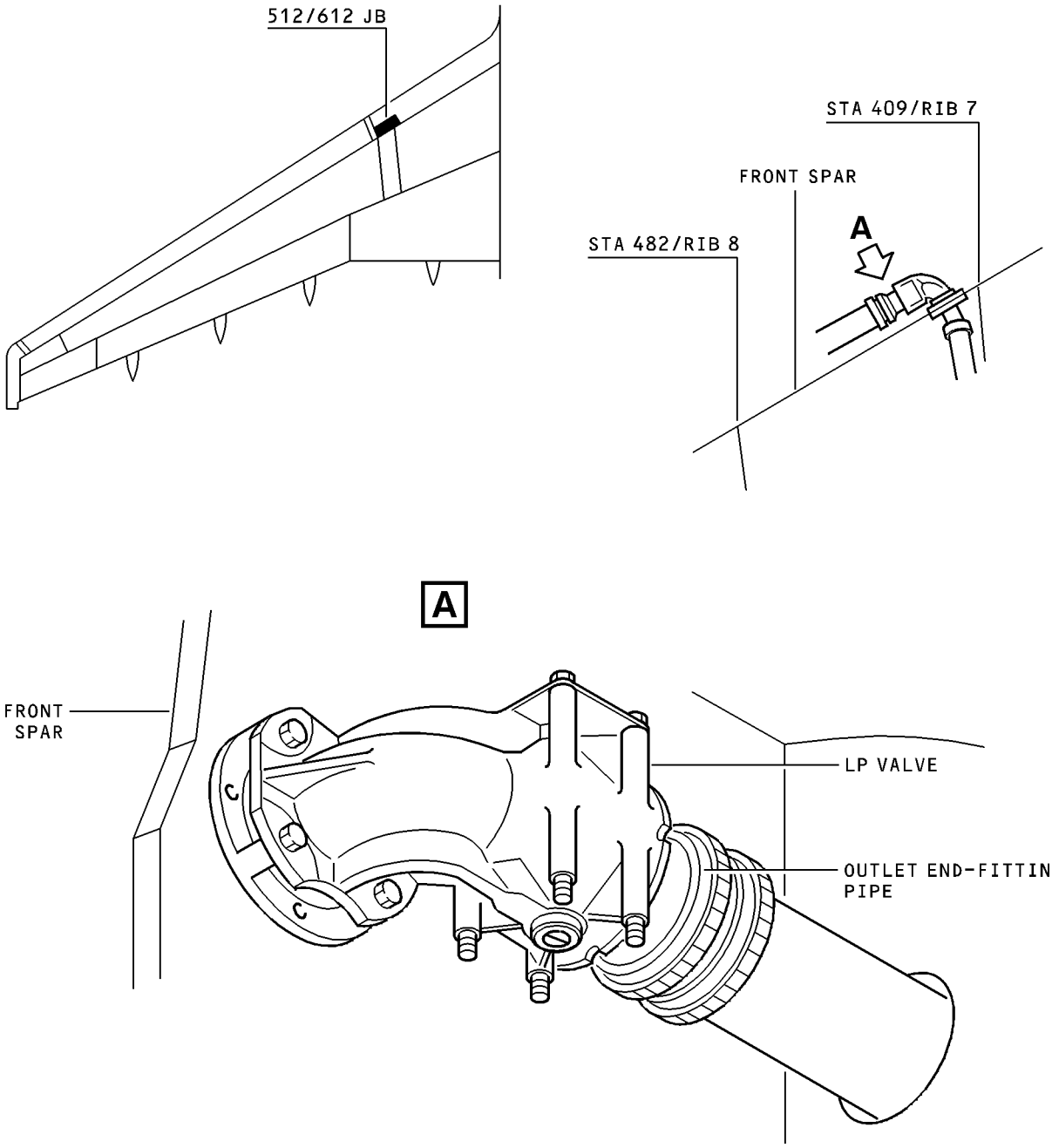
A. Job Set-Up

(1)Position the access platform.

(2)Open access door 512JB (612JB).

(3)Open, safety and tag the circuit breakers that follow:

- for LP valve actuator, engine 1



NOTE: ACTUATOR REMOVED FOR CLARITY

BM8 28 24 31 6 AAMO 00

LP Valve - Corrosion Inspection
Figure 601

PANEL	SERVICE	IDENT.	LOCATION
22VU	FUEL/LP VALVES/MOTOR 2/ENG 1	3QG	201/J19
132VU	FUEL/LP VALVES/ENG 1/MOTOR 1	1QG	323/M53
132VU	FUEL/LP VALVES/ENG 1/POS ANN	5QG	322/N53

- for LP valve actuator, engine 2

PANEL	SERVICE	IDENT.	LOCATION
22VU	FUEL/LP VALVES/MOTOR 2/ENG 2	4QG	201/J20
132VU	FUEL/LP VALVES/ENG 2/MOTOR 1	2QG	323/N54
132VU	FUEL/LP VALVES/ENG 2/POS ANN	6QG	323/M54

B. Inspection

(1)Use a torch and mirror to do a detailed visual inspection of the LP Valve for corrosion. Pay particular attention to the outlet end-fitting pipe.

NOTE : Any corrosion found must be reported to Airbus.

C. Close-up

(1)Make sure that the working area is clean and clear of tools and all other items of equipment.
(2)Close access door 512JB (612JB)
(3)Remove the access platform.
(4)Remove the safety clips and tags and close the circuit breakers that follow:
- for LP valve actuator, engine 1

PANEL	SERVICE	IDENT.	LOCATION
22VU	FUEL/LP VALVES/MOTOR 2/ENG 1	3QG	201/J19
132VU	FUEL/LP VALVES/ENG 1/MOTOR 1	1QG	323/M53
132VU	FUEL/LP VALVES/ENG 1/POS ANN	5QG	322/N53

- for LP valve actuator, engine 2

PANEL	SERVICE	IDENT.	LOCATION
22VU	FUEL/LP VALVES/MOTOR 2/ENG 2	4QG	201/J20
132VU	FUEL/LP VALVES/ENG 2/MOTOR 1	2QG	323/N54
132VU	FUEL/LP VALVES/ENG 2/POS ANN	6QG	323/M54

REFUEL/DEFUEL SYSTEM - DESCRIPTION AND OPERATION

1. General

**ON A/C 001-100,

(Ref. Fig. 001)

**ON A/C 101-200,

(Ref. Fig. 002)

**ON A/C 101-200,

Post SB 28-2105 For A/C 101-200,

(Ref. Fig. 003)

**ON A/C 101-200,

(Ref. Fig. 004)

**ON A/C 101-200,

Post SB 28-2105 For A/C 101-200,

(Ref. Fig. 005)

**ON A/C ALL

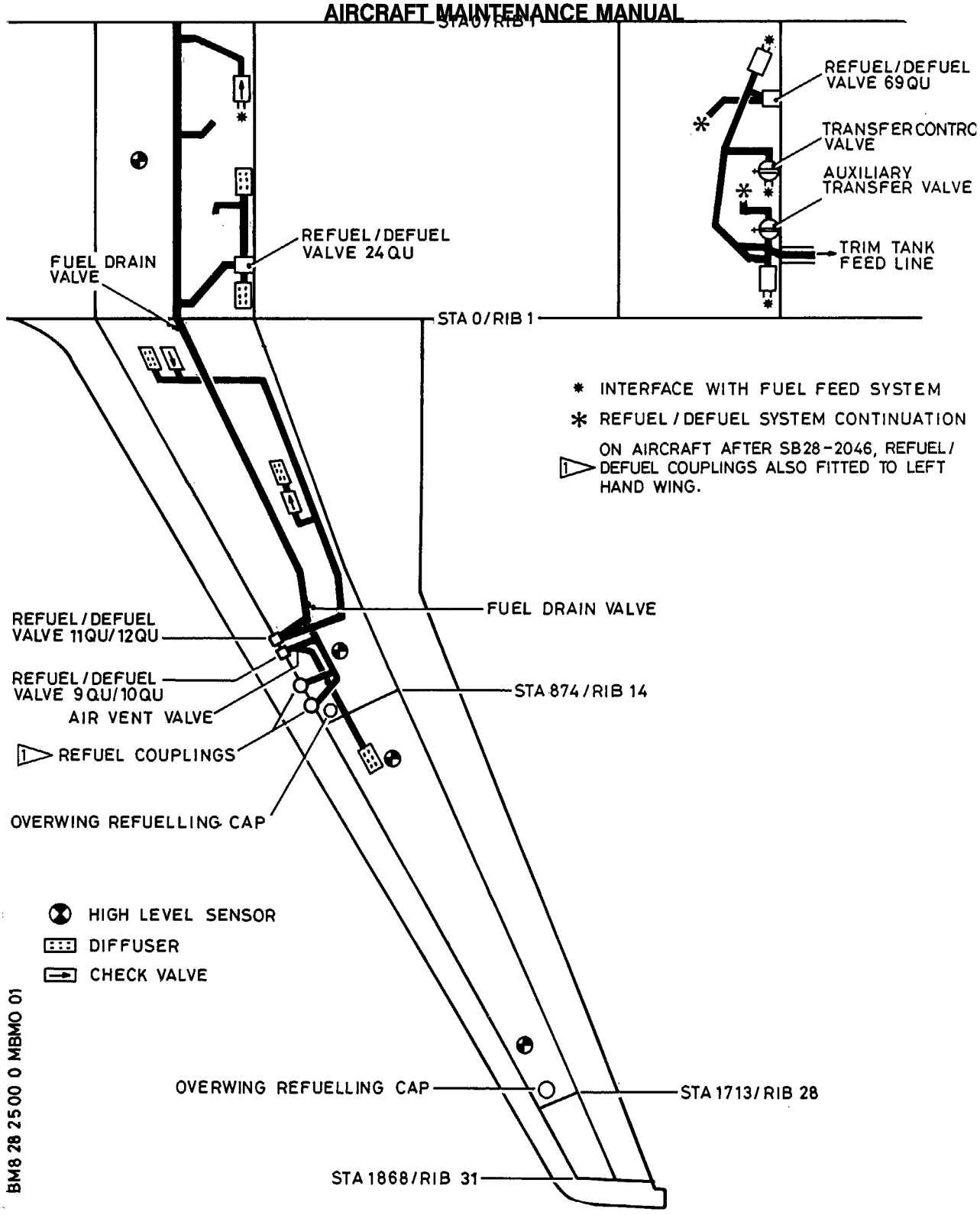
(Ref. Fig. 006)

**ON A/C 001-100,

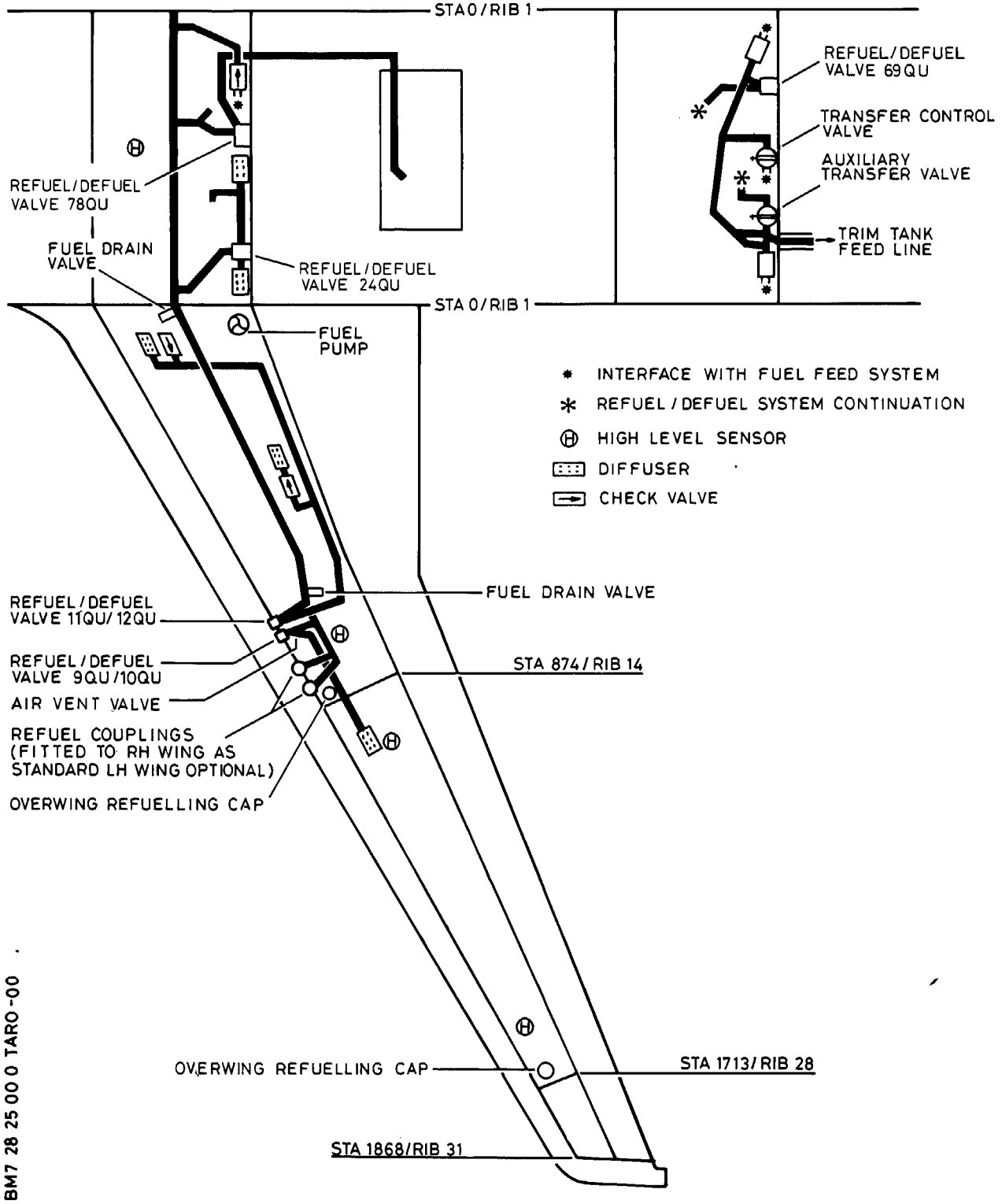
The aircraft is normally refueled from a controlled pressure source. Two standard refuel/defuel self-sealing couplings are installed on the RH wing leading-edge lower surface at STA813 (RIB 13). As a standby, gravity refueling facilities are provided by overwing refueling caps (access panels 540AT, 640AT, 550BT, 650BT) for inner and outer tanks; replenishment of the center tank being achieved by fuel transfer from the wing tanks. Each refuel point has an adjacent grounding point for electrical bonding.

**ON A/C 101-200,

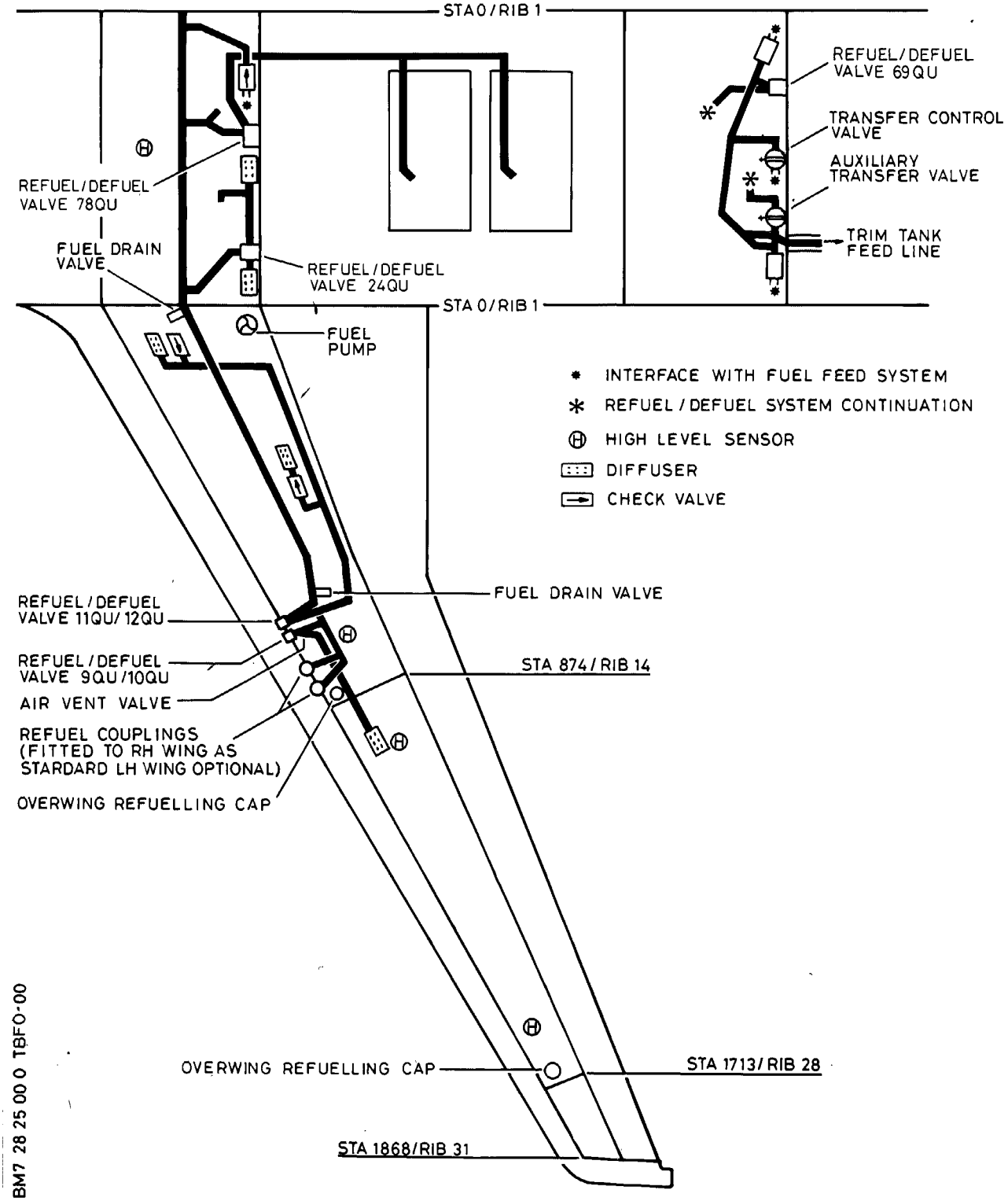
The aircraft is normally refueled from a controlled pressure source. Two standard refuel/defuel self-sealing couplings are installed on the RH wing leading-edge lower surface at STA 813 (RIB 13). As a standby, gravity refueling facilities are provided by overwing refueling caps (access panels



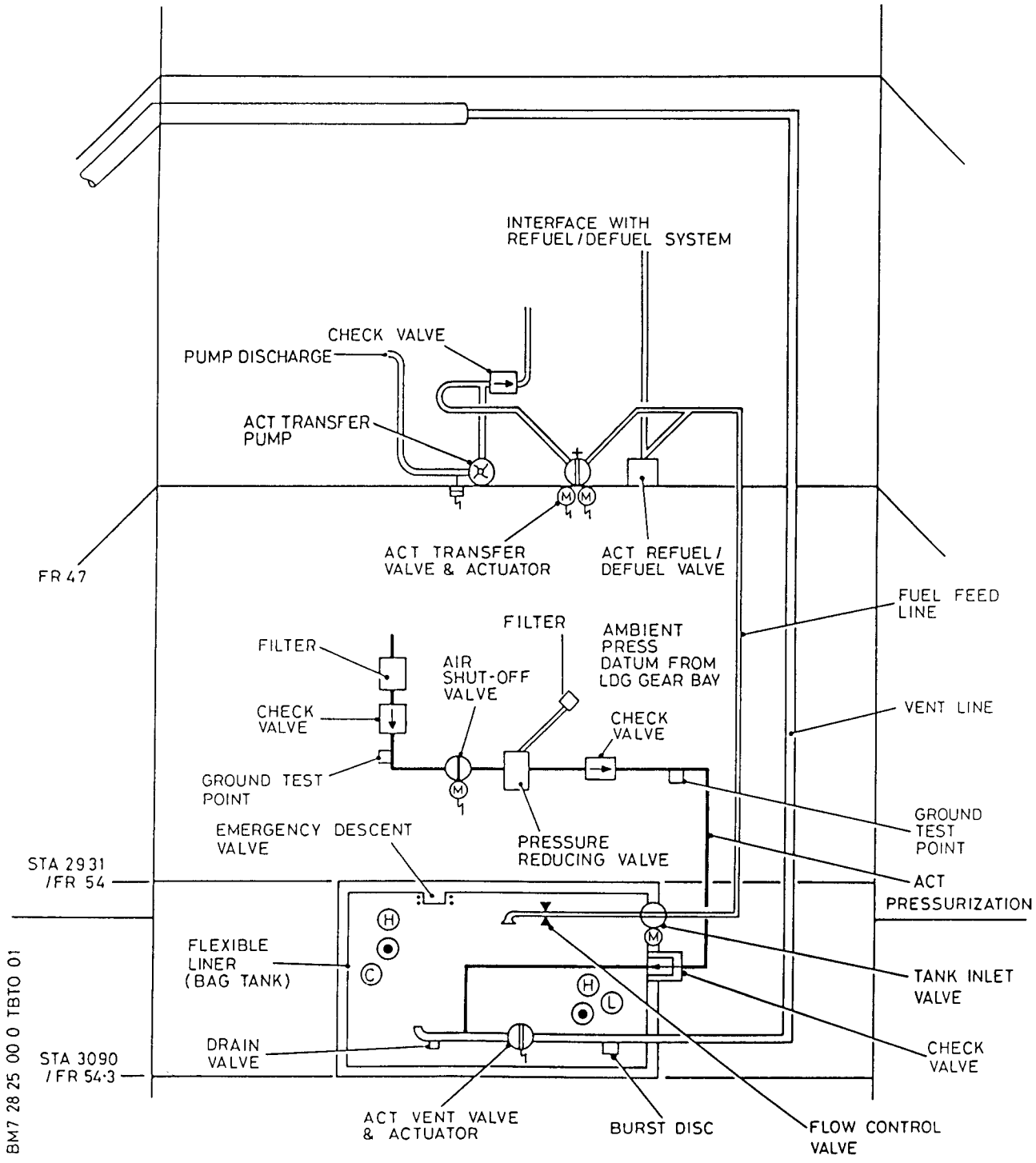
Refuel/Defuel System Schematic - Wing Tanks
Figure 001


STA 0 / RIB 1
REFUEL/DEFUEL VALVE 69QU
TRANSFER CONTROL VALVE
AUXILIARY TRANSFER VALVE
TRIM TANK FEED LINE
REFUEL/DEFUEL VALVE 78QU
FUEL DRAIN VALVE
REFUEL/DEFUEL VALVE 24QU
STA 0 / RIB 1
FUEL PUMP
* INTERFACE WITH FUEL FEED SYSTEM
* REFUEL / DEFUEL SYSTEM CONTINUATION
H HIGH LEVEL SENSOR
DIFFUSER
CHECK VALVE
FUEL DRAIN VALVE
REFUEL / DEFUEL VALVE 11QU/12QU
REFUEL / DEFUEL VALVE 9QU/10QU
STA 874 / RIB 14
AIR VENT VALVE
REFUEL COUPLINGS (FITTED TO RH WING AS STANDARD LH WING OPTIONAL)
OVERWING REFUELLING CAP
OVERWING REFUELLING CAP
STA 1713/ RIB 28
STA 1868/RIB 31
BM7 28 25 00 0 TARO-00

Refuel/Defuel System Schematic - Wing Tanks
Figure 002


STA 0 / RIB 1
REFUEL/DEFUEL VALVE 69QU
TRANSFER CONTROL VALVE
AUXILIARY TRANSFER VALVE
TRIM TANK FEED LINE
REFUEL/DEFUEL VALVE 78QU
FUEL DRAIN VALVE
REFUEL/DEFUEL VALVE 24QU
STA 0 / RIB 1
FUEL PUMP
INTERFACE WITH FUEL FEED SYSTEM
REFUEL / DEFUEL SYSTEM CONTINUATION
HIGH LEVEL SENSOR
DIFFUSER
CHECK VALVE
FUEL DRAIN VALVE
REFUEL / DEFUEL VALVE 11QU/ 12QU
REFUEL / DEFUEL VALVE 9QU /10QU
STA 874 / RIB 14
AIR VENT VALVE
REFUEL COUPLINGS (FITTED TO RH WING AS STARDARD LH WING OPTIONAL)
OVERWING REFUELLING CAP
OVERWING REFUELLING CAP
STA 1713/ RIB 28
STA 1868/RIB 31
BM7 28 25 00 0 TBF0-00

Refuel/Defuel System Schematic - Wing Tanks
Figure 003



Refuel/Defuel System Schematic - ACT
Figure 004

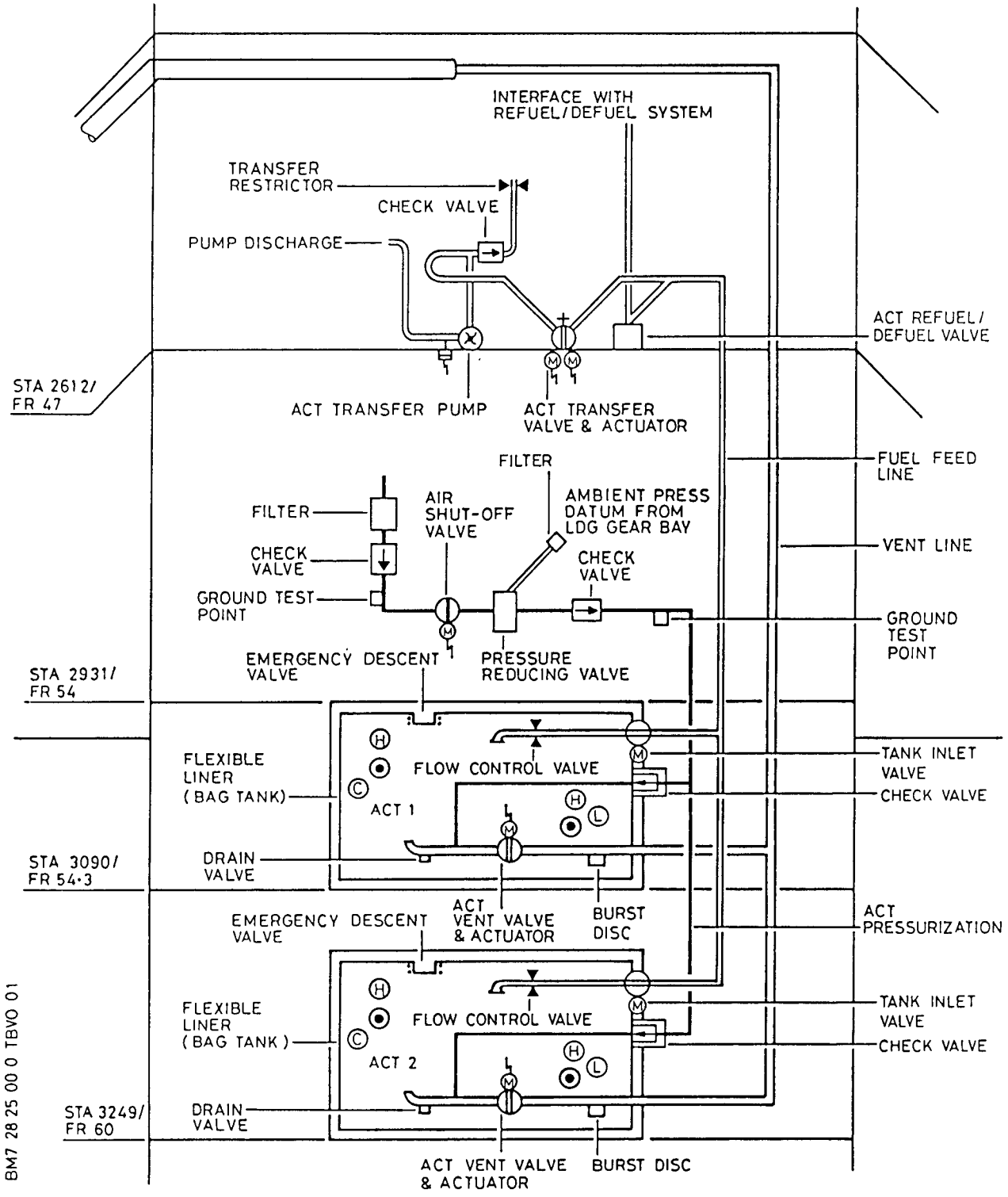
R

R EFFECTIVITY: 101-200,

PIA

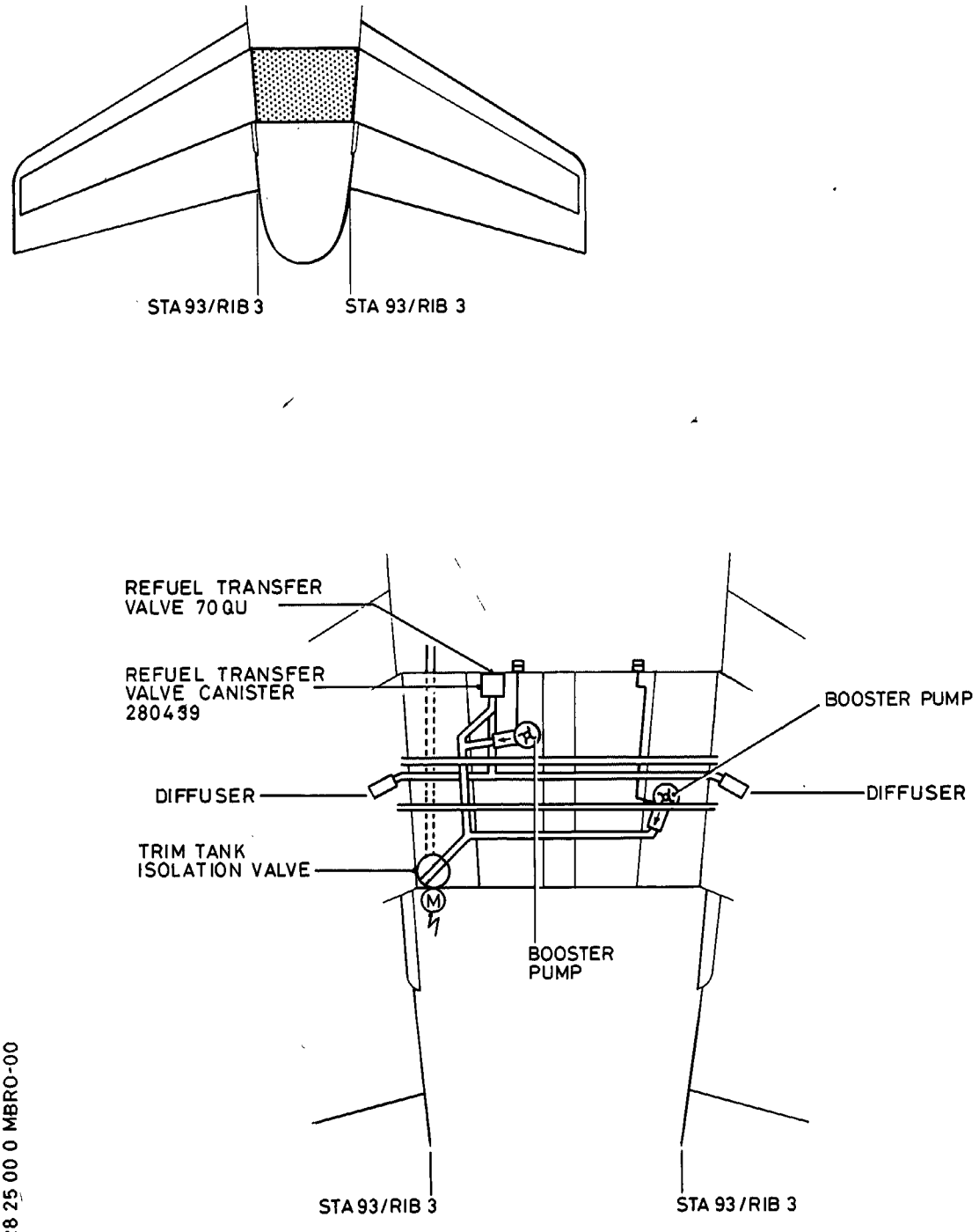
28-25-00

Printed in France



Refuel/Defuel System Schematic - ACTs
Figure 005

R



Refuel/Defuel System Schematic - Trim Tank
Figure 006

540AT, 640AT, 550BT, 650BT) for the inner and outer tanks. Replenishment of the center tank and the ACT(s) (if installed) are by fuel transfer from the wing tanks.

**ON A/C ALL

NOTE: When overwing gravity refueling, the trim tank cannot be refueled by transfer from the wing tanks or center tank.

For use on the ground only, the refuel/defuel system can be connected to the feed system through the transfer system.

The aircraft tanks may be defueled by suction at the refuel/defuel couplings or by pressure using the fuel feed booster pumps and the transfer system. The two methods may be used separately or together.

The refuel/defuel system network includes a line routed through the center tank to connect the LH and RH wing and trim tank systems. In each tank the lines terminate in diffusers which disperse incoming fuel at a set rate over a large area to prevent formation of fuel mist or foaming and to ensure a calm fuel surface.

During fueling operations, flow is controlled by a canister-mounted, solenoid-operated refuel/defuel valve for each tank. In the event that electrical power is not available, the refuel/defuel valves can be opened manually by a mechanical control on each valve.

Refueling/defueling procedures are controlled and monitored from panel 110VU, located in the RH air conditioning fairing on the underside of the fuselage.

During aircraft refueling/defueling, a series of electrical interlocks, between the refuel/defuel valves and level sensors in the center and inner tanks, prevent the aircraft CG moving aft of 50% MAC, or a CG position occuring such that subsequent baggage loading or unloading would cause the CG to move aft of 50% MAC. These interlocks make certain that:
- during auto or manual refueling, the trim tank refuel/defuel valve will open only if the center tank refuel/defuel valve is selected open
- during suction defueling, if the trim tank is above low level, it is not possible to defuel the center tank unless the trim tank refuel/defuel valve is selected open
- during pressure defueling or intertank transfer, the transfer valve is prevented from opening unless the trim tank is empty as detected by the FQI and low level sensor.

The interlocks are inhibited when both inner tank high level sensors are immersed in fuel. This allows:
- the FQI system to top up the trim tank when the center tank is

full
- manual transfer of fuel into the trim tank before take-off, when the center tank is not full, giving loading flexibility at forward CG positions.

High level fuel sensors are installed in each tank to signal the associated refuel/defuel valve to close when maximum allowable fuel volume is obtained. The high level sensors are positioned to ensure that a minimum expansion space of two percent fuel volume is maintained at all aircraft ground standing attitudes.
A level sensor is installed in each vent tank to detect fuel overflow during refueling. If the level sensor in the trim vent tank is immersed, the refuel/defuel valve and the refuel transfer valve will automatically close.

Direct defueling of the trim tank may not be possible if the initial quantity is less than 200 Kg (440 LB). This can be overcome by defueling the trim tank via the center tank, using the trim tank **AUTO MODE** pushbutton switch on panel 430VU.

**ON A/C 101-200,

When refueling, an interlock on the **ACT** refuel/defuel valve makes sure that both **ACT** vent valves are open and the air shut off valve is closed, before the refuel procedure starts.

**ON A/C 101-200,

Post SB 28-2108 For A/C 101-200,

If the aircraft is in the single **ACT** configuration, a dummy plug must be fitted to the **ACT** 2 vent valve connector to simulate that the valve is open.

**ON A/C ALL

2. Component Location

**ON A/C 001-100,

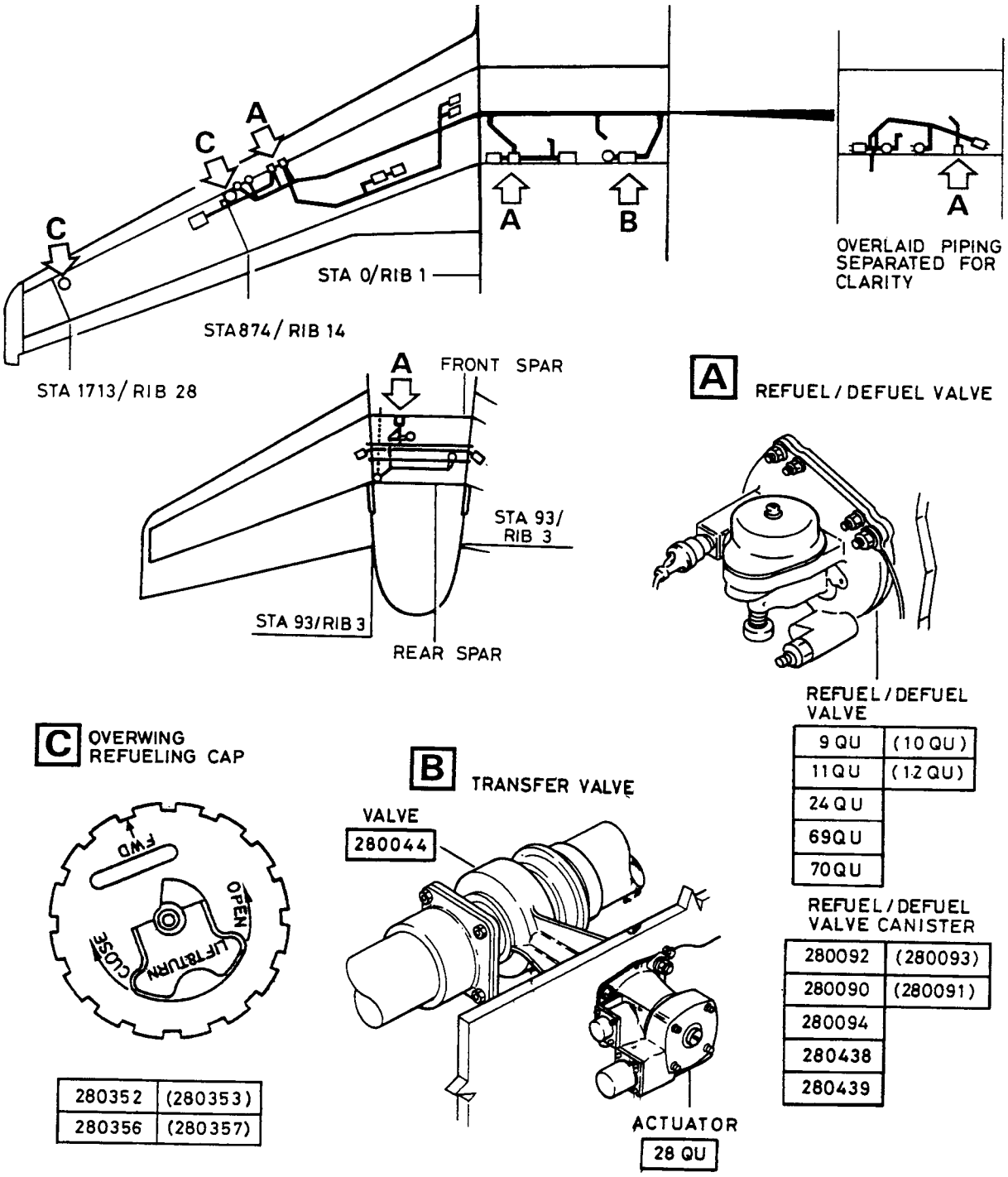
(Ref. Fig. 007)

**ON A/C 101-200,

(Ref. Fig. 008)

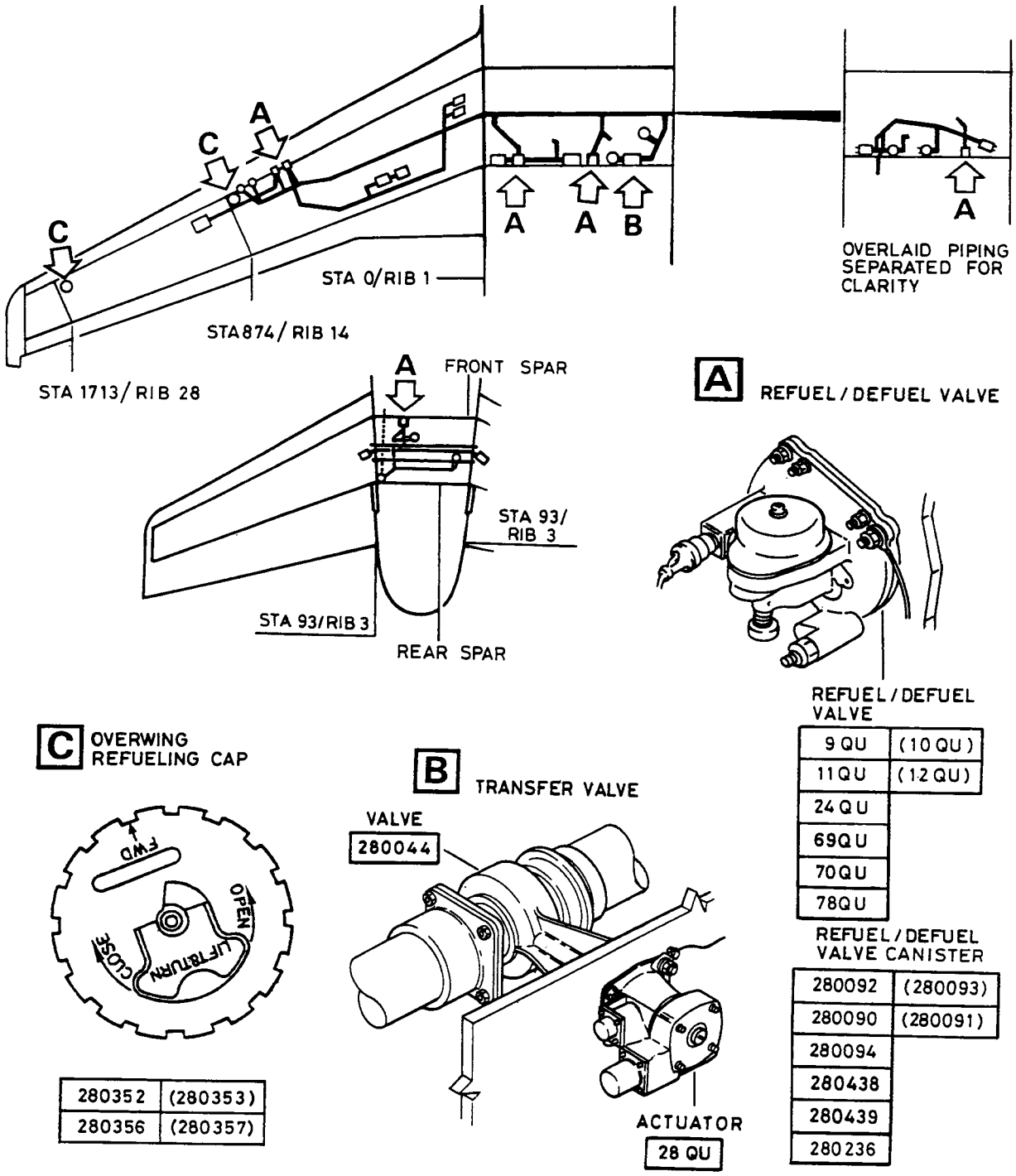
**ON A/C 001-100,

(Ref. Fig. 009)



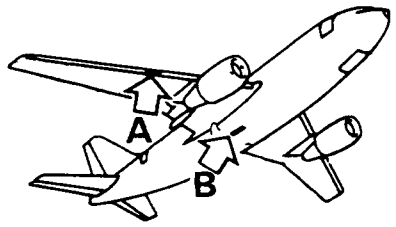
BM8 28 25 00 0 SNMO 00

Component Location
Figure 007



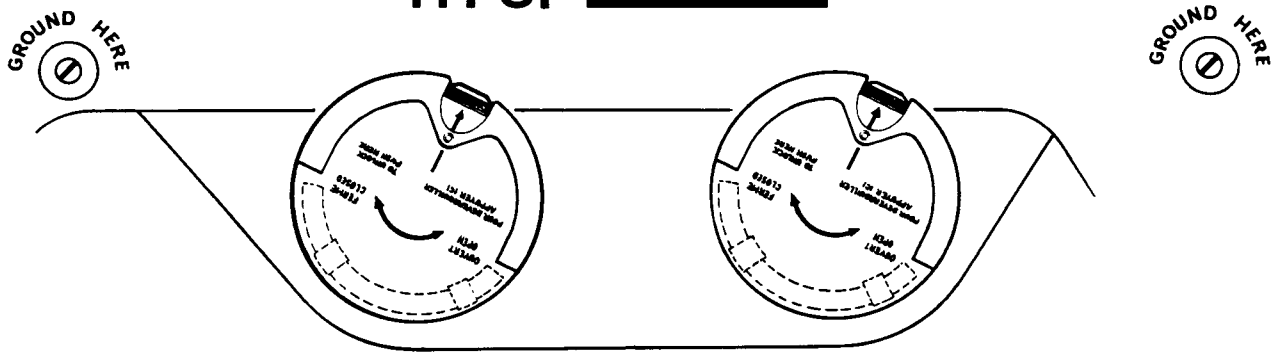
BM8 28 25 00 0 SPMO 00

Component Location
Figure 008

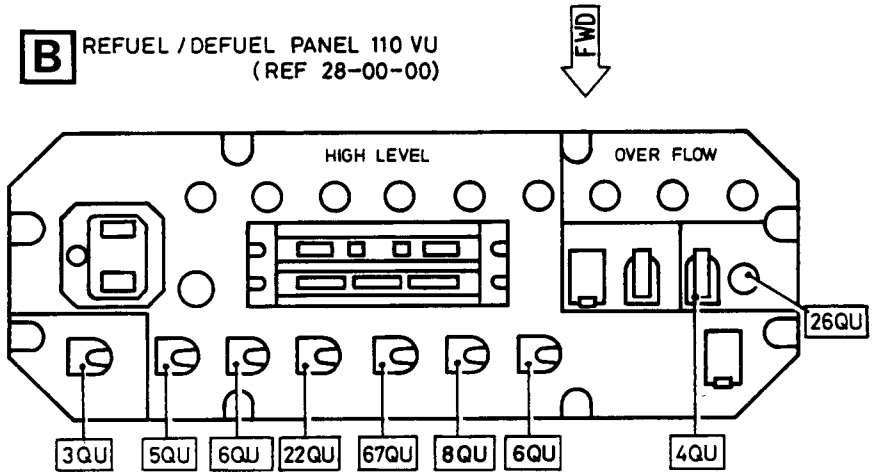


A

JET FUEL FOR SPECIFICATIONS SEE FLIGHT MANUAL
MAX PRESSURE
50PSI 3.5 BARS
MAX SUCTION
11PSI 0.8 BARS



B REFUEL / DEFUEL PANEL 110 VU
(REF 28-00-00)



BM8 28 25 00 0 MEMO 01

Component Location
Figure 009

R **ON A/C 101-200,

(Ref. Fig. 010)

R **ON A/C 101-200,

R Post SB 28-2108 For A/C 101-200,

(Ref. Fig. 011)

R **ON A/C ALL

FIN	FUNCTIONAL DESIGNATION	PANEL	ZONE	ACCESS DOOR	ATA REF
280044	VALVE - TRANSFER		142	148AZ	28-25-16
280058	CHECK VALVE - 2 INCH, CTR TK		142	148AZ	28-25-14
280080	COUPLING - REFUEL/DEFUEL		623	623FB	28-25-11
280081	COUPLING - REFUEL/DEFUEL		623	623FB	28-25-11
280090	CANISTER - RE-DEFUEL VALVE L INR TK		540	540FB	28-25-13
280091	CANISTER - RE-DEFUEL VALVE R INR TK		640	640FB	28-25-13
280092	CANISTER - RE-DEFUEL VALVE L OUTR TK		540	540FB	28-25-13
280093	CANISTER - RE-DEFUEL VALVE R OUTR TK		640	640FB	28-25-13
280094	CANISTER - RE-DEFUEL VALVE CTR TK		141	147AZ	28-25-13
**ON A/C 005-005,					
280184	COUPLING - REFUEL/DEFUEL		523	523FB	28-25-11
280185	COUPLING - REFUEL/DEFUEL		523	523FB	28-25-11
**ON A/C ALL					
280370	CHECK VALVE - FUEL 2 INCH L INR TK		540	540BB	28-25-14
280371	CHECK VALVE - FUEL 2 INCH R INR TK		640	640BB	28-25-14
280372	CHECK VALVE - FUEL 2 INCH L INR TK		540	540AB	28-25-14
280373	CHECK VALVE - FUEL 2 INCH R INR TK		640	640AB	28-25-14

R **ON A/C 101-200,

280237 CANISTER - REFUEL/DEFUEL VALVE ACT

R **ON A/C ALL

280438	CANISTER - REFUEL/DEFUEL VALVE, TRIM TK		142	148AZ	28-25-12
280439	CANISTER - REFUEL TRANSFER VALVE TRIM TANK		319	319AZ	28-25-24
1QU	C/B - FUEL/FUELLING/CTL & REFUEL/VALVE	132VU	212	321/P56	28-00-00
2QU	C/B - FUEL/FUELLING/TRANSFER VALVE	132VU	212	321/P55	28-00-00
3QU	SW - MODE SELECTOR	110VU	144	144DR	

	FIN	FUNCTIONAL DESIGNATION	PANEL	ZONE	ACCESS DOOR	ATA REF
	4QU	SW - TRANSF VALVE	110VU	144	144DR	
	5QU	SW - REFUEL DEFUEL VALVES, L OUTR TK	110VU	144	144DR	
	6QU	SW - REFUEL DEFUEL VALVES, R OUTR TK	110VU	144	144DR	
	7QU	SW - REFUEL DEFUEL VALVES, L INR TK	110VU	144	144DR	
	8QU	SW - REFUEL DEFUEL VALVES, R INR TK	110VU	144	144DR	
R	9QU	VALVE - REFUEL DEFUEL, L OUTR TK		523	523EB	
R	10QU	VALVE - REFUEL DEFUEL, R OUTR TK		623	623EB	
R	11QU	VALVE - REFUEL DEFUEL, L INNER TK		523	523EB	
R	12QU	VALVE - REFUEL DEFUEL, R INNER TK		623	623EB	
	13QU	RELAY 2 - REFUEL PANEL DOOR POSITION	110VU	144	144DR	
	14QU	RELAY 1 - REFUEL PANEL DOOR POSITION	110VU	144	144DR	
	15QU	RELAY - FUEL QUANTITY CTL, L OUTR TK	110VU	144	144DR	
	16QU	RELAY - FUEL QUANTITY CTL, R OUTR TK	110VU	144	144DR	
	17QU	RELAY - FUEL QUANTITY CTL, L INR TK	110VU	144	144DR	
	18QU	RELAY - FUEL QUANTITY CTL, R INR TK	110VU	144	144DR	
	19QU	RELAY - TRANSFER VALVE POSITION	110VU	144	144DR	
	20QU	RELAY - FUEL QUANTITY CTL, CTR TK	110VU	144	144DR	
	21QU	RELAY 3 - REFUEL PANEL DOOR POSITION	110VU	144	144DR	
	22QU	SW - REFUEL DEFUEL VALVES, CTR TK	110VU	144	144DR	
	23QU	MICROSWITCH - REFUEL PANEL DOOR POS		144		
	24QU	VALVE - REFUEL/DEFUEL, CTR TK		141		28-25-12
	25QU	RELAY - HIGH LEVEL INHIBIT	110VU	144	144DR	
	26QU	WARNING LIGHT - TRANSF VALVE OPEN	110VU	144	144DR	
	28QU	ACTUATOR - TRANSFER VALVE		142		28-25-17
	73QU	RELAY - AUTO RESET	282VU	122		
	67QU	SW - REFUEL/DEFUEL, TRIM TK	110VU	144	144DR	
	68QU	RELAY - FUEL QTY CTL TRIM TK	110VU	144	144DR	
	69QU	VALVE - REFUEL-DEFUEL, TRIM TK		141		28-25-12
	70QU	VALVE - REFUEL TRANSFER, TRIM TK		319		28-25-23
	71QU	RELAY - OPEN INHIBIT	104VU	120		
	72QU	RELAY - TRIM TANK REFUEL VALVE OPEN DELAY	104VU	120		
	74QU	RELAY - PRESSURE DEFUEL	104VU	120		
	**ON A/C 101-200,					
	75QU	SWITCH - REFUEL/DEFUEL VALVE ACT	110VU	144	144DR	
	76QU	RELAY - ACT 1 LOAD CTL	110VU	144	144DR	
	78QU	VALVE - REFUEL/DEFUEL ACT				
	83QU	RELAY - TRIM TK EMPTY OR LO LEVEL				
	84QU	RELAY - ACT 1 DEFUEL CTL	110VU	144	144DR	
	**ON A/C 101-200,					
	Post SB 28-2108 For A/C 101-200,					
	75QU	SWITCH - REFUEL/DEFUEL VALVE ACT 1	110VU	144	144DR	
	76QU	RELAY - ACT 1 LOAD CTL	110VU	144	144DR	

FIN	FUNCTIONAL DESIGNATION	PANEL	ZONE	ACCESS DOOR	ATA REF
78QU	VALVE - REFUEL/DEFUEL ACT				
83QU	RELAY - TRIM TK EMPTY OR LO LEVEL				
84QU	RELAY - ACT 1 DEFUEL CTL	110VU	144	144DR	
85QU	RELAY - ACT 2 DEFUEL CTL	110VU	144	144DR	
86QU	RELAY - ACT 2 LOAD CTL	110VU	144	144DR	
90QU	SWITCH - REFUEL/DEFUEL VALVE ACT 2	110VU	144	144DR	
**ON A/C 004-200,					
93QU	DIODE		312		
**ON A/C ALL					
	VALVE - AIR VENT L INR TK		540	540FB	28-25-19
	VALVE - AIR VENT R INR TK		640	640FB	28-25-19
	DIFFUSER - REFUEL/DEFUEL L INR TK		540	540AB	28-25-15
	DIFFUSER - REFUEL/DEFUEL R INR TK		640	640AB	28-25-15
	DIFFUSER - REFUEL/DEFUEL L INR TK		540	540BB	28-25-15
	DIFFUSER - REFUEL/DEFUEL R INR TK		640	640BB	28-25-15
	DIFFUSER - REFUEL/DEFUEL L OUTR TK		550	550BB	28-25-15
	DIFFUSER - REFUEL/DEFUEL R OUTR TK		650	650BB	28-25-15
	DIFFUSER - REFUEL/DEFUEL CTR TK		141	147AZ	28-25-15
	DIFFUSER - REFUEL/DEFUEL, TRIM TK				
	DIFFUSER - REFUEL/DEFUEL, TRIM TK				

3. Description

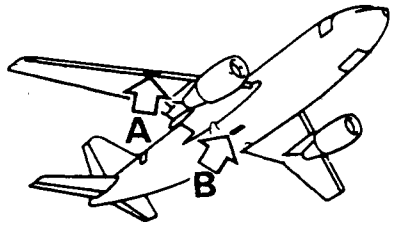
The refuel/defuel system consists of a line network together with associated system components.

The refuel/defuel system consists of the following:

- two refuel/defuel couplings installed on the lower surface of RH wing, leading edge located at STA813 (RIB 13). Each coupling has a flush fitting cap.

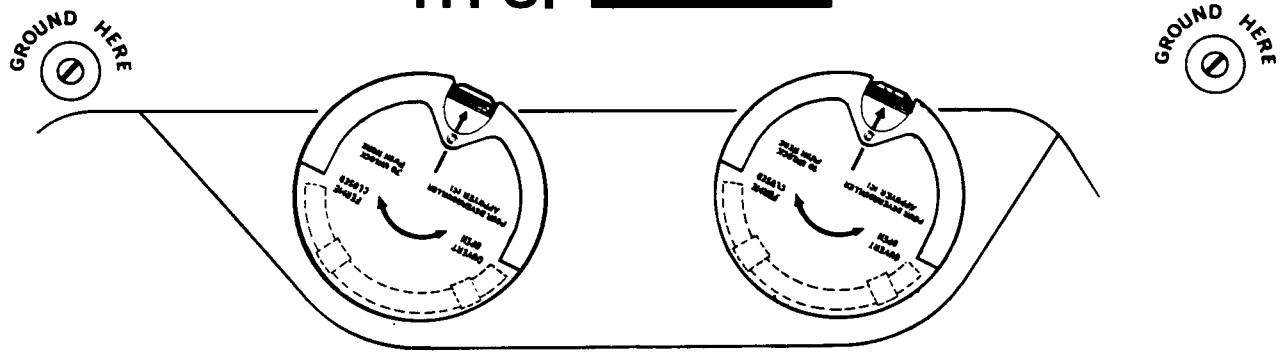
- an inner tank refuel/defuel valve installed on the aft face of the front spar between STA663 (RIB 11) and STA737 (RIB 12) of each wing.
- an outer tank refuel/defuel valve installed on the aft face of the front spar between STA663 (RIB 11) and STA737 (RIB 12) of each wing.
- a center tank refuel/defuel valve installed on the forward face of the rear spar in the left hand side of the center tank.

- a trim tank refuel/defuel valve, installed on the forward face of the rear spar in the right hand side of the center tank.
- a trim tank refuel transfer valve installed on the rear face of the front spar in the trim tank.

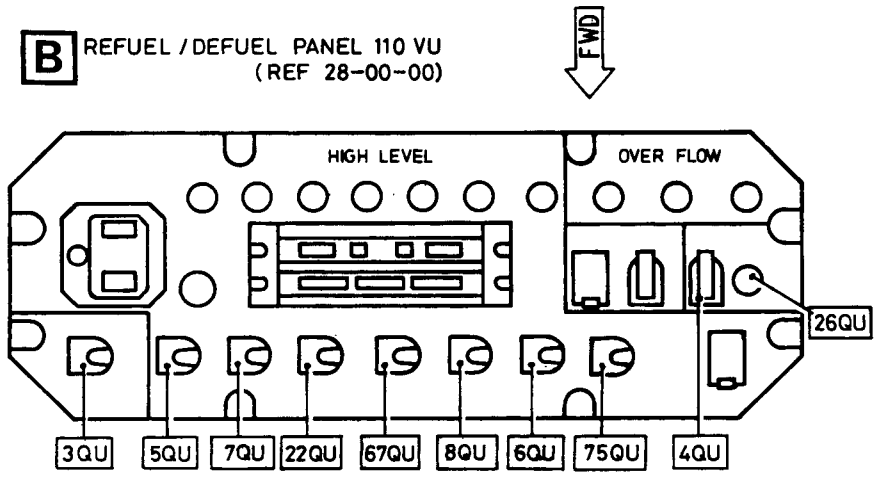


A

JET FUEL FOR SPECIFICATIONS SEE FLIGHT MANUAL
MAX PRESSURE
50 PSI 3.5 BARS
MAX SUCTION
11 PSI 0.8 BARS

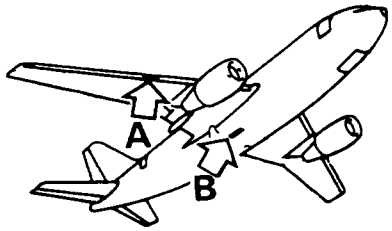


B REFUEL / DEFUEL PANEL 110 VU
(REF 28-00-00)



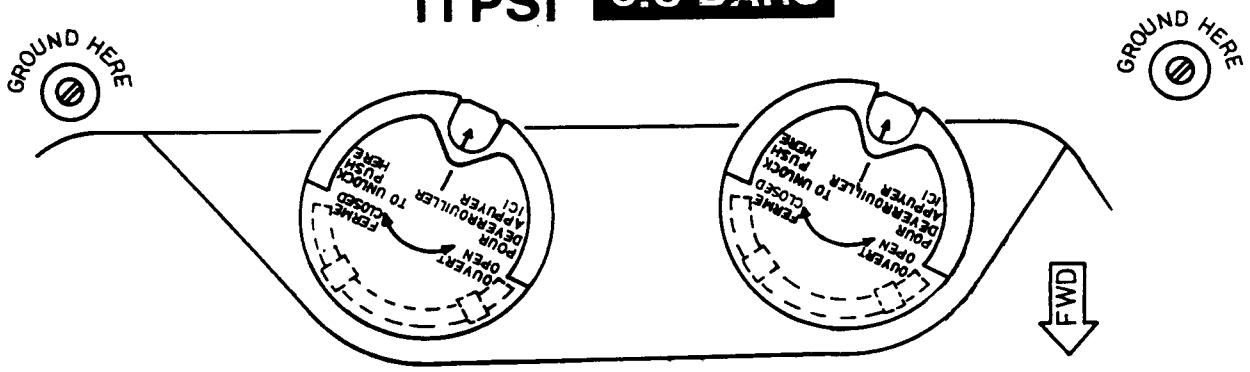
BM8 28 25 00 0 RRM00

Component Location
Figure 010

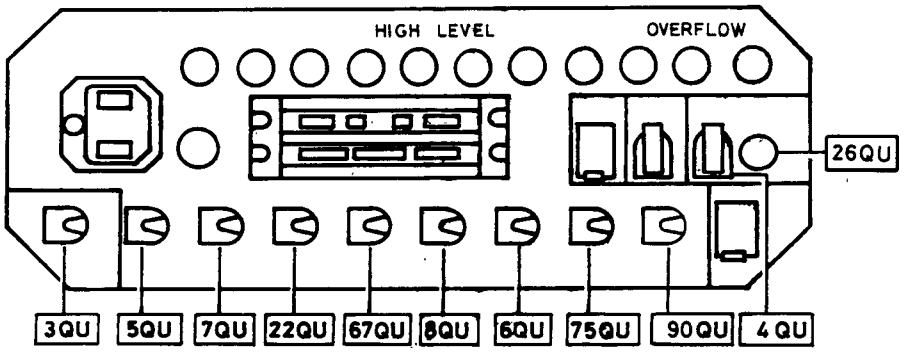


A

JET FUEL FOR SPECIFICATIONS SEE FLIGHT MANUAL
MAX PRESSURE
50PSI 3.5 BARS
MAX SUCTION
11PSI 0.8 BARS



B REFUEL / DEFUEL PANEL 110 VU
(REF 28-00-00)



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Component Location
Figure 011

**ON A/C 101-200,

- an ACT refuel/defuel valve installed on the forward face of the rear spar in the right hand side of the center tank.

**ON A/C ALL

Each refuel/defuel valve is controlled electrically, but may be operated manually by depressing a plunger incorporated in the valve.

- two diffusers installed in the inner tank of each wing; one between STA67 (RIB 2) and STA139 (RIB 3), the other between STA339 (RIB 6) and STA409 (RIB 7).
- a diffuser installed in the outer tank of each wing between STA935 (RIB 15) and STA996 (RIB 16).
- two diffusers installed in the center tank, on the left hand side adjacent to the rear spar.

- two diffusers installed in the trim tank just outboard of STA93 (RIB 3) on each side.
- two drain valves installed in each inner tank; one between STA0 (RIB 1) and STA67 (RIB 2), the other between STA590 (RIB 10) and STA663 (RIB 11). Each drain valve is attached directly to the refuel gallery, the outboard valve via an adapter.

- an air vent valve installed at the inlet of each outer tank refuel/defuel valve.
- a high level sensor installed in each inner tank between STA737 (RIB 12) and STA813 (RIB 13)
- two high level sensors installed in each outer tank; one between STA935 (RIB 15) and STA996 (RIB 16), the other between STA1550 (RIB 25) and STA1604 (RIB 26).
- a high level sensor installed in the center tank between STA2347 (FR 42) and STA2400 (FR 43) right of aircraft center-line.
- two high level sensors installed in the trim tank; one between STA723 (RIB 19) and STA673 (RIB 18) on the left hand side, and the other between STA673 (RIB 18) and STA623 (RIB 17) on the right hand side.
- an overflow level sensor installed in each vent tank at STA1713 (RIB 28).
- an overflow level sensor installed in the trim vent tank outboard of STA673 (RIB 18).

**ON A/C 101-200,

- two high level sensors in the ACT (if ACT fitted).

**ON A/C 101-200,

Post SB 28-2105 For A/C 101-200,

- two high level sensors in each ACT (if ACT(s) fitted).

**ON A/C ALL

- a check valve installed in each inner tank defuel line between STA67 (RIB 2) and STA139 (RIB 3).
- a check valve installed at the inlet of each inner tank diffuser between STA339 (RIB 6) and STA409 (RIB 7).
- a check valve installed in the outlet line of the transfer valve.
- a transfer valve in the right side of the center tank installed on the forward face of the rear spar STA2612(FR47/48).
- an overwing refueling cap installed in the wing top surface of each inner and outer wing tank. Inner tank refueling cap located between STA813 (RIB 13) and STA874 (RIB 14); outer tank refueling cap located between STA1659 (RIB 27) and STA1713 (RIB 28).
- a cadensicon installed on the forward face of the front spar right wing only, between STA663 (RIB 11) and STA737 (RIB 12). (Ref. 28-42-00, P. Block 1).

**ON A/C 101-200,

- a burst disc is installed in the vent line of the ACT.

**ON A/C 101-200,

Post SB 28-2105 For A/C 101-200,

Post SB 28-2108 For A/C 101-200,

- a burst disc is installed in the vent line of both ACT 1 and ACT 2

**ON A/C 101-200,

- an inlet valve is installed in the fuel refuel/transfer line in the ACT tank.

**ON A/C 101-200,

Post SB 28-2105 For A/C 101-200,

- an inlet valve is installed in the fuel refuel/transfer line in each ACT tank.

**ON A/C ALL

4. Not Applicable

5. Component Description

A. Pipes and Couplings

Fuel pipes are manufactured from light alloy tube.
Bulkhead fittings, connectors and branches are of cast light alloy construction. Pipes are connected by means of O-ring sliding joints with screw threaded retaining nuts.

B. Refuel/Defuel Couplings
(Ref. Fig. 012)

The refuel/defuel couplings are standard 2 1/2 inch diameter self-sealing couplings mounted flush with the wing undersurface. When not in use, each coupling is protected by a cap which provides a second seal. The caps are removed by lifting a hinged flush mounted handle in the center of each cap through ninety degrees, and turning to unlock. Removal instructions are marked on each cap. When removed, each cap is retained by a chain. Each coupling is flange bolted to an adaptor which connects with the refuel/defuel line.

C. Overwing Refueling Caps

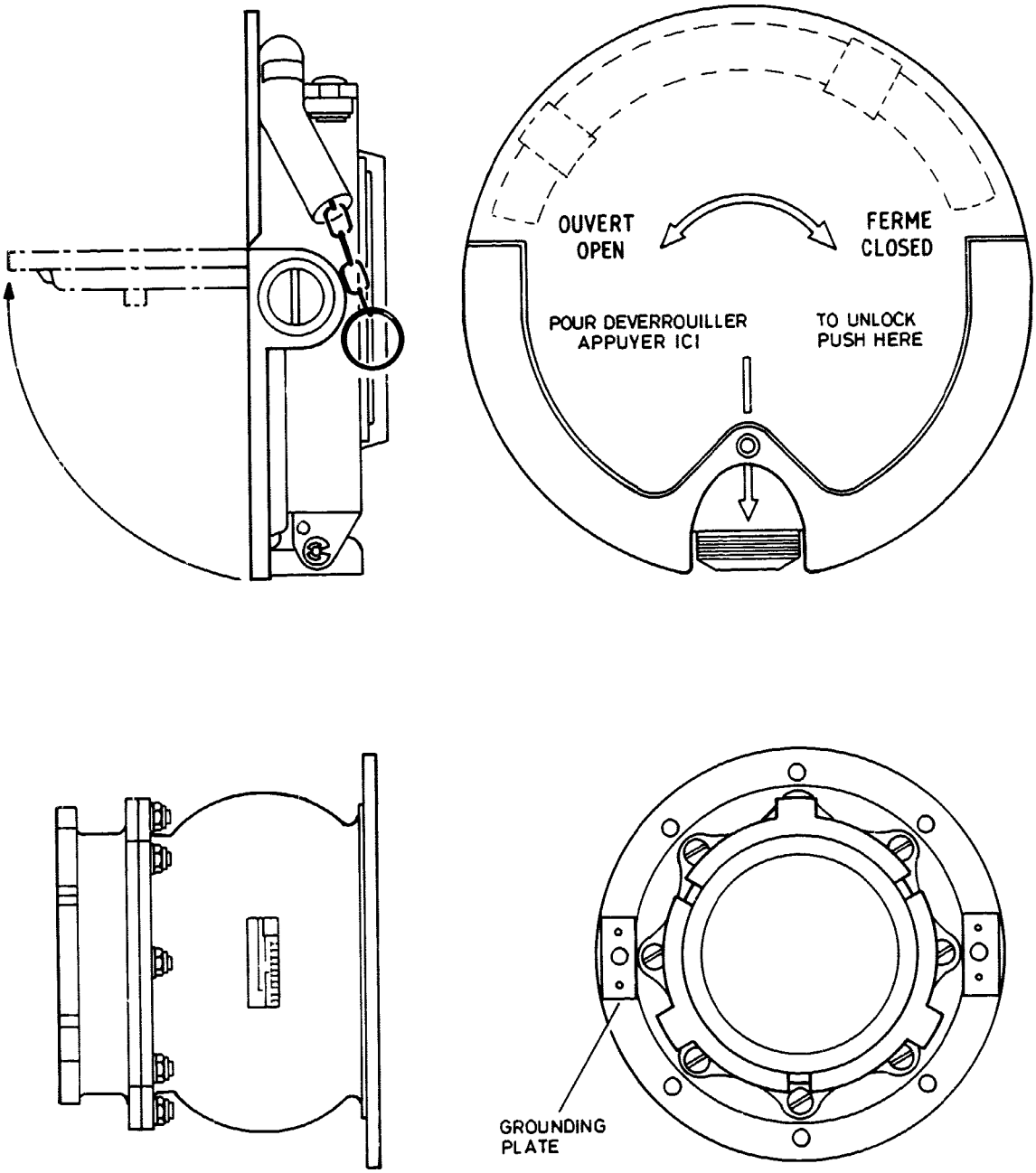
(Ref. Fig. 013)

Overwing refueling caps are installed in the wing top surface of each inner and outer tank. Each cap is opened by lifting a hinged flush mounted handle in the center of each cap, and turned to unlock; direct access to the tank is gained. There is a grounding connection adjacent to the filler cap.

D. Refuel/Defuel Valves
(Ref. Fig. 014)

**ON A/C 001-100,

Each refuel/defuel valve is installed in an aluminum alloy canister having fuel inlet and outlet connections. The canisters for the inner and outer tanks are flange bolted to the aft face of the front spar within the inner tank of each wing. The canister for the center tank and trim tank are flange bolted to the forward face of the rear spar within the center tank.
A second trim tank canister is flange bolted to the rear face of the front spar in the trim tank.
Each canister has a spring-loaded self-sealing valve which allows the refuel/defuel valve to be removed when the tank and pipes contain fuel. The mounting of the valve is such that during operation, reactive loads cannot be transmitted to the fuel pipes.



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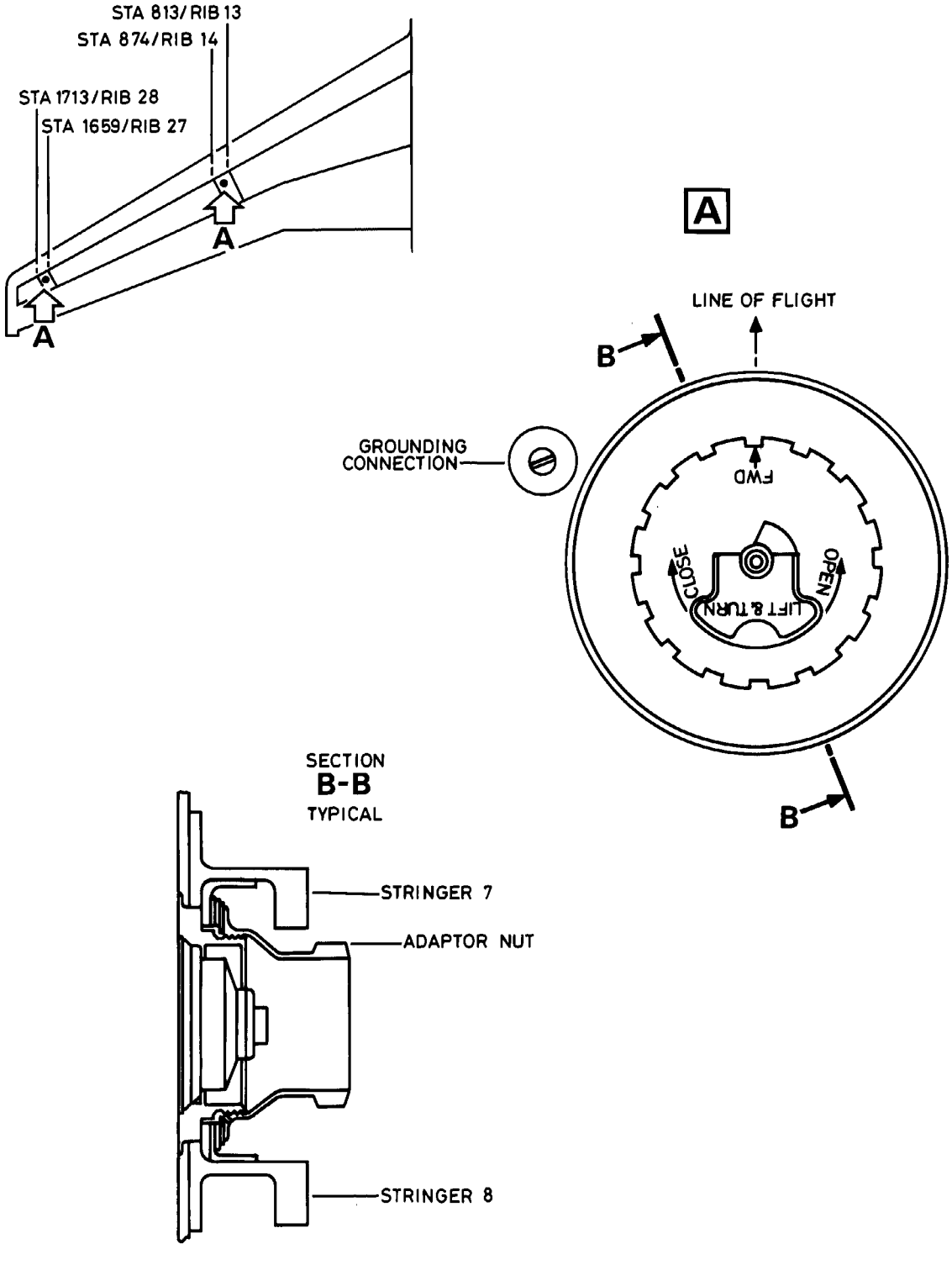
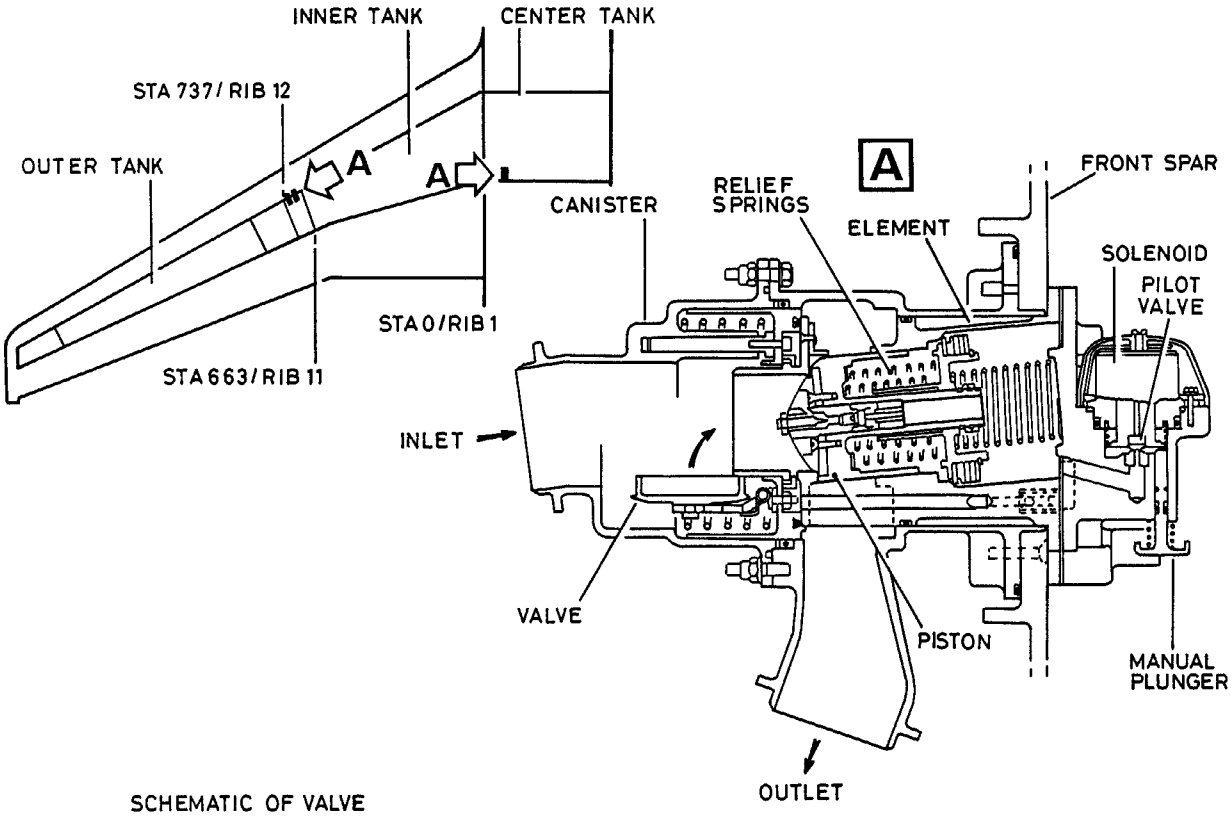
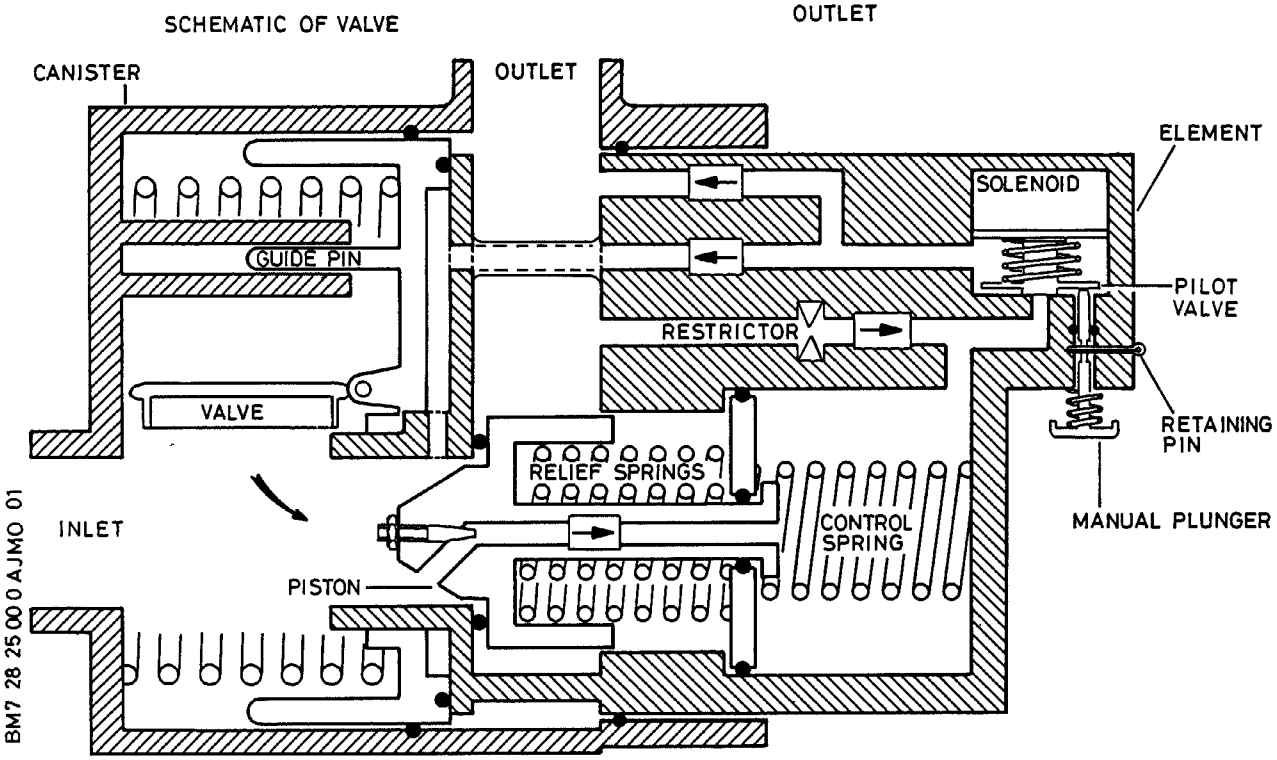
Refuel Couplings and Protective Cap
Figure 012



Overwing Refueling Caps
Figure 013





Refuel/Defuel Valve - Schematic
Figure 014

Each valve mechanism has a differential area piston with a metered bleed through the piston head and a pilot valve. The pilot valve controls the pressure behind the valve piston which allows fuel pipe differential pressure to open the valve. The pilot valve is controlled by a solenoid. The solenoid is energized when REFUEL or DEFUEL is selected for the appropriate valve at the refuel panel. A manual plunger is located adjacent the solenoid which when operated opens the pilot valve mechanically. The pilot valve closes when the plunger is released.

When the valve is in the closed position (solenoid de-energized), fuel will not pass through the valve unless fuel inlet pressure exceeds normal values, that is, a hose end pressure control failure or transient overpressure. In this case, the piston head deflects against the action of a spring and fuel is admitted to the tank until the overpressure condition ceases. When fuel inlet pressure is within normal limits and valve is not selected open, fuel passes through the piston head and pressurizes the volume behind the piston. The differential area of the piston causes a closing load to be applied to the piston. When the valve is selected open, the pilot valve connects the volume behind the piston with the valve outlet. The pressure behind the piston thus falls and the piston is pushed open by fuel pressure. When fuel pressure is not present, the valve is closed by the action of a spring, and will remain closed regardless of pilot valve position.

**ON A/C 101-200,

Each refuel/defuel valve is installed in an aluminum alloy canister having fuel inlet and outlet connections. The canisters for the inner and outer tanks are flange bolted to the aft face of the front spar within the inner tank of each wing. The canisters for the center tank, trim tank and ACT(s) (if fitted) are flange bolted to the forward face of the rear spar within the center tank.
A second trim tank canister is flange bolted to the rear face of the front spar in the trim tank.
Each canister has a spring-loaded self-sealing valve which allows the refuel/defuel valve to be removed when the tank and pipes contain fuel. The mounting of the valve is such that during operation, reactive loads cannot be transmitted to the fuel pipes.
Each valve mechanism has a differential area piston with a metered bleed through the piston head and a pilot valve. The pilot valve controls the pressure behind the valve piston which allows fuel pipe differential pressure to open the valve. The pilot valve is controlled by a solenoid. The solenoid is energized when REFUEL or DEFUEL is selected for the appropriate valve at the refuel panel. A manual plunger is located adjacent the solenoid which when operated opens the pilot valve mechanically. The pilot valve closes when the plunger is released.

When the valve is in the closed position (solenoid de-energized), fuel

will not pass through the valve unless fuel inlet pressure exceeds normal values, that is, a hose end pressure control failure or transient overpressure. In this case, the piston head deflects against the action of a spring and fuel is admitted to the tank until the overpressure condition ceases. When fuel inlet pressure is within normal limits and valve is not selected open, fuel passes through the piston head and pressurizes the volume behind the piston. The differential area of the piston causes a closing load to be applied to the piston. When the valve is selected open, the pilot valve connects the volume behind the piston with the valve outlet. The pressure behind the piston thus falls and the piston is pushed open by fuel pressure. When fuel pressure is not present, the valve is closed by the action of a spring, and will remain closed regardless of pilot valve position.

**ON A/C ALL

E. Not applicable.

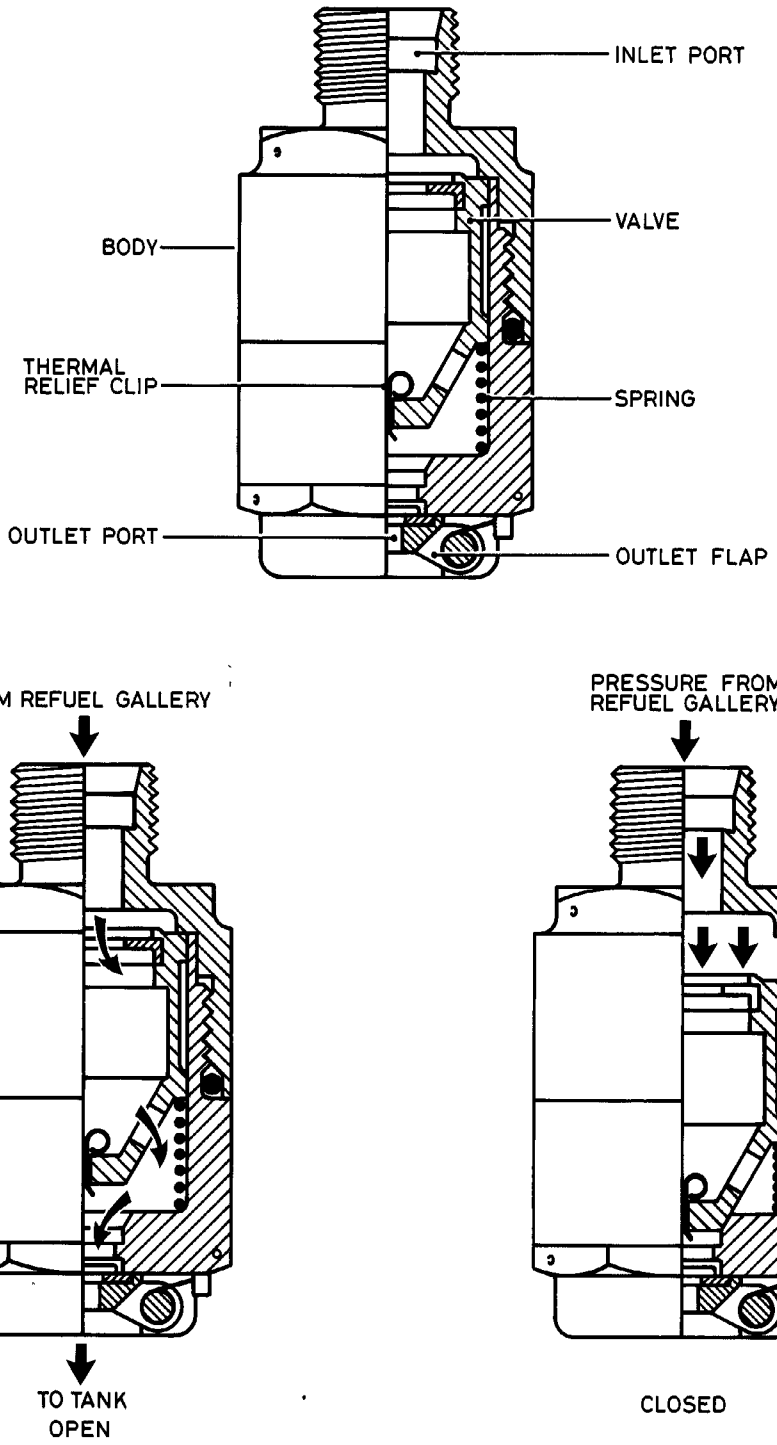
F. Drain Valves
(Ref. Fig. 015)

Two drain valves are installed on the refuel gallery within each inner tank. The valves are sprung loaded in the open position to allow any fuel contained in the refuel gallery, to drain into the inner tanks. During refueling, refuel pressure holds the valve shut against the spring preventing fuel drainage through the valves, into the inner tanks.
Each valve comprises an inlet port which is connected to the refuel gallery and an outlet port which discharges fuel through an outlet flap into the inner tanks. The outlet flap is spring loaded in the closed position preventing any reverse fuel flow through the drain valve. When the valve is closed, a loose fitting thermal relief clip will allow fuel to drain, should the temperature rise.

G. Not applicable.

H. Air Vent Valves
(Ref. Fig. 016)

An air vent valve is installed at the inlet of each outer tank refuel/defuel valve.
The valves open to allow air into the refuel/defuel line so that any fuel in the line may drain into the inner tanks through the drain valves. Fuel pressure in the refuel/defuel line closes the valves to prevent uncontrolled flow into the tanks.



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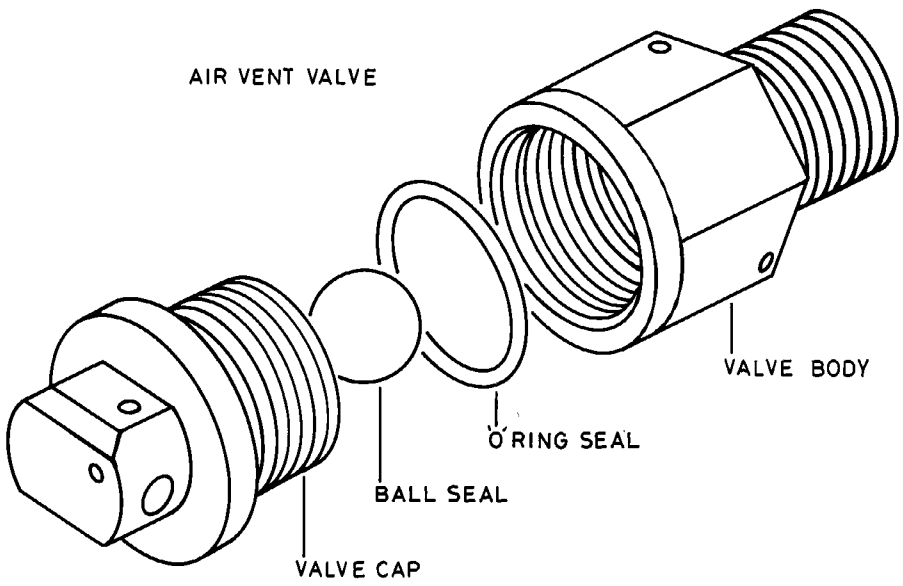
Drain Valve
Figure 015



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Air Vent Valves
Figure 016

J. Diffusers
(Ref. Fig. 017)

Diffusers are installed at the end of refuel branch lines in the tanks. They direct fuel into the tanks with minimum splashing or foaming. The diffusers consist of a cylindrical aluminium alloy tube connected at one end to the refuel branch line and closed at the other end. The cylinder is perforated along the top of its axis to allow fuel to enter the tank in an upwards direction. A baffled shield is mounted over the cylinder to prevent uncontrolled flow and to direct fuel away from the diffuser along the floor of the tank. A restrictor is installed in the line fitting at the diffuser which provides the correct fueling rate for the tank. The line fitting for the center tank diffuser is not fitted with a restrictor.

K. Transfer Valve
(Ref. Fig. 018)
(Ref. Fig. 019)

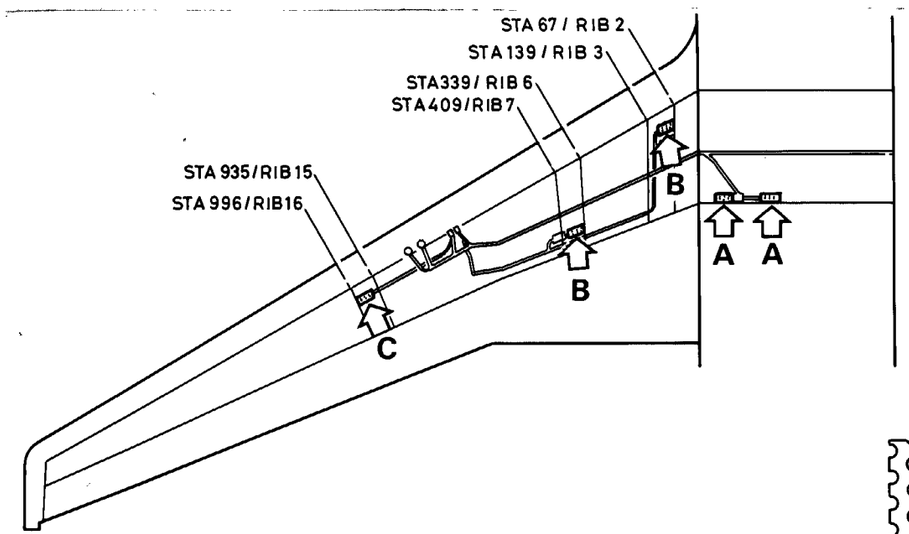
When open the transfer valve connects the engine fuel feed system to the refuel/defuel system.
The transfer valve is an electrically-actuated spherical-plug valve of two inch diameter similar to the tank isolation valves. The valve, installed on the inside of the center tank wall by a flange, comprises the body, spherical plug and control rod. The control rod protrudes through the tank wall and connects with the electrical actuator installed on the outside of the tank.

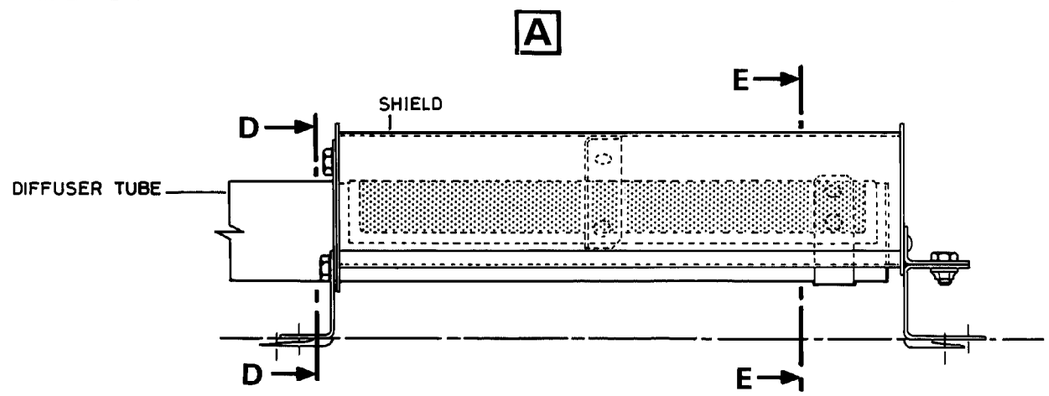
The actuator comprises a single electric motor, a reduction gear and microswitches. The microswitches limit the travel of the spherical plug to ninety degrees and complete the circuit for the valve open indication.

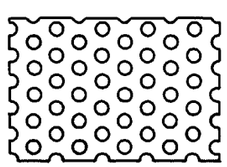
L. Check Valves
(Ref. Fig. 020)

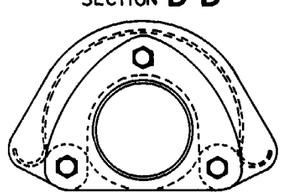
A check valve is installed in:
- the defueling branch line between STA67 (RIB 2) and STA139 (RIB 3) to prevent fuel entering the tank through the branch line when refueling.
- the branch line to the entry of the diffuser between STA339 (RIB 6) and STA409 (RIB 7), to prevent air entering the refuel/defuel system when defueling to a low level.
- the outlet line of the transfer valve which prevents fuel flow from the refuel/defuel system to the engine fuel feed system if the transfer valve is open.

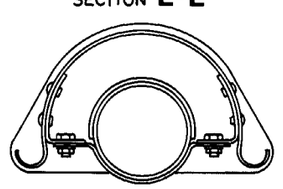
The check valve comprises a body with irreversible line connections containing a hinged flap which closes against an abutment face inside the body. The flap is spring loaded to the closed position.

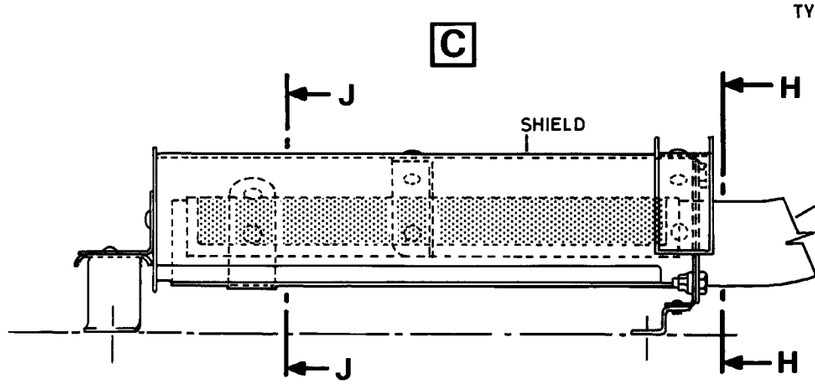


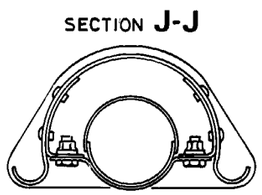


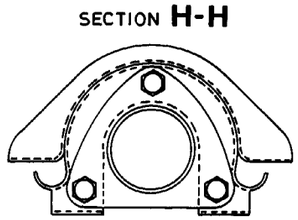


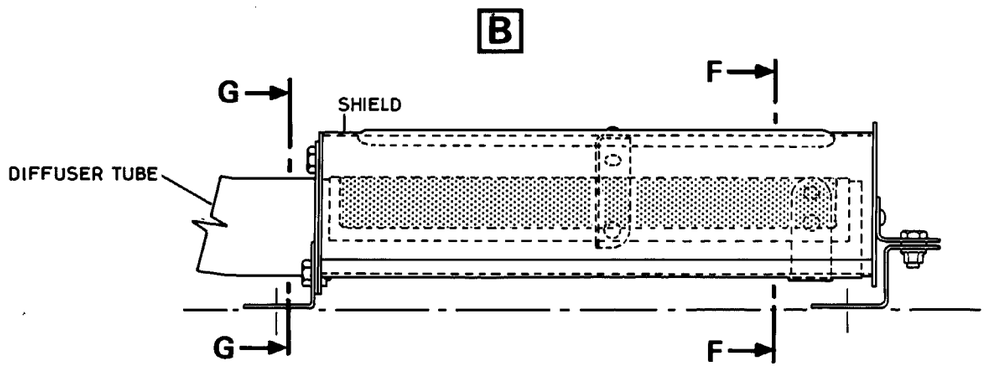


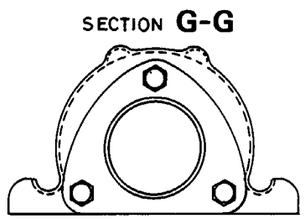


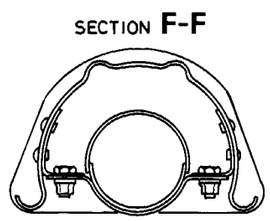












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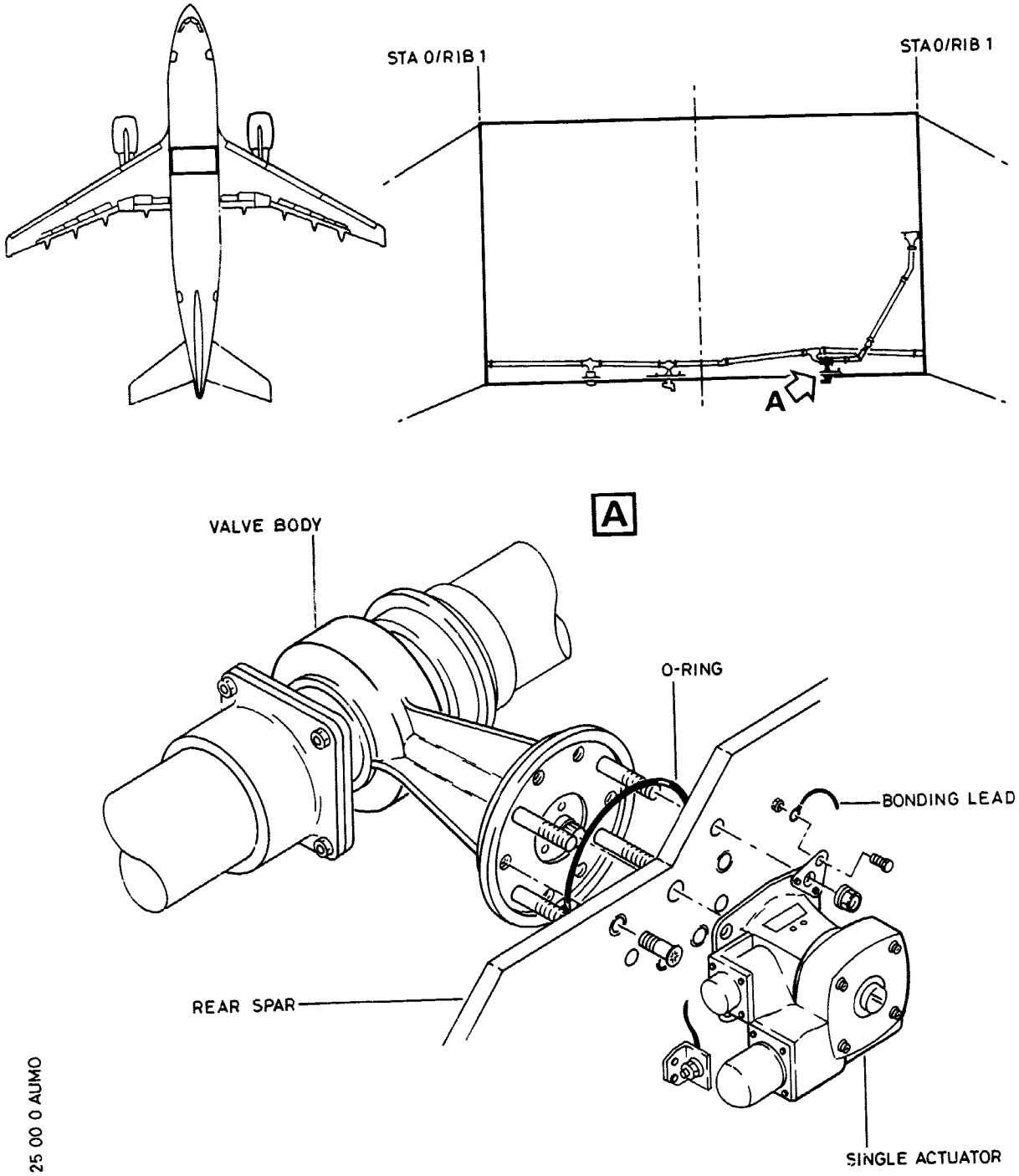
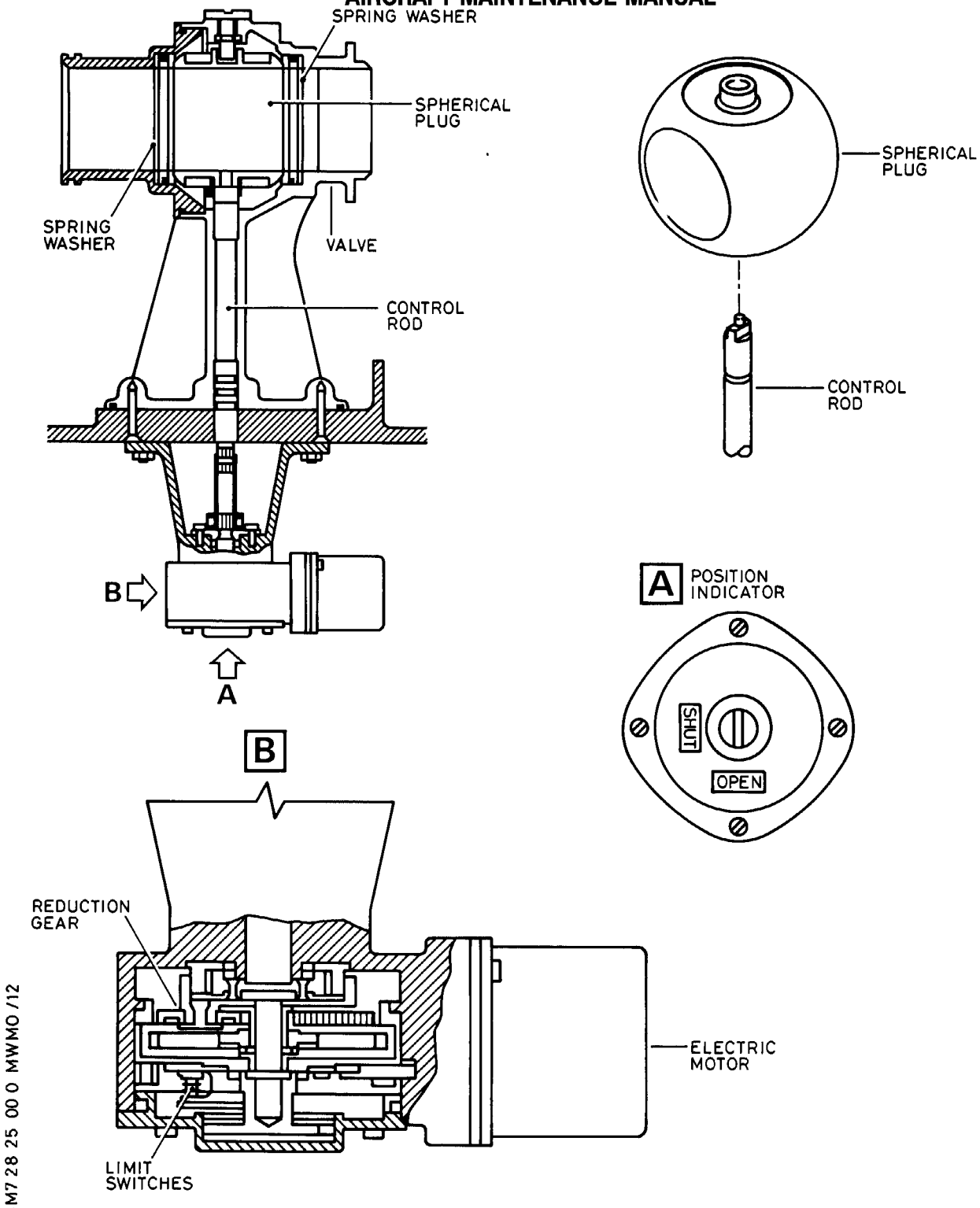
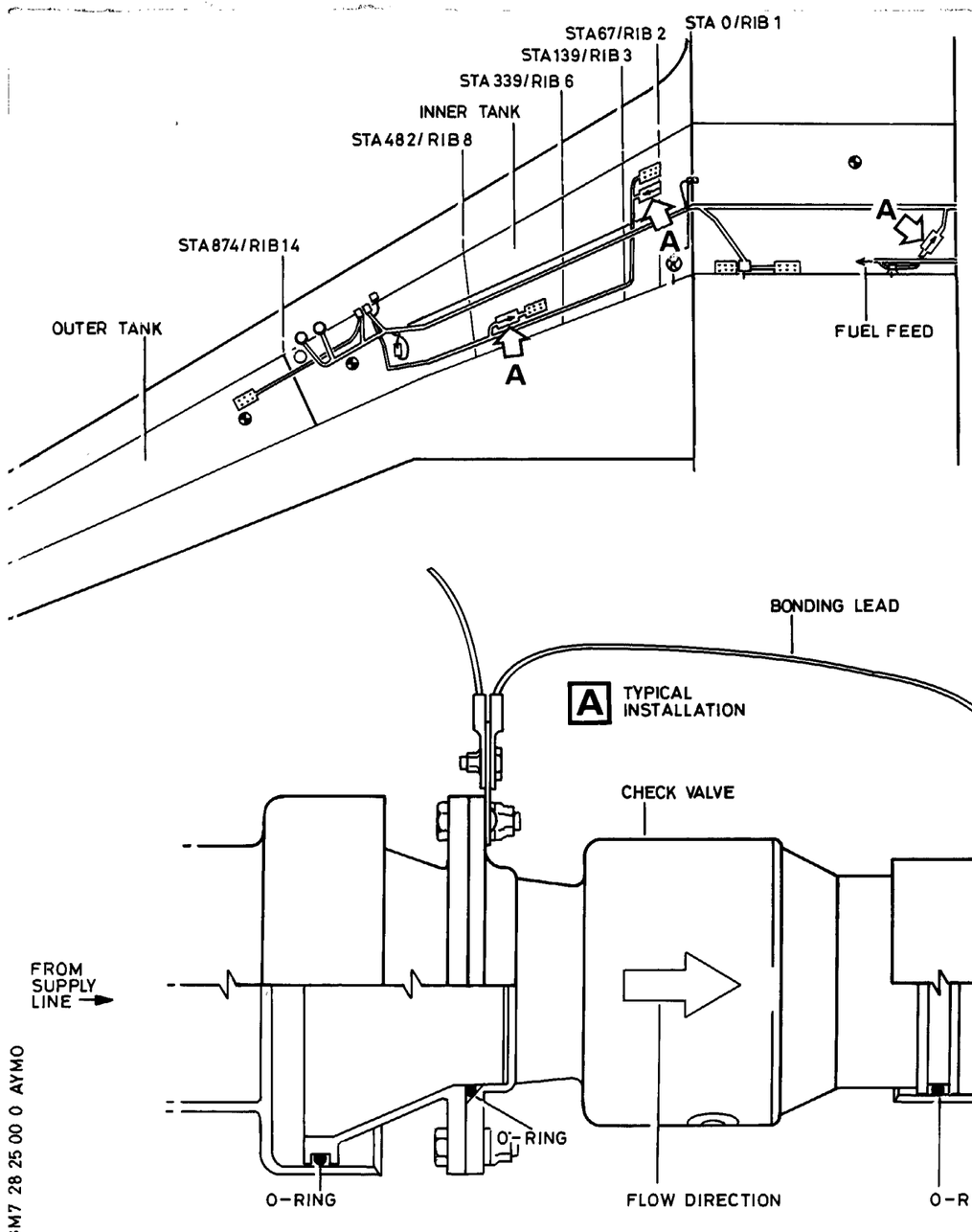
Diffusers
Figure 017

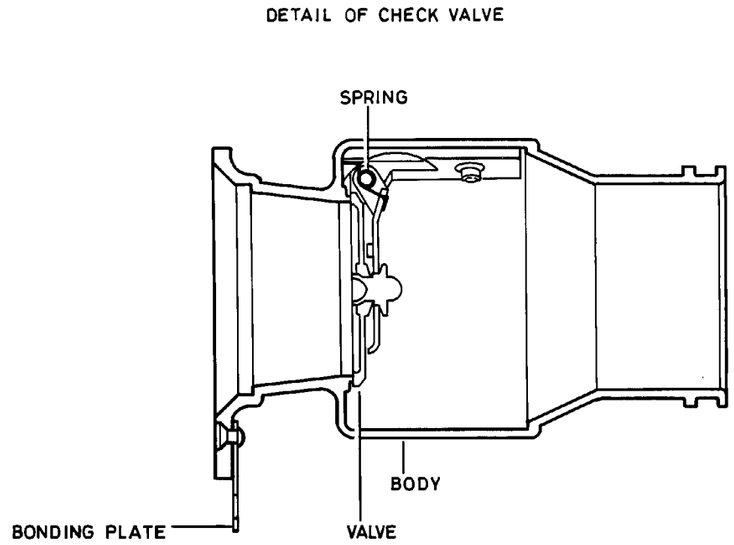


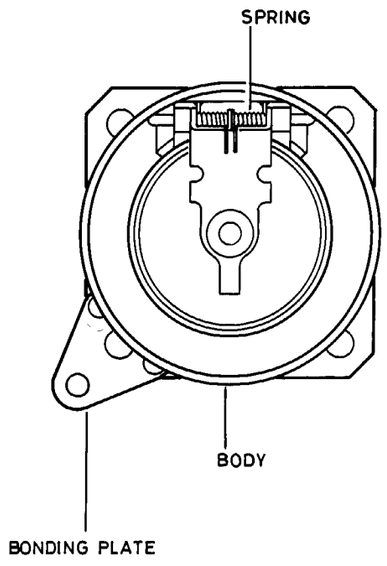
Transfer Valve - Location and Installation
Figure 018



Transfer Valve Details
Figure 019







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Check Valve - Component Location
Figure 020

M. Cadensicon Sensor

A cadensicon sensor is installed in the right wing on the forward face of the front spar adjacent to the refuel valves.

When refueling, a sample of fuel entering the inner tank is passed through the sensor in order to measure the density specific gravity and dielectric constant (Ref. 28-42-00, P. Block 1).

**ON A/C 101-200,

N. Burst Disc

A burst disc is installed in the vent line of the ACT. Should the tank pressure become abnormally high during the refuelling procedure due to a closed vent valve, the disc will burst and allow the tank to depressurize via the vent line, downstream of the vent valve.

**ON A/C 101-200,

Post SB 28-2105 For A/C 101-200,

N. Burst Disc(s)

A burst disc is installed in the vent line of both ACT 1 and ACT 2. Should the tank pressure become abnormally high during the refuelling procedure due to a closed vent valve, the disc will burst and allow tank depressurization to occur via the vent line, downstream of the vent valve.

**ON A/C ALL

6. Operation

The nominal refueling rates with 50 psi (3.45 bars) at the couplings are as follows.

**ON A/C 001-100,

TANK	SINGLE TANK FILLING LITERS (US GAL)/MIN	ALL TANK FILLING LITERS (US GAL)/MIN
OUTBOARD	LEFT 250(66) RIGHT 250(66)	LEFT 170(45) RIGHT 204(54)
INBOARD	LEFT 825(218) RIGHT 871(230)	LEFT 598(158) RIGHT 700(185)
CENTER	1094(281)	787(208)
TRIM	293(77)	220(58)

TANK	SINGLE TANK FILLING LITERS (US GAL)/MIN	ALL TANK FILLING LITERS (US GAL)/MIN

It is possible to fill the wing tanks completely in approximately nineteen minutes, wing tanks and center tanks in approximately twenty-four minutes; and all tanks in 27 minutes; an average flow rate of 2460 liters (650 US gal)per minute.
Tanks are filled preferentially in the order outers, inners, center and trim tank depending on fuel load required. All tanks to be fueled are refueled simultaneously.

**ON A/C 101-200,

TANK	SINGLE TANK FILLING LITERS/(US GAL)/MIN	ALL TANK FILLING LITERS/(US GAL)/MIN
OUTBOARD	LEFT 250(66) RIGHT 250(66)	LEFT 170(45) RIGHT 204(54)
INBOARD	LEFT 825(218) RIGHT 871(230)	LEFT 598(158) RIGHT 700(185)
CENTER	1094(289)	787(208)
TRIM	293(77)	220(58)
ACT	290(76)	220(58)

It is possible to fill the wing tanks completely in approximately nineteen minutes, wing tanks and center tanks in approximately twenty-four minutes; wing, center and trim tanks in approximately twenty seven minutes; and all tanks including the ACT in approximately thirty six minutes. The average flow rate when ACT is not refueled is 2460 litres (650 US gal)/min; the average flow rate when all tanks including the ACT are refueled, reduces to 1905 liters/min (503 US gal/min).

Tanks are filled preferentially in the order outers, inners, center, ACT and trim tank depending on fuel load required. All tanks to be fueled are refueled simultaneously.

**ON A/C 101-200,

Post SB 28-2105 For A/C 101-200,

TANK	SINGLE TANK FILLING LITERS/(US GAL)/MIN		ALL TANK FILLING LITERS/MIN(US GAL)/MIN	
OUTBOARD	LEFT 250(66)	RIGHT 250(66)	LEFT 105(28)	RIGHT 120(32)
INBOARD	LEFT 825(218)	RIGHT 871(230)	LEFT 455(120)	RIGHT 502(133)
CENTER	1094(289)		600(159)	
TRIM	293(77)		150(40)	
ACT1	290(76)		160(42)	
ACT2	280(74)		160(42)	

The approximate refuel times are as follows:
- Wing - 19 minutes
- Wing and center - 24 minutes
- Wing, center and ACT1 - 29 minutes
- Wing, center, ACT1 and ACT2 - 36 minutes
- All tanks - 45 minutes.

The average refuel flow rates are as follows:
- Wing and center - 2290 liters/min (605 US gal/min)
- Wing, center and ACT1 - 2140 liters/min (565 US gal/min)
- Wing, center, ACT1 and ACT2 - 1930 liters/min (510 US gal/min)
- All tanks - 1680 liters/min (444 US gal/min).

When you refuel automatically, all the tanks fill at the same time. The selected fuel load controls the quantities which the computer calculates for the applicable tank in the sequence: outers, inners, center, ACT1, ACT2 and trim tank.

The selected fuel load controls the tanks to be filled in the sequence: outers, inners, center, ACT1, ACT2 and trim tank. All the tanks to be filled are refueled at the same time.

**ON A/C ALL

The total quantity necessary, is pre-selected on the refuel panel 110VU. The knob at the left of the display is pulled and turned, until the total quantity necessary is shown on the PRESELECTED display. The knob is then put back to its normal position. The total contents at the time are shown on the ACTUAL display.

7. Control and Indications

A. Refuel/Defuel Panel

**ON A/C 001-100,

(Ref. Fig. 021)

**ON A/C 101-200,

(Ref. Fig. 022)

**ON A/C 101-200,

Post SB 28-2108 For A/C 101-200,

(Ref. Fig. 023)

**ON A/C 001-100,

(Ref. Fig. 024)

**ON A/C 101-200,

(Ref. Fig. 025)

**ON A/C 101-200,

Post SB 28-2108 For A/C 101-200,

(Ref. Fig. 026)

**ON A/C 001-100,

(Ref. Fig. 027)

**ON A/C 101-200,

(Ref. Fig. 028)

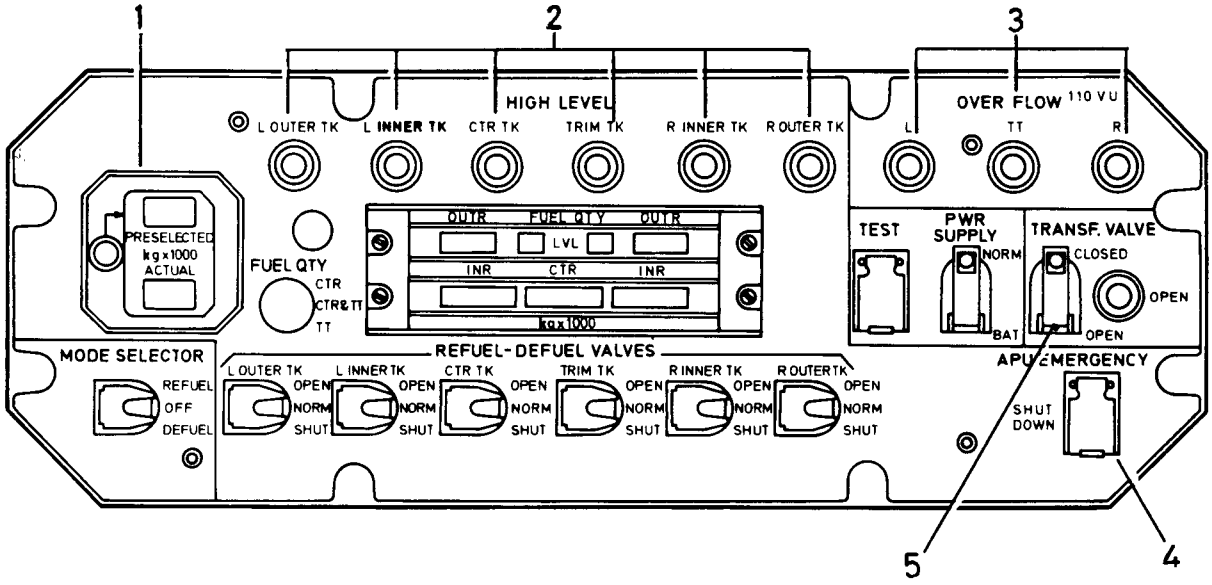
**ON A/C 101-200,

Post SB 28-2108 For A/C 101-200,

(Ref. Fig. 029)

**ON A/C ALL

The indications and controls for refueling and defueling are located on



1 PRESELECTOR: THE FUEL QUANTITY FOR AUTOMATIC REFUELING IS GOVERNED BY THE SETTING OF THE PRESELECTOR. THE COUNTER DISPLAYS THE PRESELECTED TOTAL FUEL QUANTITY IN KG X 1000. ROTATION OF THE KNOB ADJUSTS THE PRESELECTED QUANTITY TO THE DESIRED VALUE.

2 HIGH LEVEL LIGHTS: COME ON BLUE WHEN ASSOCIATED TANK HIGH LEVEL SENSORS ARE COVERED.
EACH LIGHT HAS A FILAMENT PRESS-TO-TEST FACILITY.

3 OVERFLOW L, R AND TT LIGHTS: COME ON AMBER WHEN THE OVERFLOW SENSOR IN THE ASSOCIATED VENT SURGE TANK IS COVERED.
EACH LIGHT HAS A FILAMENT PRESS-TO-TEST FACILITY.

4 APU EMERGENCY PUSHBUTTON SWITCH: WHEN PRESSED (IN), THE APU SHUTDOWN SEQUENCE IS INITIATED: IT IS USED IN THE EVENT OF FUEL SPILL OR OVERFLOW.

5 TRANSF VALVE SWITCH (GUARDED AT CLOSED):
- OPEN : TRANSFER VALVE OPEN: IF TRIM TANK EMPTY FUEL FEED LINE IS CONNECTED TO REFUEL LINE; AMBER OPEN LIGHT ADJACENT TO SWITCH COMES ON.
- CLOSED : TRANSFER VALVE CLOSED; AMBER LIGHT IS OFF.

OPEN LIGHT FILAMENT HAS A PRESS TO TEST FACILITY.
IF THE TRANSF SWITCH IS LEFT IN THE OPEN POSITION, THE VALVE WILL CLOSE WHEN REFUEL PANEL ACCESS DOOR IS CLOSED.

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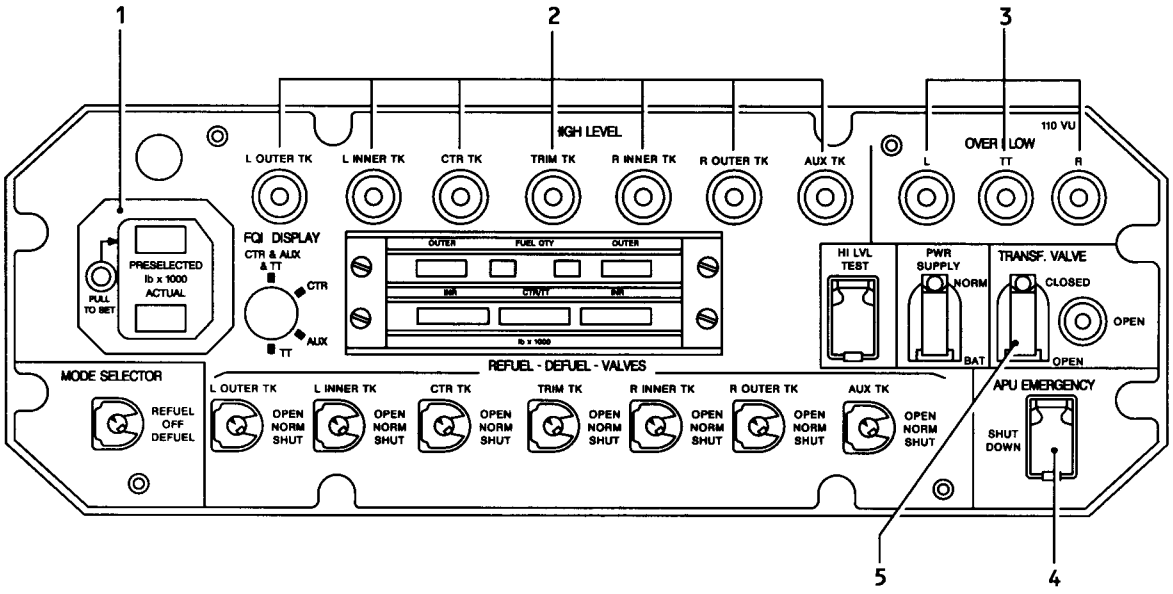
Refuel/Defuel Panel 110VU
Figure 021



1 PRESELECTOR: THE FUEL QUANTITY FOR AUTOMATIC REFUELING IS GOVERNED BY THE SETTING OF THE PRESELECTOR. THE COUNTER DISPLAYS THE PRESELECTED TOTAL FUEL QUANTITY IN lb x 1000. ROTATION OF THE KNOB ADJUSTS THE PRESELECTED QUANTITY TO THE DESIRED VALUE.

2 HIGH LEVEL LIGHTS: COME ON BLUE WHEN ASSOCIATED TANK HIGH LEVEL SENSORS ARE COVERED.
EACH LIGHT HAS A FILAMENT PRESS-TO-TEST FACILITY.

3 OVER FLOW L,R AND TT LIGHTS: COME ON AMBER WHEN THE OVER FLOW SENSOR IN THE ASSOCIATED VENT SURGE TANK IS COVERED.
EACH LIGHT HAS A FILAMENT PRESS- TO- TEST FACILITY.

4 APU EMERGENCY PUSHBUTTON SWITCH: WHEN PRESSED (IN), THE APU SHUTDOWN SEQUENCE IS INITIATED: IT IS USED IN THE EVENT OF FUEL SPILL OR OVERFLOW.

5 TRANSF VALVE SWITCH (GUARDED AT CLOSED):
- OPEN : TRANSFER VALVE OPEN: IF TRIM TANK EMPTY FUEL FEED LINE IS CONNECTED TO REFUEL LINE; AMBER OPEN LIGHT ADJACENT TO SWITCH COMES ON.
- CLOSED : TRANSFER VALVE CLOSED: AMBER LIGHT IS OFF.

OPEN LIGHT FILAMENT HAS A PRESS-TO-TEST FACILITY.
IF THE TRANSF SWITCH IS LEFT IN THE OPEN POSITION, THE VALVE WILL CLOSE WHEN REFUEL PANEL ACCESS DOOR IS CLOSED.

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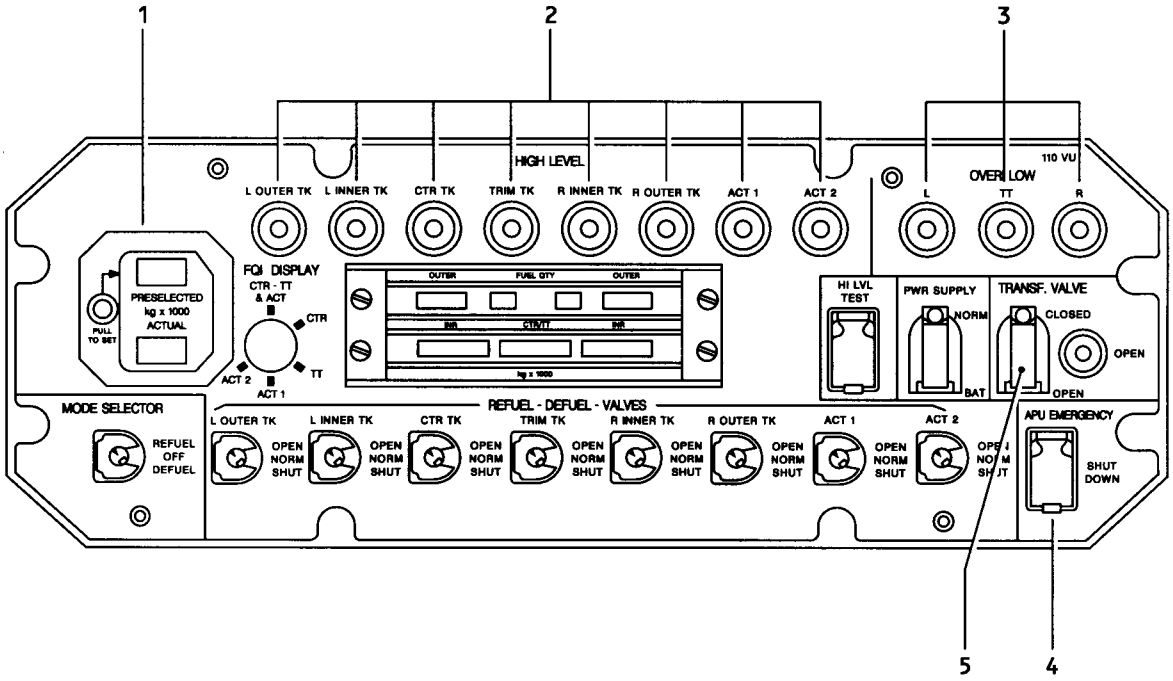
Refuel/Defuel Panel 110VU
Figure 022



1 PRESELECTOR: THE FUEL QUANTITY FOR AUTOMATIC REFUELING IS GOVERNED BY THE SETTING OF THE PRESELECTOR. THE COUNTER DISPLAYS THE PRESELECTED TOTAL FUEL QUANTITY IN kg x 1000. ROTATION OF THE KNOB ADJUSTS THE PRESELECTED QUANTITY TO THE DESIRED VALUE.

2 HIGH LEVEL LIGHTS: COME ON BLUE WHEN ASSOCIATED TANK HIGH LEVEL SENSORS ARE COVERED.
EACH LIGHT HAS A FILAMENT PRESS-TO-TEST FACILITY.

3 OVER FLOW L,R AND TT LIGHTS: COME ON AMBER WHEN THE OVER FLOW SENSOR IN THE ASSOCIATED VENT SURGE TANK IS COVERED.
EACH LIGHT HAS A FILAMENT PRESS- TO- TEST FACILITY.

4 APU EMERGENCY PUSHBUTTON SWITCH: WHEN PRESSED (IN), THE APU SHUTDOWN SEQUENCE IS INITIATED: IT IS USED IN THE EVENT OF FUEL SPILL OR OVERFLOW.

5 TRANSF VALVE SWITCH (GUARDED AT CLOSED)
- OPEN : TRANSFER VALVE OPEN: IF TRIM TANK EMPTY FUEL FEED LINE IS CONNECTED TO REFUEL LINE; AMBER OPEN LIGHT ADJACENT TO SWITCH COMES ON.
- CLOSED : TRANSFER VALVE CLOSED: AMBER LIGHT IS OFF.

OPEN LIGHT FILAMENT HAS A PRESS-TO-TEST FACILITY.
IF THE TRANSF SWITCH IS LEFT IN THE OPEN POSITION, THE VALVE WILL CLOSE WHEN REFUEL PANEL ACCESS DOOR IS CLOSED.

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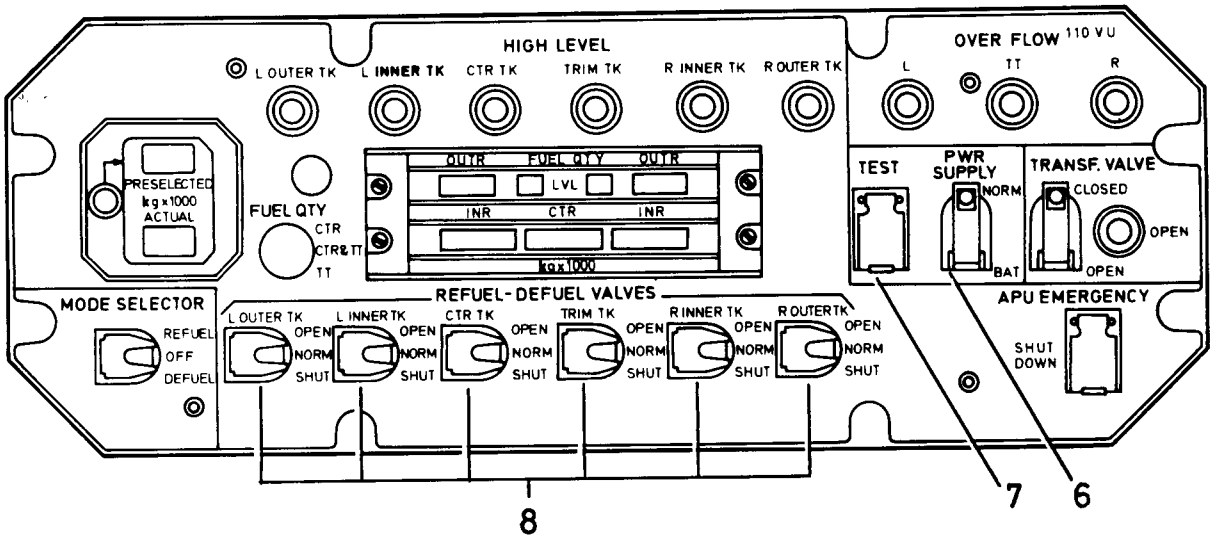
Refuel/Defuel Panel 110VU
Figure 023



6. PWR SUPPLY SWITCH (GUARDED AT NORM):
   - NORM : REFUELING/DEFUELING CAN BE POWERED WITH EXTERNAL POWER CONNECTED OR APU GENERATOR ON LINE.
   - BAT : REFUEL/DEFUEL SYSTEM POWERED BY BATTERY (BAT 1) AND EMERGENCY INVERTER.
7. TEST PUSHBUTTON SWITCH: WHEN PRESSED (IN) FOR AT LEAST ONE MINUTE THE HIGH LEVEL LIGHTS AND THE OVERFLOW LIGHTS COME ON IF THEIR CIRCUITS AND SENSORS ARE SERVICEABLE. THE FUEL QUANTITY INDICATOR DISPLAYS LA (ONLY IF LOWERED ACCURACY EXISTS) FOR 4 SECONDS THEN 8 s FOR 15 SECONDS. THE DISPLAY CHANGES TO 7 s FOR 30 SECONDS IF SYSTEM IS SATISFACTORY, OR BLANK FOR FAULT CONDITION. PRESELECTED AND ACTUAL INDICATORS DISPLAY 8 s UNTIL TEST PUSHBUTTON SWITCH IS RELEASED. AFTER ONE MINUTE DISPLAY WILL REVERT TO NORMAL.
8. REFUEL/DEFUEL VALVES SWITCHES (GUARDED AT NORMAL):
   - NORMAL : VALVES ARE CONTROLLED BY AUTOMATIC FUELING LOGIC WHEN MODE SELECTOR SWITCH IS SET TO REFUEL. WITH THE MODE SELECTOR SWITCH SET TO DEFUEL THE VALVES WILL NOT OPEN.
   - OPEN : VALVES ARE OPEN WHEN MODE SELECTOR SWITCH IS IN REFUEL OR DEFUEL POSITION. IF MODE SELECTOR SWITCH IS IN THE REFUEL POSITION, EACH REFUEL VALVE WILL CLOSE WHEN HIGH LEVEL IS DETECTED IN THE RESPECTIVE TANK.

     NOTE : FOR REFUEL
     TRIM TANK VALVE WILL NOT OPEN UNLESS CTR TANK VALVE ALSO SELECTED OPEN.
     FOR DEFUEL
     WITH FUEL IN THE TRIM TANK, CTR TANK CANNOT BE DEFUELED UNLESS ALSO SELECTED.
   - SHUT : VALVES CLOSED, INDEPENDENT OF MODE SELECTOR SWITCH POSITION.

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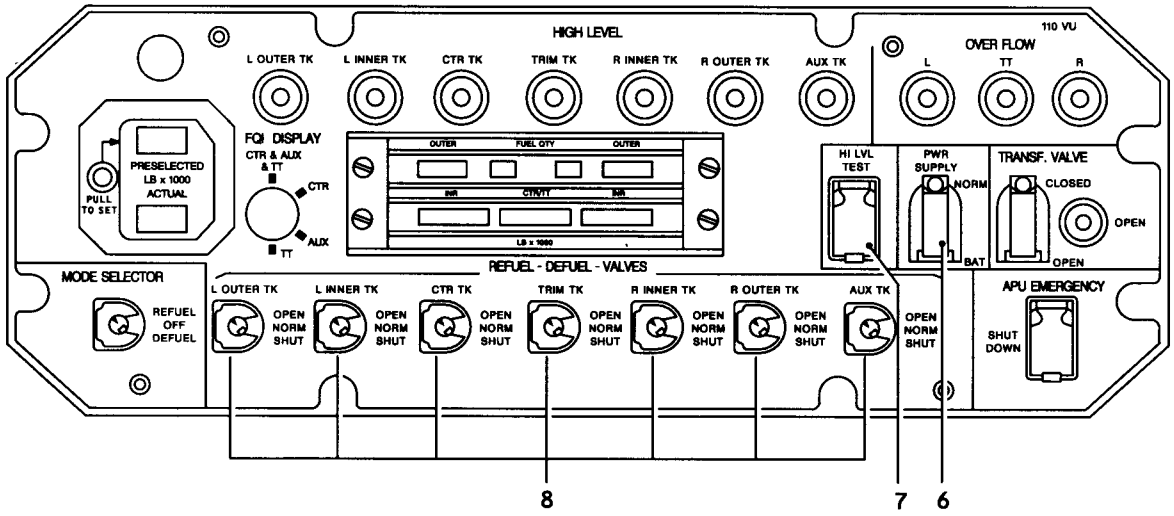
Refuel/Defuel Panel 110VU
Figure 024



6 PWR SUPPLY SWITCH (GUARDED AT NORM):
- NORM : REFUELING/DEFUELING CAN BE POWERED WITH EXTERNAL POWER CONNECTED OR APU GENERATOR ON LINE.
- BAT : REFUEL/DEFUEL SYSTEM POWERED BY BATTERY (BAT 1) AND EMERGENCY INVERTER.

7 HI LVL TEST PUSHBUTTON SWITCH: WHEN PRESSED (IN) FOR AT LEAST ONE MINUTE THE SEVEN HIGH LEVEL LIGHTS AND THE THREE OVER FLOW LIGHTS COME ON IF THEIR CIRCUITS AND SENSORS ARE SERVICEABLE. THE FUEL QUANTITY INDICATOR DISPLAYS LA (ONLY IF LOWERED ACCURACY EXISTS) FOR 4 SECONDS THEN 8's FOR 15 SECONDS. THE DISPLAY CHANGES TO 7's FOR 30 SECONDS IF SYSTEM IS SATISFACTORY, OR BLANK FOR FAULT CONDITION. PRESELECTED AND ACTUAL INDICATORS DISPLAY 8's UNTIL TEST PUSHBUTTON SWITCH IS RELEASED. AFTER ONE MINUTE DISPLAY WILL REVERT TO NORMAL.

8 REFUEL/DEFUEL VALVES SWITCHES (GUARDED AT NORMAL):
- NORM : VALVES ARE CONTROLLED BY AUTOMATIC FUELING LOGIC WHEN MODE SELECTOR SWITCH IS SET TO REFUEL. WITH THE MODE SELECTOR SWITCH SET TO DEFUEL THE VALVES WILL NOT OPEN.
- OPEN : VALVES ARE OPEN WHEN MODE SELECTOR SWITCH IS IN REFUEL OR DEFUEL POSITION. IF MODE SELECTOR SWITCH IS IN THE REFUEL POSITION, EACH REFUEL VALVE WILL CLOSE WHEN HIGH LEVEL IS DETECTED IN THE RESPECTIVE TANK.
  NOTE: FOR REFUEL, TRIM TANK VALVE WILL NOT OPEN UNLESS CTR TANK VALVE IS ALSO SELECTED OPEN. FOR DEFUEL, WITH FUEL IN THE TRIM TANK, CTR TANK CANNOT BE DEFUELED UNLESS ALSO SELECTED.
- SHUT : VALVES CLOSED,INDEPENDENT OF MODE SELECTOR SWITCH POSITION.

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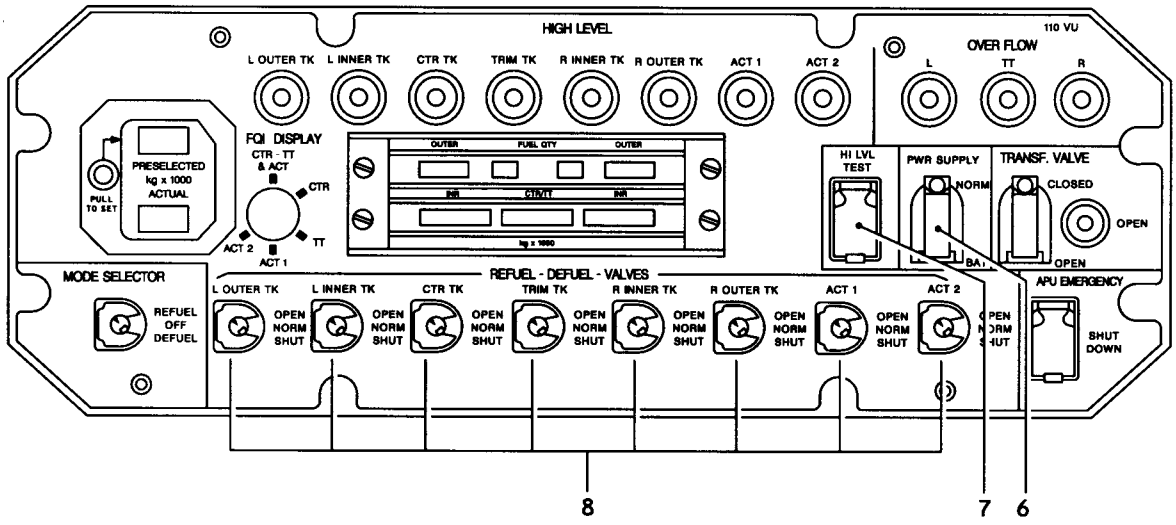
Refuel/Defuel Panel 110VU
Figure 025



6 PWR SUPPLY SWITCH (GUARDED AT NORM):
- NORM : REFUELING/DEFUELING CAN BE POWERED WITH EXTERNAL POWER CONNECTED OR APU GENERATOR ON LINE.
- BAT : REFUEL/DEFUEL SYSTEM POWERED BY BATTERY (BAT 1) AND EMERGENCY INVERTER.

7 HI LVL TEST PUSHBUTTON SWITCH: WHEN PRESSED (IN) FOR AT LEAST ONE MINUTE THE EIGHT HIGH LEVEL LIGHTS AND THE THREE OVER FLOW LIGHTS COME ON IF THEIR CIRCUITS AND SENSORS ARE SERVICEABLE. THE FUEL QUANTITY INDICATOR DISPLAYS LA (ONLY IF LOWERED ACCURACY EXISTS) FOR 4 SECONDS THEN 8's FOR 15 SECONDS. THE DISPLAY CHANGES TO 7's FOR 30 SECONDS IF SYSTEM IS SATISFACTORY, OR BLANK FOR FAULT CONDITION. PRESELECTED AND ACTUAL INDICATORS DISPLAY 8's UNTIL TEST PUSHBUTTON SWITCH IS RELEASED. AFTER ONE MINUTE DISPLAY WILL REVERT TO NORMAL.

8 REFUEL/DEFUEL VALVES SWITCHES (GUARDED AT NORMAL):
- NORM : VALVES ARE CONTROLLED BY AUTOMATIC FUELING LOGIC WHEN MODE SELECTOR SWITCH IS SET TO REFUEL. WITH THE MODE SELECTOR SWITCH SET TO DEFUEL THE VALVES WILL NOT OPEN.
- OPEN : VALVES ARE OPEN WHEN MODE SELECTOR SWITCH IS IN REFUEL OR DEFUEL POSITION. IF MODE SELECTOR SWITCH IS IN THE REFUEL POSITION, EACH REFUEL VALVE WILL CLOSE WHEN HIGH LEVEL IS DETECTED IN THE RESPECTIVE TANK.
  NOTE: FOR REFUEL, TRIM TANK VALVE WILL NOT OPEN UNLESS CTR TANK VALVE IS ALSO SELECTED OPEN. FOR DEFUEL, WITH FUEL IN THE TRIM TANK, CTR TANK CANNOT BE DEFUELED UNLESS ALSO SELECTED.
- SHUT : VALVES CLOSED, INDEPENDENT OF MODE SELECTOR SWITCH POSITION.

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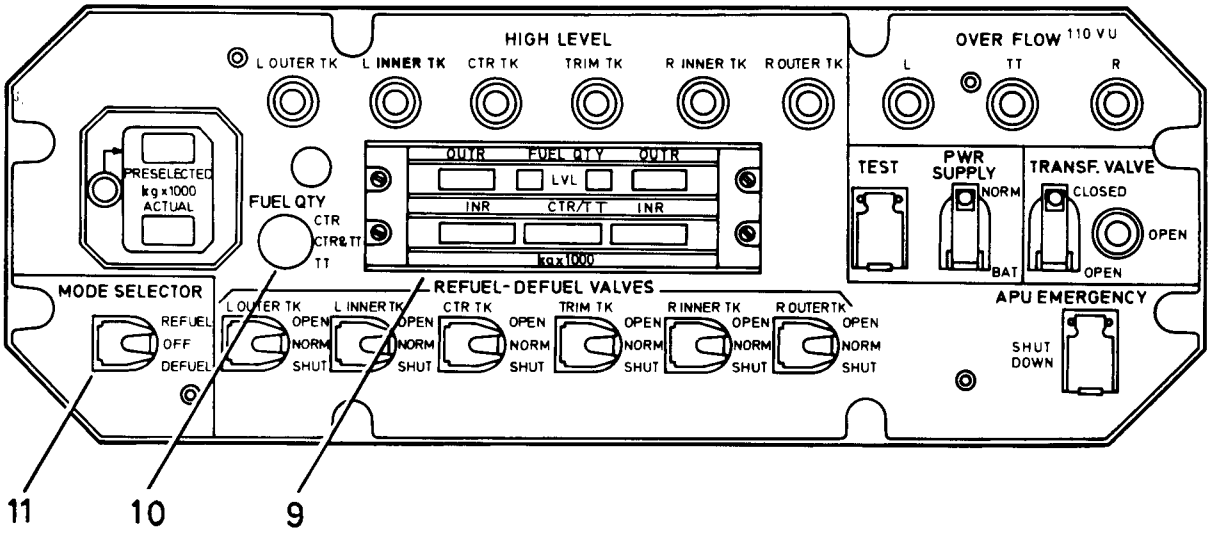
Refuel/Defuel Panel 110VU
Figure 026



9 FUEL QTY INDICATOR (FQI): INDICATES THE QUANTITY OF FUEL IN EACH TANK. THE LO LVL LEGENDS ARE INOPERATIVE.

10 FUEL QTY SWITCH: SELECTS TANK(S) QUANTITY TO BE DISPLAYED ON CTR TANK INDICATOR:
- CTR: CENTER TANK ONLY.
- CTR & TT: CENTER TANK PLUS TRIM TANK.
- TT: TRIM TANK ONLY.

11 MODE SELECTOR SWITCH (GUARDED AT OFF).
- OFF : REFUEL/DEFUEL VALVES CLOSED.
- REFUEL : REFUEL/DEFUEL VALVES OPERATE BY AUTO REFUELING LOGIC OR MANUAL OPERATION DEPENDING ON POSITION OF THE INDIVIDUAL REFUEL DEFUEL VALVES SWITCHES.
- DEFUEL : REFUEL/DEFUEL VALVES OPERATED BY THE OPEN AND SHUT POSITIONS OF THE REFUEL DEFUEL VALVES SWITCHES.

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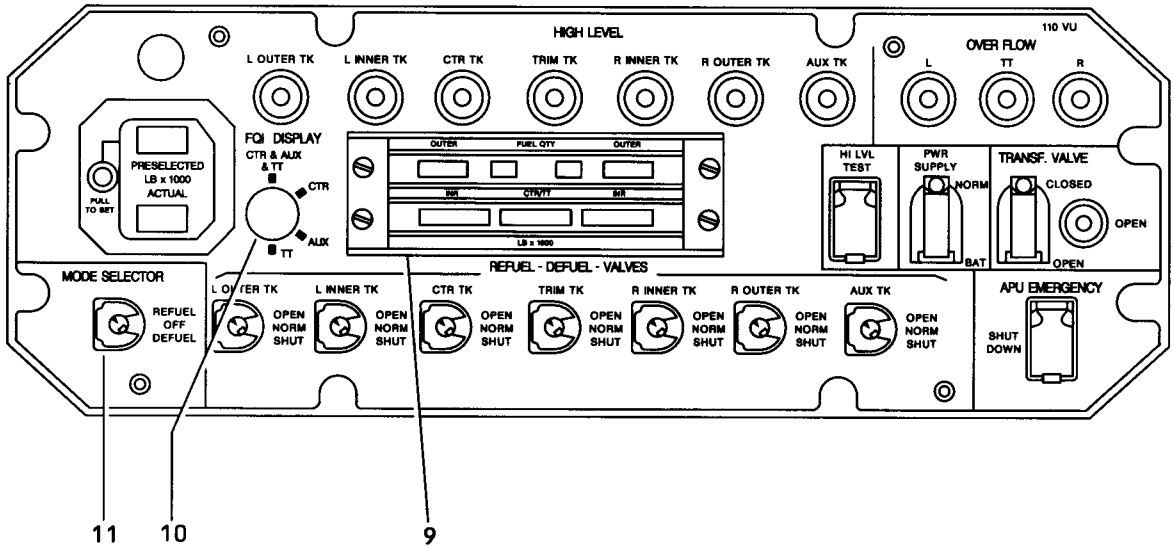
Refuel/Defuel Panel 110VU
Figure 027



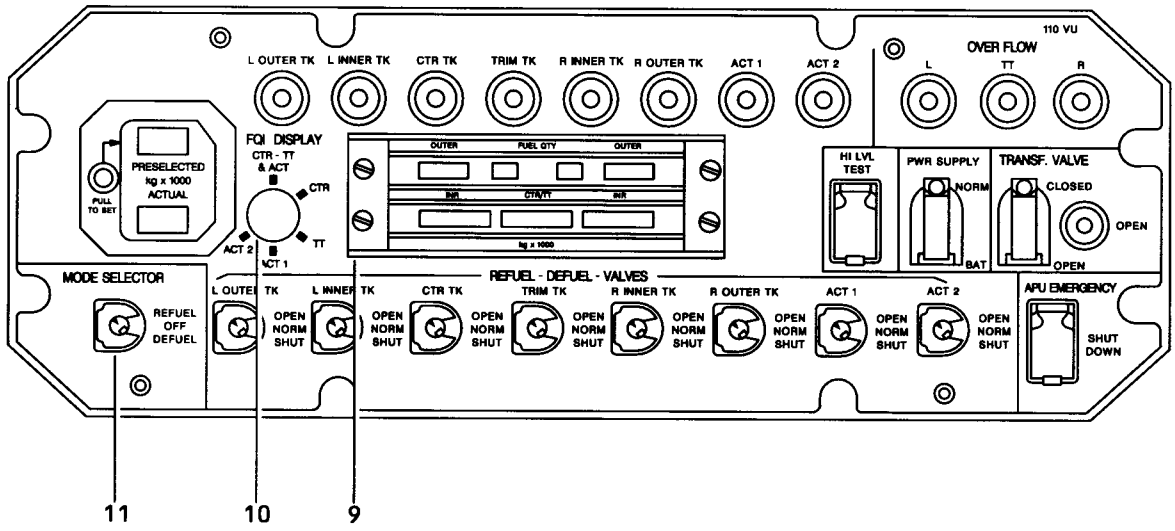
9 FUEL QTY INDICATOR (FQI):INDICATES THE QUANTITY OF FUEL IN EACH TANK. THE LO LVL LEGENDS ARE INOPERATIVE.

10 FUEL QTY SWITCH: SELECTS TANK(S) QUANTITY TO BE DISPLAYED ON FQI:
- CTR & AUX & TT: CENTER PLUS ACT PLUS TRIM TANK.
- CTR: CENTER TANK ONLY.
- AUX: ACT ONLY
- TT: TRIM TANK ONLY.

11 MODE SELECTOR SWITCH (GUARDED AT OFF)
- OFF : REFUEL/DEFUEL VALVES CLOSED.
- REFUEL : REFUEL/DEFUEL VALVES OPERATE BY AUTO REFUELING LOGIC OR MANUAL OPERATION DEPENDING ON POSITION OF THE INDIVIDUAL REFUEL/DEFUEL VALVES SWITCHES.
- DEFUEL : REFUEL/DEFUEL VALVES OPERATED BY THE OPEN AND SHUT POSITIONS OF THE REFUEL/DEFUEL VALVES SWITCHES.

BM8 28 25 00 0 UDM0 01

Refuel/Defuel Panel 110VU
Figure 028



9 FUEL QTY INDICATOR (FQI): INDICATES THE QUANTITY OF FUEL IN EACH TANK. THE LO LVL LEGENDS ARE INOPERATIVE.

10 FUEL QTY SWITCH: SELECTS TANK(S) QUANTITY TO BE DISPLAYED ON FQI:
- CTR & TT & ACT: CENTER TANK PLUS TRIM TANK PLUS ACT 1 AND ACT 2.
- CTR: CENTER TANK ONLY.
- TT: TRIM TANK ONLY.
- ACT 1: ACT 1 ONLY.
- ACT 2: ACT 2 ONLY.

11 MODE SELECTOR SWITCH (GUARDED AT OFF):
- OFF : REFUEL/DEFUEL VALVES CLOSED.
- REFUEL : REFUEL/DEFUEL VALVES OPERATE BY AUTO REFUELING LOGIC OR MANUAL OPERATION DEPENDING ON POSITION OF THE INDIVIDUAL REFUEL DEFUEL VALVES SWITCHES.
- DEFUEL : REFUEL/DEFUEL VALVES OPERATED BY THE OPEN AND SHUT POSITIONS OF THE REFUEL DEFUEL VALVES SWITCHES.

BM8 28 25 00 0 EDM0 00

Refuel/Defuel Panel 110VU
Figure 029

the refuel panel 110VU located in the cooling air intake fairing below the fuselage.
Power is applied to the panel and the panel is illuminated on opening the access door.
The trim tank isolation valve is signalled to open, to allow refueling of the trim tank, when the refuel panel door is opened. The isolation valve is signalled to close when the refuel panel door is closed.

B. Refueling/Defueling

Refer to relevant maintenance procedures (Ref. 12-11-28 or 28-25-00, P. Block 301).

C. Not applicable

D. Refueling Using Preselector

The fuel quantity for automatic refueling is governed by the setting of the preselector on the refuel/defuel panel 110VU.
The counter displays the preselected fuel quantity and this is adjusted by rotation of the knob.

**ON A/C 001-003,

(Ref. Fig. 030)

**ON A/C 101-200,

Post SB 28-2108 For A/C 101-200,

(Ref. Fig. 031) (Sheet 1 and 2)

**ON A/C 004-100,

(Ref. Fig. 032)

**ON A/C 101-200,

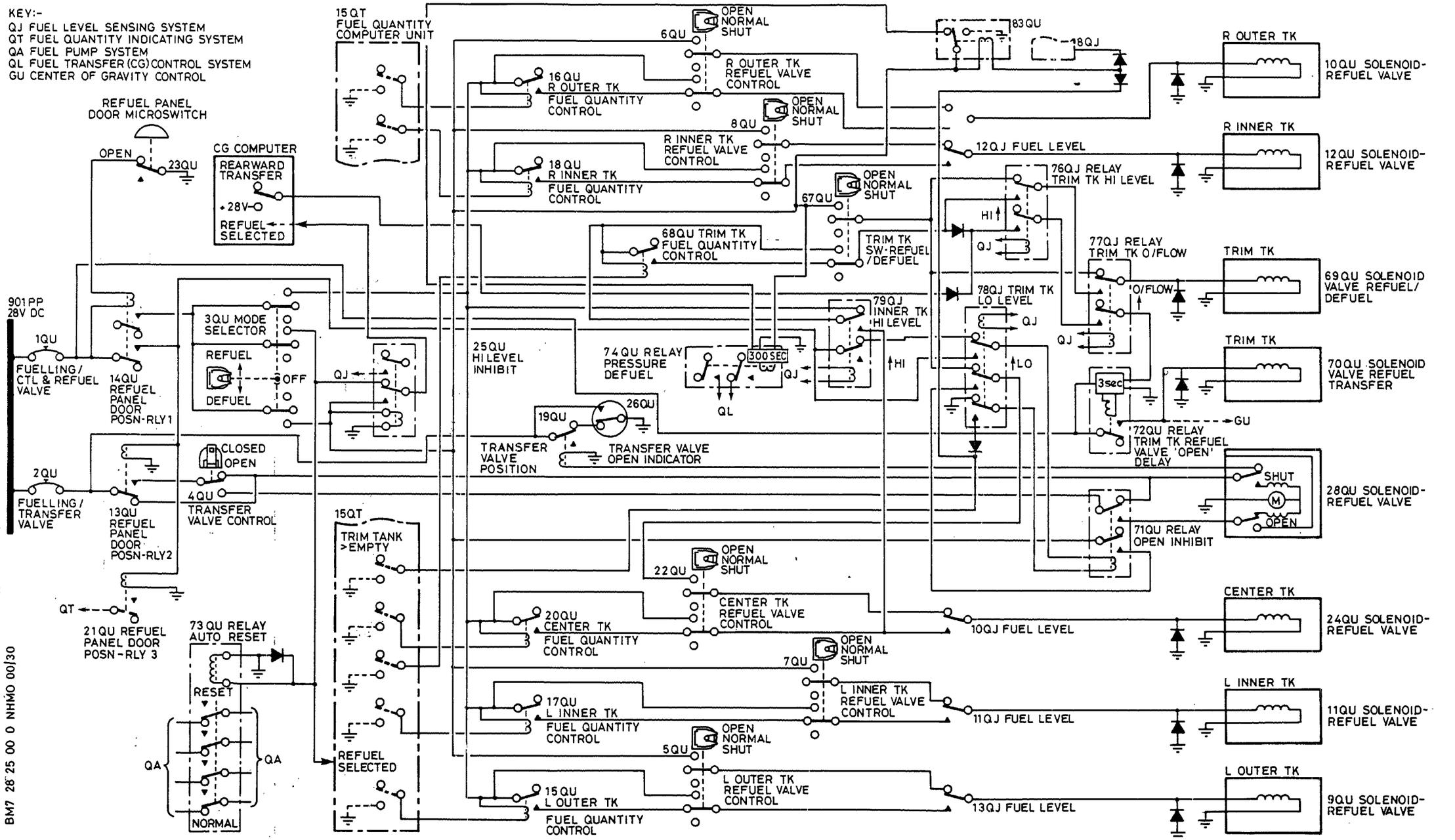
(Ref. Fig. 033)

**ON A/C 101-200,

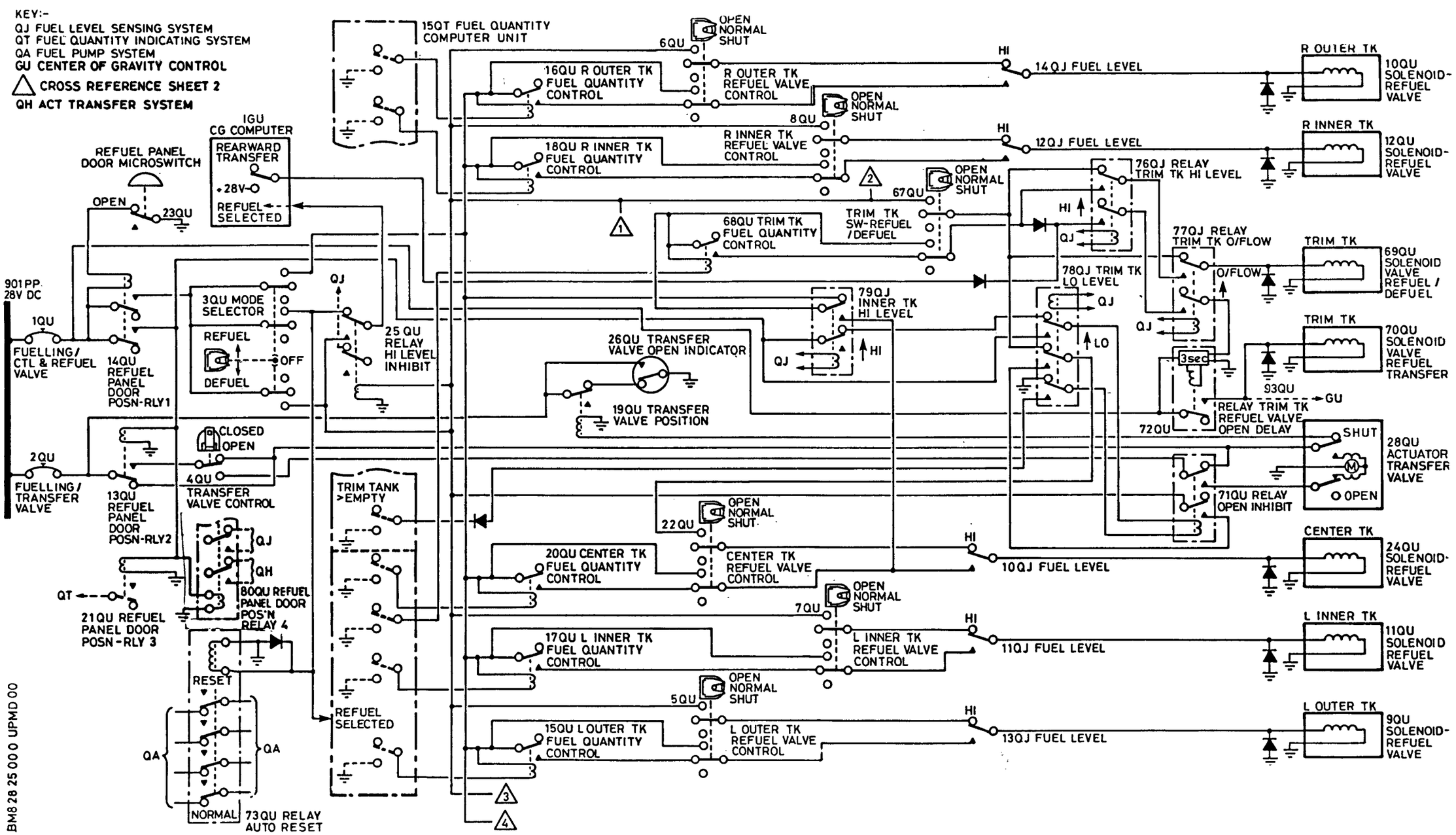
Post SB 28-2105 For A/C 101-200,

Post SB 28-2108 For A/C 101-200,

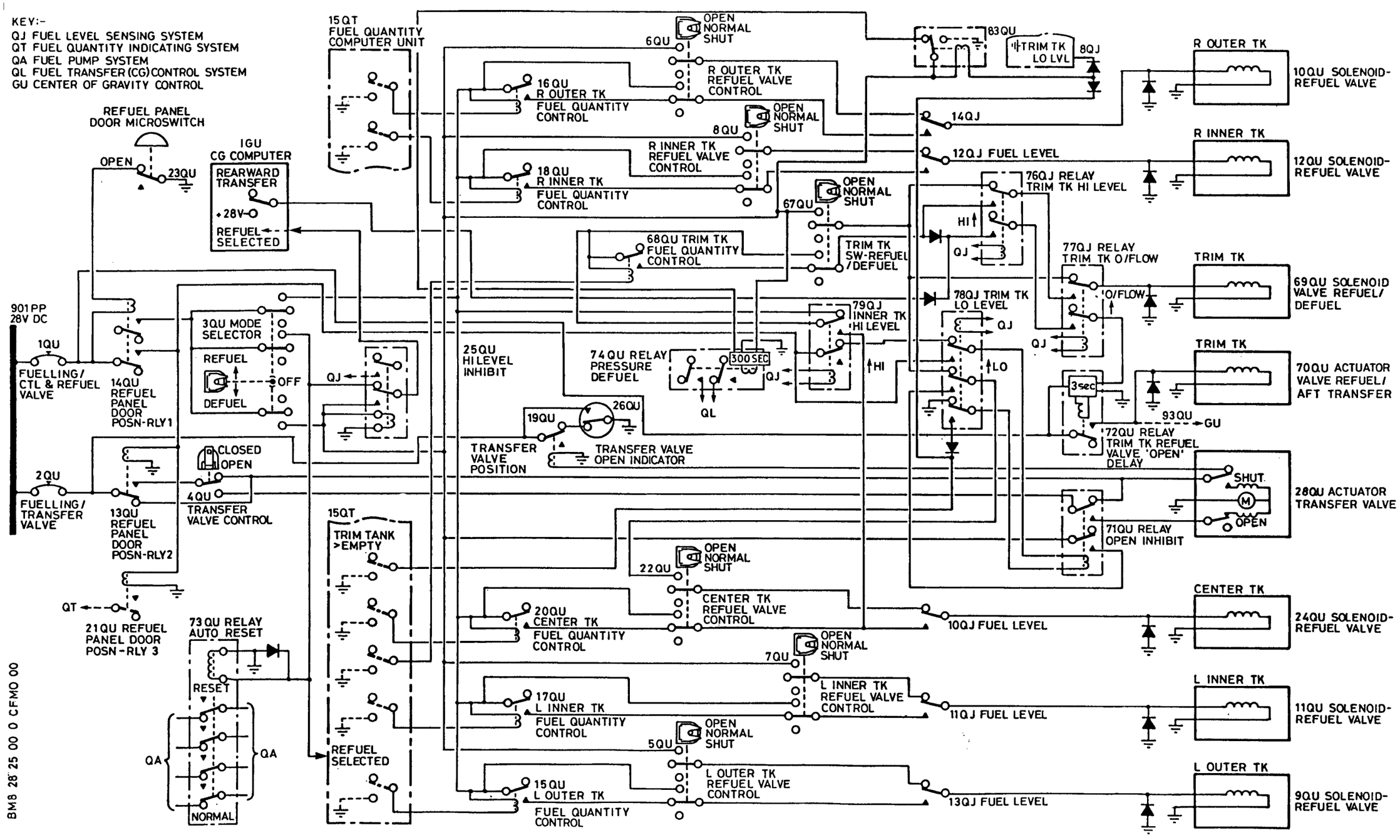
(Ref. Fig. 031) (Sheet 1 and 2)



Refuel/Defuel System - Circuit Diagram
Figure 030

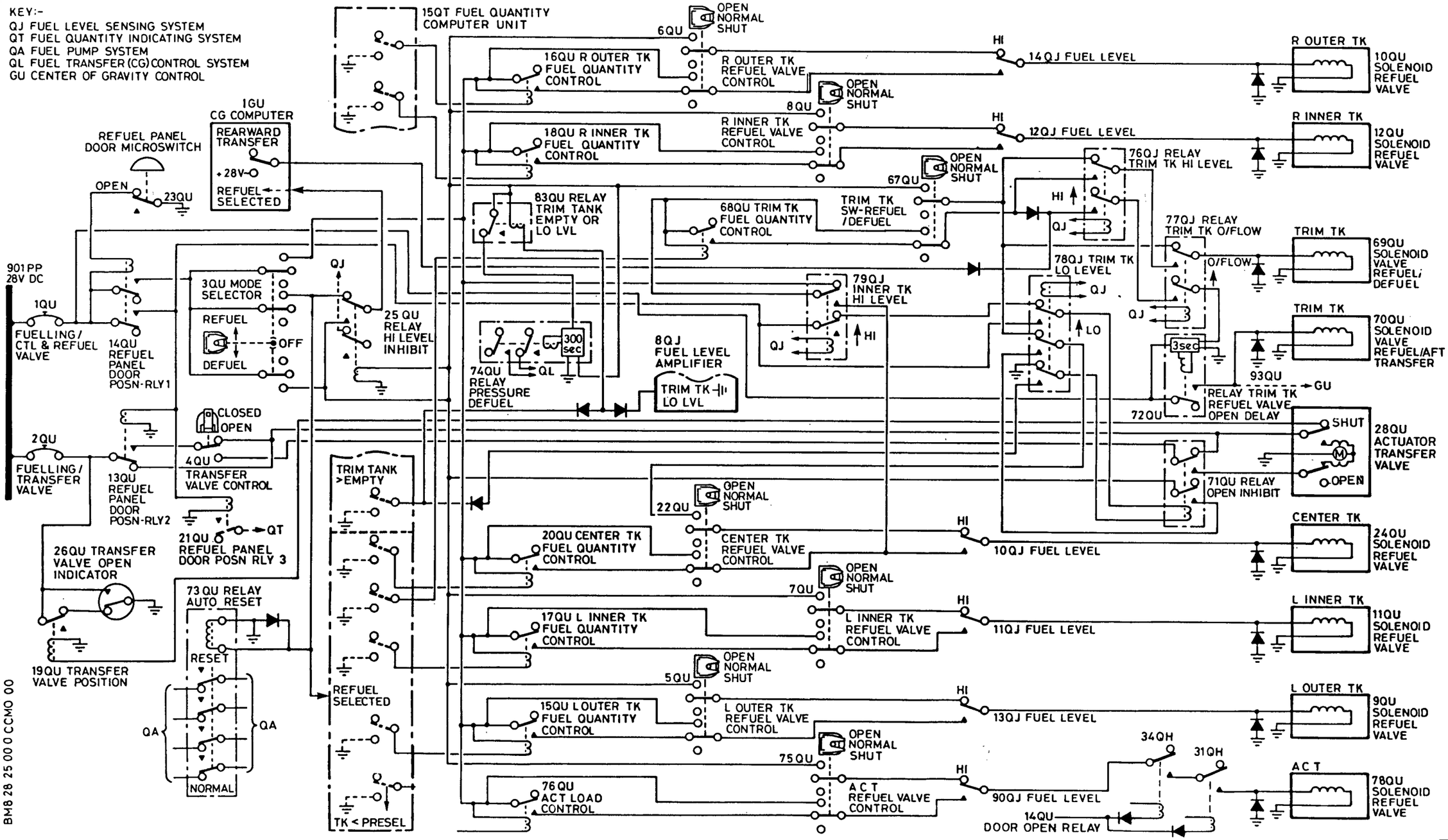


Refuel/Defuel System - Circuit Diagram
(Sheet 1 of 2)
Figure 031



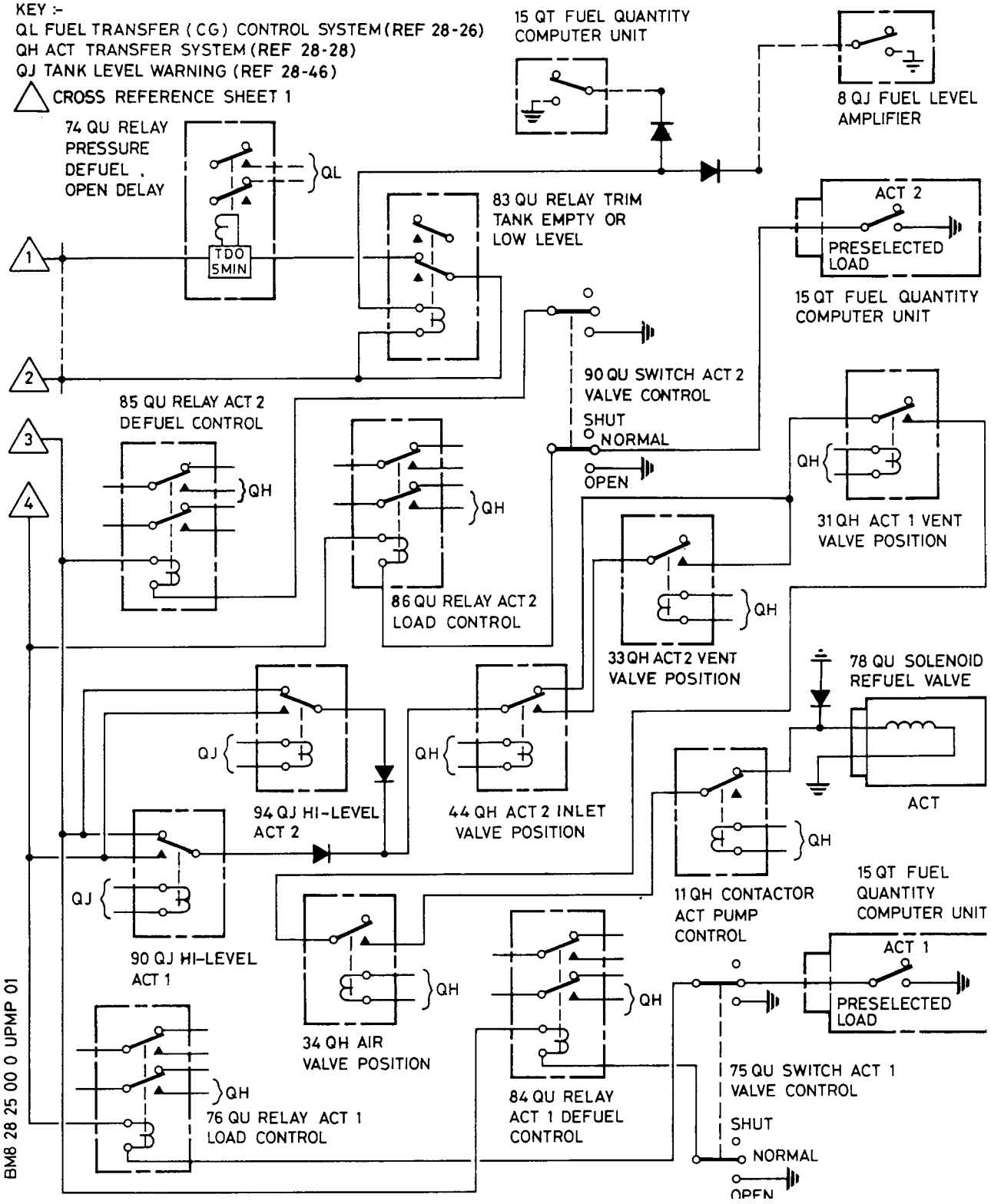
Refuel/Defuel System - Circuit Diagram
Figure 032

KEY:-
QJ FUEL LEVEL SENSING SYSTEM
QT FUEL QUANTITY INDICATING SYSTEM
QA FUEL PUMP SYSTEM
QL FUEL TRANSFER (CG) CONTROL SYSTEM
GU CENTER OF GRAVITY CONTROL



BM8 28 25 00 0 CCMO 00

Refuel/Defuel System - Circuit Diagram
Figure 033


KEY :-
QL FUEL TRANSFER (CG) CONTROL SYSTEM (REF 28-26)
QH ACT TRANSFER SYSTEM (REF 28-28)
QJ TANK LEVEL WARNING (REF 28-46)
CROSS REFERENCE SHEET 1
15 QT FUEL QUANTITY COMPUTER UNIT
8 QJ FUEL LEVEL AMPLIFIER
74 QU RELAY PRESSURE DEFUEL , OPEN DELAY
QL
TDO 5MIN
83 QU RELAY TRIM TANK EMPTY OR LOW LEVEL
ACT 2
PRESELECTED LOAD
15 QT FUEL QUANTITY COMPUTER UNIT
90 QU SWITCH ACT 2 VALVE CONTROL
SHUT
NORMAL
OPEN
85 QU RELAY ACT 2 DEFUEL CONTROL
QH
86 QU RELAY ACT 2 LOAD CONTROL
31 QH ACT 1 VENT VALVE POSITION
33 QH ACT 2 VENT VALVE POSITION
78 QU SOLENOID REFUEL VALVE
ACT
QJ
94 QJ HI-LEVEL ACT 2
44 QH ACT 2 INLET VALVE POSITION
11 QH CONTACTOR ACT PUMP CONTROL
15 QT FUEL QUANTITY COMPUTER UNIT
ACT 1
PRESELECTED LOAD
90 QJ HI-LEVEL ACT 1
34 QH AIR VALVE POSITION
76 QU RELAY ACT 1 LOAD CONTROL
84 QU RELAY ACT 1 DEFUEL CONTROL
75 QU SWITCH ACT 1 VALVE CONTROL
SHUT
NORMAL
OPEN
BM8 28 25 00 0 UPMP 01

Refuel/Defuel System - Circuit Diagram
(Sheet 2 of 2)
Figure 031

**ON A/C 001-100,

Preselector refueling is achieved in two successive computation sequences:
- the initial fuel distribution is computed by considering the greatest volume allowed by the sensors within permissible ground standing attitudes, at a fixed density/specific gravity near the maximum
- the fuel distribution is recomputed taking into account the density/specific gravity of the incoming fuel measured by the cadensicon. Refueling is completed when the full tanks are shut-off by the high level sensors and the partially filled tanks reach the calculated value.

To achieve this, the Fuel Quantity Computer receives two signals. One when both LH and RH outer tank high level sensors are in fuel, the other from both LH and RH inner tank fuel quantity probes. When both signals have been present for 10 seconds, the quantities in the partially filled tanks are calculated, and the tanks are filled so that the total quantity displayed by the gages is exactly the preselected quantity. If the outer and inner tanks are full before the selected quantity is reached, the remaining fuel is admitted to the center tank; if center tank is full before the selected quantity is reached the remaining fuel is admitted to the trim tank.

**ON A/C 101-200,

Preselector refueling is achieved in two successive computation sequences:
- the initial fuel distribution is computed by considering the greatest volume allowed by the sensors within permissible ground standing attitudes, at a fixed density (specific gravity) near the maximum
- the fuel distribution is recomputed taking into account the density (specific gravity) of the incoming fuel measured by the cadensicon. Refueling is completed when the FULL tanks are shut-off by the high level sensors and the partially filled tanks reach the calculated value.

To achieve this, the Fuel Quantity Computer receives two signals. One when both LH and RH outer tank high level sensors are in fuel, the other from both LH and RH inner tank fuel quantity probes. When both signals have been present for 10 seconds, the quantities in the partially filled tanks are calculated, and the tanks are filled so that the total quantity displayed by the gages is exactly the preselected quantity. If the outer and inner tanks are FULL before the selected quantity is reached, the remaining fuel is admitted to the center tank; if center tank is full before the selected quantity is reached the remaining fuel is admitted first to the ACT and then the trim tank.

**ON A/C 101-200,

Preselector refueling is achieved in two successive computation sequences:-
- The initial fuel distribution is computed by considering the greatest volume allowed by the sensors within permissible ground standing attitudes, at a fixed density (specific gravity) near the maximum.
- The fuel distribution is recomputed taking into account the density (specific gravity) of the incoming fuel measured by the cadensicon. Refueling is completed when the FULL tanks are shut-off by the high level sensors and the partially filled tanks reach the calculated value.

To achieve this, the Fuel Quantity Computer receives two signals. One when both LH and RH outer tank high level sensors are in fuel, the other from both LH and RH inner tank fuel quantity probes. When both signals have been present for 10 seconds, the quantities in the partially filled tanks are calculated, and the tanks are filled so that the total quantity displayed by the gages is exactly the preselected quantity. If the outer and inner tanks are FULL before the selected quantity is reached, the remaining fuel is admitted to the center tank; If the center tank is full before the selected quantity is reached the remaining fuel is admitted first to the ACT 1 and then to the ACT 2 and then to the trim tank.

WARNING: BEFORE ALLOWING A FUEL TANKER TO APPROACH WITHIN A RADIUS OF 60 m (200 ft) OF THE AIRCRAFT NOSE, MAKE SURE THAT THE WEATHER RADAR IS OFF.

LANDING GEAR - MAKE SURE THAT THE GROUND SAFETIES AND CHOCKS ARE IN POSITION.

FLIGHT CONTROLS - MAKE SURE THAT THE TRAVEL RANGES OF THE CONTROL SURFACES ARE CLEAR.

OBSERVE SAFETY PRECAUTIONS IN 28-00-00, P. BLOCK 301 AND 12-11-28, P. BLOCK 301.

MAKE SURE THAT THE FIRE FIGHTING EQUIPMENT IS AVAILABLE AND ADEQUATE.

MAKE SURE THAT YOU ISOLATE THE ELECTRICAL CIRCUITS UPON WHICH WORK IS IN PROGRESS.

BEFORE CONNECTING THE TANKER HOSE TO THE AIRCRAFT, MAKE SURE THAT BOTH THE TANKER AND THE AIRCRAFT ARE CORRECTLY CONNECTED TO AN APPROVED GROUND, AND THAT ELECTRICAL BONDING BETWEEN THE AIRCRAFT, THE TANKER AND THE HOSE(S) IS EFFECTED (REF. 24-00-00, P. BLOCK 301).

R BONDING IS MANDATORY, FOR GROUNDING YOU MUST OBEY THE LOCAL AREA
R REGULATIONS.

DO NOT OPERATE THE MICROPHONE BUTTONS ON HF TRANSMISSION DURING REFUELING/DEFUELING OR GROUND MAINTENANCE - FUEL TRANSFER OPERATIONS.

CAUTION: THE AIRCRAFT IS NOT ALLOWED TO TAKE OFF IF THE DIFFERENCE BETWEEN THE FUEL QUANTITIES IN THE INNER TANKS IS MORE THAN 2000 kg (4400 lb).

YOU MUST NOT REFUEL THE AIRCRAFT WHEN THE AIRCRAFT IS ON JACKS (REF. 07-11-00, P. Block 1).

YOU MUST OBEY THE AIRCRAFT STABILITY PRECAUTIONS (REF. 05-57-00 OR 05-57-11, P. BLOCK 1) BEFORE YOU TRANSFER FUEL FROM ONE TANK TO ANOTHER WHEN THE AIRCRAFT IS ON JACKS (REF. 07-11-00,P. BLOCK 1).

1. Reason for the Job

   A. To reduce the level of fuel in the fuel tanks by off-loading into the tanker or transferring from one aircraft tank to another.

2. Not applicable.

3. Suction Defueling with Aircraft Electrical Network Energized

   WARNING: ALWAYS DEFUEL THE TRIM TANK BEFORE THE WING TANKS AND THE CENTER TANK.

NOTE: If external ground power is not available, suction defueling may be performed using the aircraft batteries.

A. Equipment and Materials

ITEM	DESIGNATION
A.	Access Platform 4 m (13 ft)
B.	Defuel Tanker, Capable of 0.76 bar (11 psi) Negative Pressure at Refuel/Defuel Coupling
C.	Warning Notices - NO SMOKING
Referenced Procedures	
- 05-57-00, P. Block 1	Aircraft Stability
- 05-57-11, P. Block 1	Aircraft Stability With Fuel in Trim Tank
- 07-11-00, P. Block 1	Jacking For Aircraft Maintenance
- 12-11-28, P. Block 301	Replenishing of Fuel Tanks
- 12-31-28, P. Block 201	Cold Weather Maintenance
- 24-41-00, P. Block 301	AC External Power Control
- 24-31-00, P. Block 1	Batteries DC Generation
- 27-40-00, P. Block 1	Trimmable Horizontal Stabilizer
- 28-00-00, P. Block 301	Fuel - General
- 28-25-11, P. Block 401	Refuel/Defuel Coupling
- 28-42-38, P. Block 501	Fuel Quantity Computer (15QT)

B. Job Set-Up
(Ref. Fig. 301)
(Ref. Fig. 302)
(Ref. Fig. 303)

**ON A/C 001-100,

(Ref. Fig. 304)

**ON A/C 101-200,

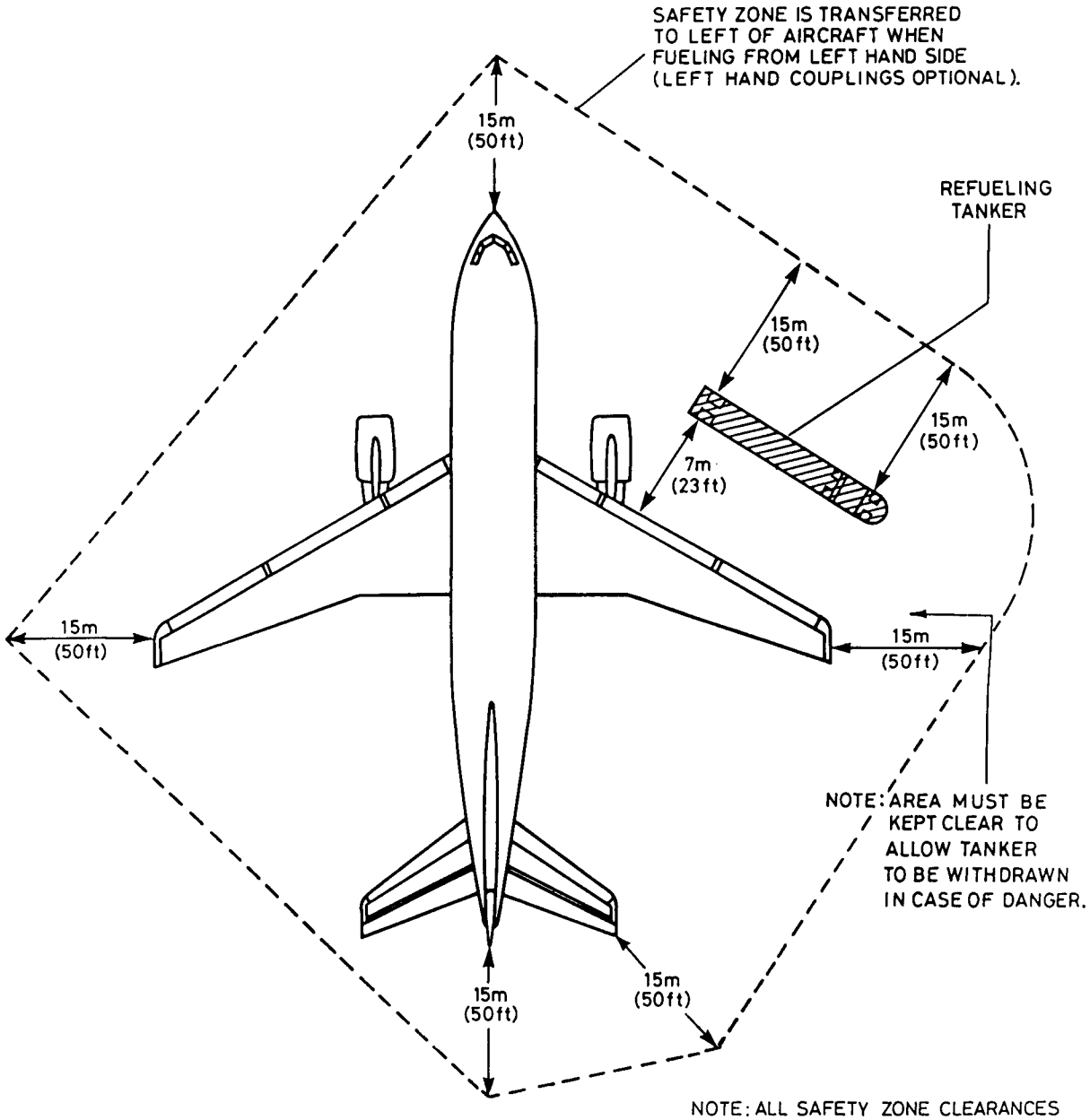
(Ref. Fig. 305)

**ON A/C 101-200,

Post SB 28-2108 For A/C 101-200,

(Ref. Fig. 306)

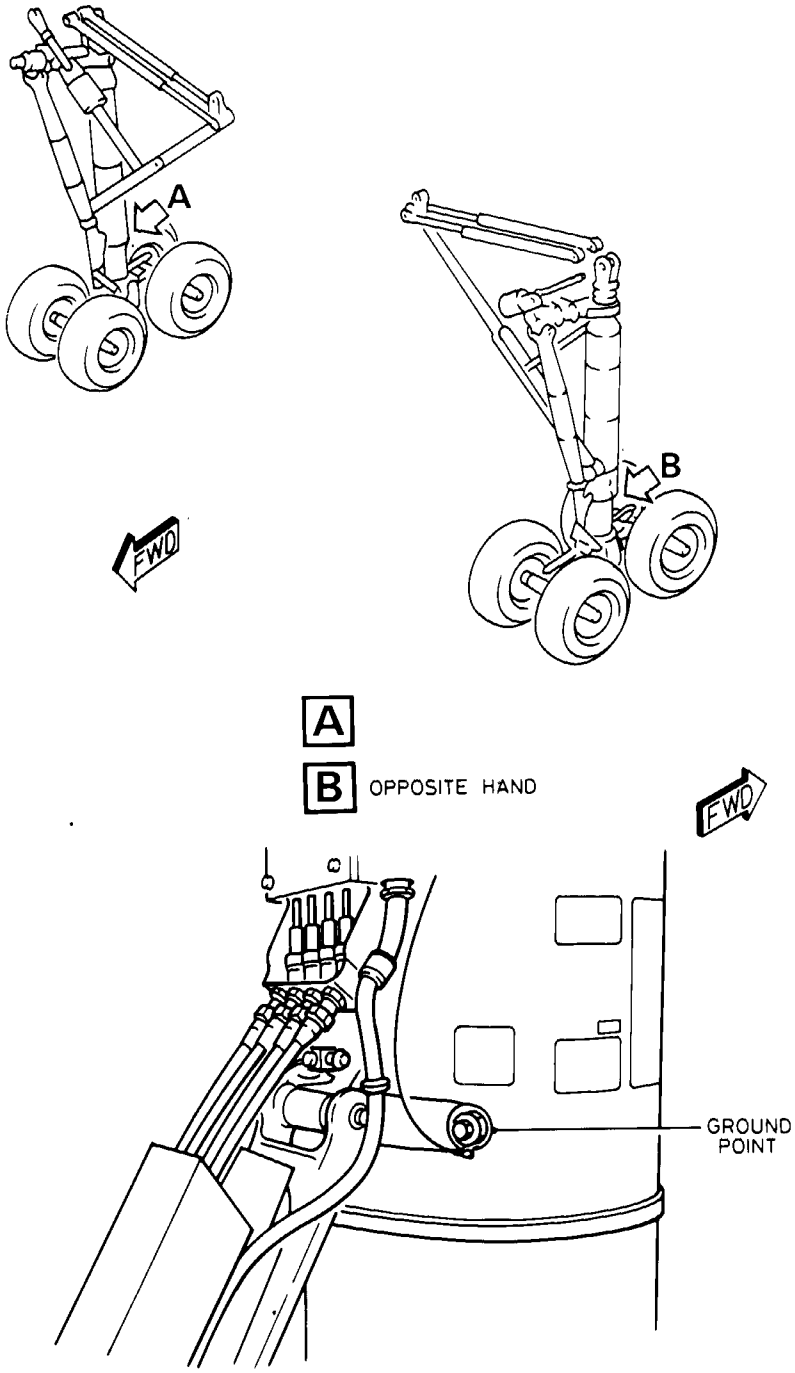
**ON A/C ALL



BM8 28 25 00 3 TAMO 01

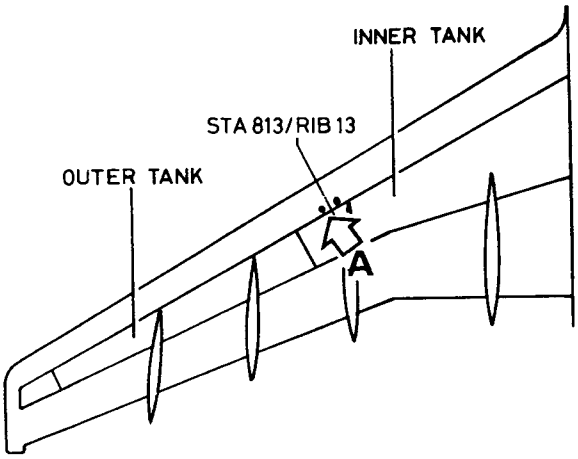
Defueling Safety Area
Figure 301

R



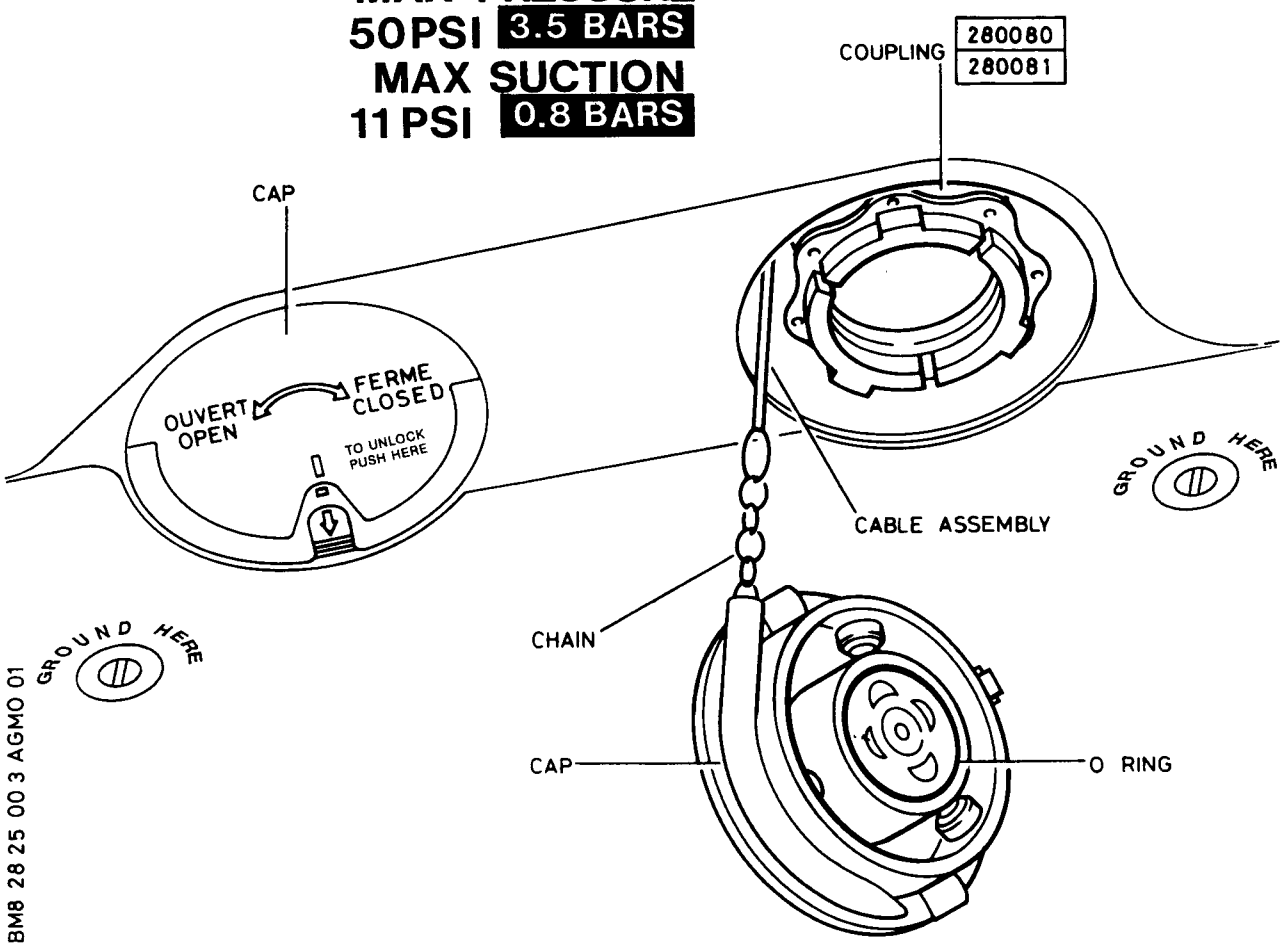
BM7 28 25 00 3 TCMO 25

Grounding Points - Main Landing Gear
Figure 302

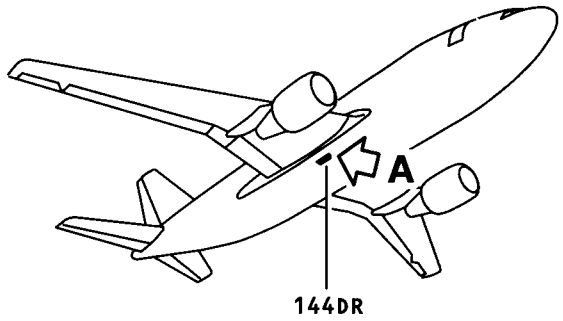


A

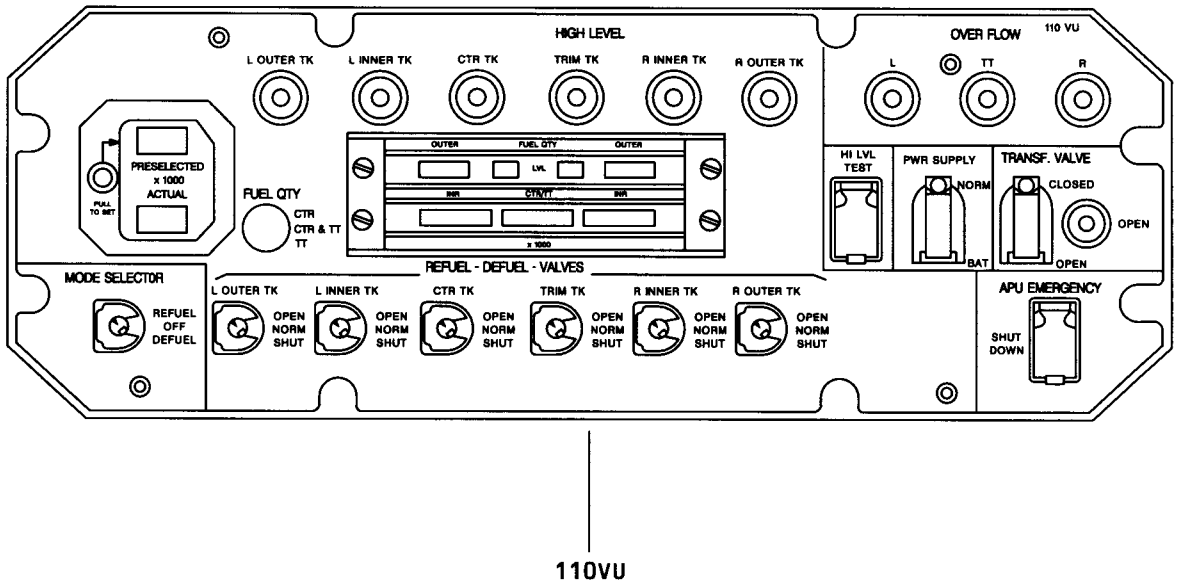
JET FUEL FOR SPECIFICATIONS SEE FLIGHT MANUAL
MAX PRESSURE
50PSI 3.5 BARS
MAX SUCTION
11 PSI 0.8 BARS



R Refuel/Defuel Couplings
Figure 303



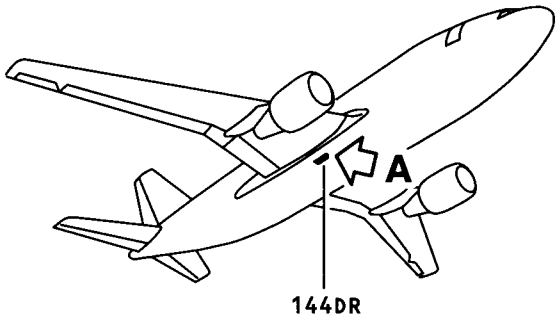
A



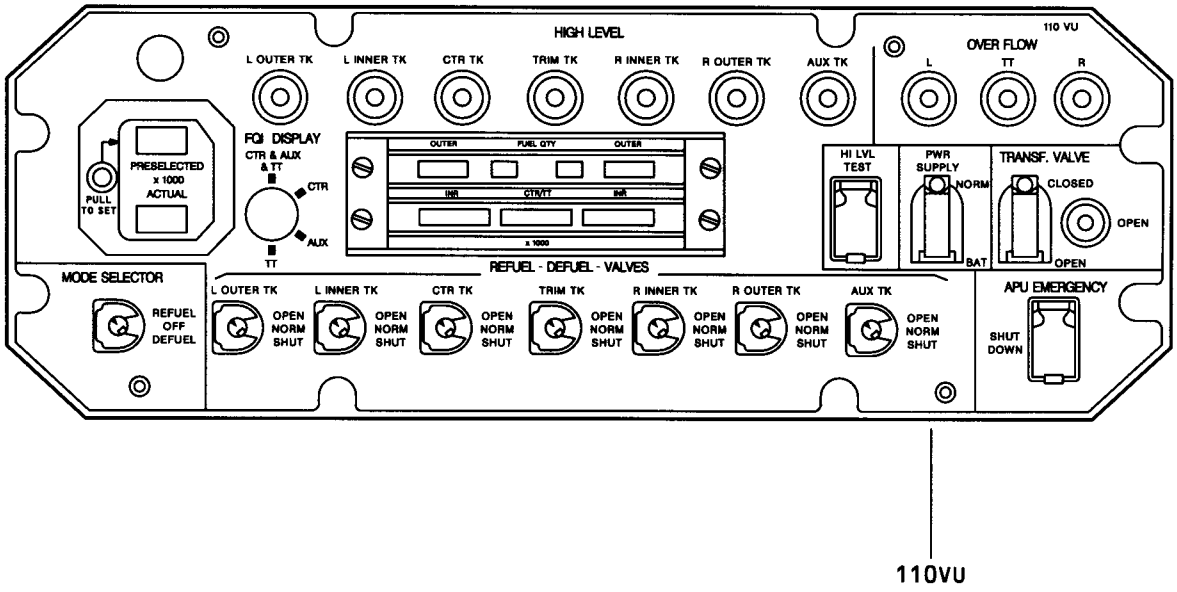
110VU

BM8 28 25 00 3 TFM0 01

Refuel/Defuel Panel
Figure 304



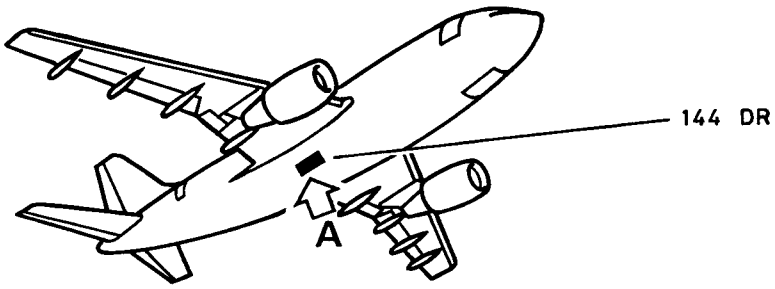
A



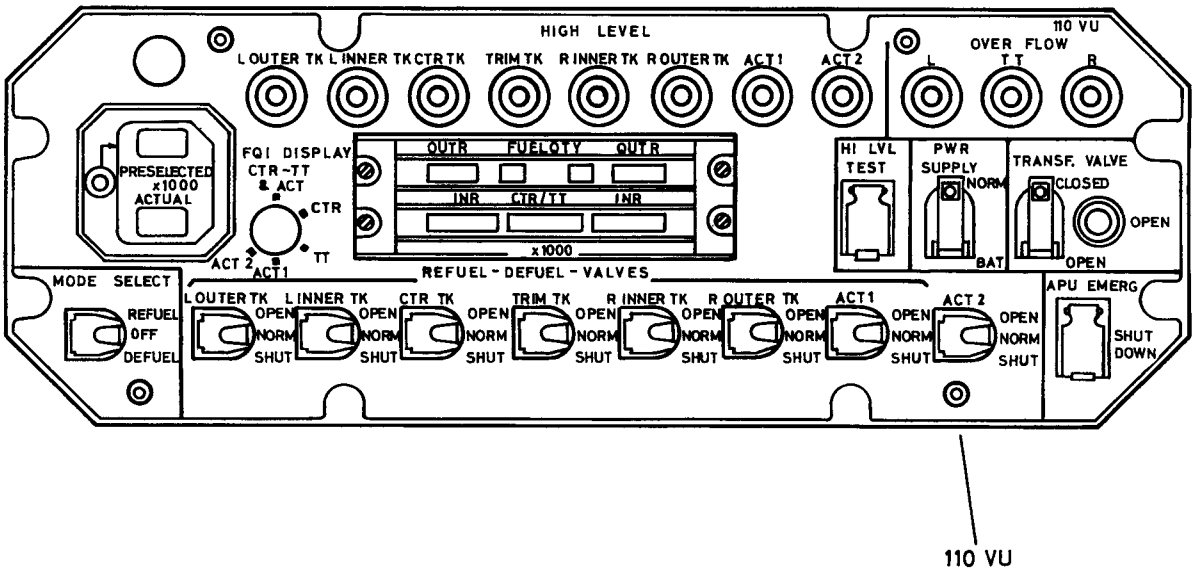
110VU

BM8 28 25 00 3 TGM0 01

R Refuel/Defuel Panel
Figure 305



A



BM8 28 25 00 3 CHPO 00

Refuel/Defuel Panel
Figure 306

CAUTION : WHEN YOU MUST OPERATE THE REFUEL/DEFUEL PANEL 110VU, IN AMBIENT TEMPERATURES BELOW -40 DEG. C. (-40 DEG. F.), REFER TO THE PROCEDURE FOR THE PREPARATION FOR OPERATION OF THE REFUEL/DEFUEL PANEL 110VU, BELOW -40 DEG. C. (-40 DEG. F.), (REF. 12-31-28, P. BLOCK 201).

(1)Not applicable.
(2)Observe the safety precautions as for refueling (Ref. 12-11-28, P. Block 301).
(3)Position the warning notices at the perimeter of the safety area.

CAUTION: THE AREA AROUND THE TANKER MUST BE KEPT CLEAR TO ALLOW THE TANKER TO BE WITHDRAWN IN CASE OF DANGER.

(4)Position the defuel tanker adjacent to the refuel/defuel couplings.

WARNING: TO PREVENT ANY POSSIBILITY OF STATIC ELECTRICITY DISCHARGE WHICH MAY CAUSE FIRE OR EXPLOSION, THE AIRCRAFT AND THE TANKER MUST BE CORRECTLY BONDED.

(5)Observe the relevant safety precautions and make the static and electricity grounding and bonding connections in the following order:

R NOTE: Bonding is mandatory, for grounding you must obey the local area
R regulations.

(a)Make sure that the tanker is connected to an approved ground.
(b)Make sure that the aircraft ground cable is securely connected to one of the grounding points located on the main-landing-gear leg(s) upper torque link attachment point.
(c)Connect the bonding cable from the tanker to the aircraft.

CAUTION: DO NOT POSITION THE ACCESS PLATFORM UNDER THE WING.

(6)Put the access platform in position to get access to the refuel/defuel couplings in zone 623 on the RH wing, STA813 (RIB 13).
(7)Before removing the refuel/defuel coupling caps; insert the hose bonding cable pin(s) into the grounding point near the coupling(s).
(8)Remove the refuel/defuel coupling cap(s).

NOTE: The caps remain suspended on chains.

(9)Connect the tanker hose(s) to the refuel/defuel coupling(s).

CAUTION: DO NOT CLOSE THE ACCESS DOOR 144DR OR OPERATE THE ACCESS DOOR MICROSWITCH UNTIL THE FUEL TRANSFER IS COMPLETE.

(10)Open the access door 144DR to the refuel/defuel panel 110VU.
(11)If external electrical power is to be used:
(a)On panel 110VU, make sure that the PWR SUPPLY switch is in the NORM

position and guarded.
(b)Energize the aircraft electrical network (Ref. 24-41-00, P. Block 301).
(12)If the aircraft batteries are to be used (Ref. 24-31-00, P. Block 1), on panel 110VU, raise the guard and place the PWR SUPPLY switch in the BAT position. On panel 472VU, make sure that the REFUEL ON BAT legend is on.
(13)Make sure that the following circuit breakers are closed:

PANEL	SERVICE	IDENT.	LOCATION
132VU	FUEL/FQI		line 321
132VU	FUEL/FUELLING		line 321

(14)If the trim tank is to be defueled, make sure that the Trimmable Horizontal Stabilizer (THS) is in the 0 deg. position. If necessary, adjust manually on the stand-by control (Ref. 27-40-00, P. Block 1).
(15)Do the functional test of the Fuel Quantity Computer (15QT) (Ref. 28-42-38, P. Block 501).

**ON A/C 001-100,

C. Procedure (Ref. Fig. 304)

**ON A/C 101-200,

C. Procedure (Ref. Fig. 305)

**ON A/C 101-200,

Post SB 28-2108 For A/C 101-200,

C. Procedure (Ref. Fig. 306)

**ON A/C ALL

(1)On panel 110VU:
(a)Make certain that TRANSF. VALVE switch is in CLOSED position and guarded and OPEN indicator light is off.
(b)Raise guards and place all REFUEL-DEFUEL-VALVES switches in SHUT position.
(c)Raise guard and place MODE SELECTOR switch in DEFUEL position.
(d)For tanks to be defueled, place REFUEL-DEFUEL-VALVES switches in OPEN position.

CAUTION: FOR SUCTION DEFUELING, NEGATIVE PRESSURE MUST BE KEPT BETWEEN 0 AND 0.76 bar (0 AND 11 psi) AT THE AIRCRAFT COUPLING.

NOTE: During suction defueling, if trim tank low level sensor is in fuel, it is not possible to defuel the center tank unless TRIM TK REFUEL-DEFUEL-VALVES switch is in OPEN position.

**ON A/C 001-100,

(2)Start defueling.
(3)On panel 110VU, monitor the fuel levels on the FUEL QTY indicator.
  (a)For the center tank and the trim tank hold the FUEL QTY switch in the CTR or the TT position for the individual tank contents.
(4)When the tank contents reach the required level, place the appropriate REFUEL-DEFUEL-VALVES switches in the SHUT position.
(5)Switch off the tanker.
(6)On panel 110VU:
  (a)Place the MODE SELECTOR switch in the OFF position and guarded.
  (b)Place all the REFUEL-DEFUEL-VALVES switches in the NORM position and guarded.
  (c)Release the FUEL QTY switch to the CTR & TT position.
(7)If the tank is to be empty, drain the residual fuel (Ref. Para. 7.).

**ON A/C 101-200,

(2)Start defueling.
(3)On panel 110VU, monitor the fuel levels on the FUEL QTY indicator.
  (a)For the center tank, the ACT (if fitted) and the trim tank place the FQI DISPLAY switch in the CTR, AUX or TT position for individual tank contents.
(4)When the tank contents reach the required level, place the appropriate REFUEL-DEFUEL-VALVES switches in the SHUT position.
(5)Switch off the tanker
(6)On panel 110VU:
  (a)Place the MODE SELECTOR switch in the OFF position and guarded.
  (b)Place all the REFUEL-DEFUEL-VALVES switches in the NORM position and guarded.
  (c)Place the FQI DISPLAY switch in the CTR & AUX & TT position.
(7)If the tank is to be empty, drain the residual fuel (Ref. para. 7).

**ON A/C 101-200,

Post SB 28-2108 For A/C 101-200,

(2)Start defueling.
(3)On panel 110VU, monitor the fuel levels on the FUEL QTY indicator.
  (a)For the center tank, the ACT(s) (if fitted) and the trim tank place

the FQI DISPLAY switch in the CTR, TT, ACT 1 (if fitted) or ACT 2 (if fitted) position for the individual tank contents.

(4)When the tank contents reach the required level, place the appropriate REFUEL-DEFUEL-VALVES switches in the SHUT position.

(5)Switch off the tanker.

(6)On panel 110VU:

(a)Place the MODE SELECT switch in the OFF position and guarded.

(b)Place all the REFUEL-DEFUEL-VALVES switches in the NORM position and guarded.

(c)Place the FQI DISPLAY switch in the CTR-TT & ACT position.

(7)If the tank is to be empty, drain the residual fuel (Ref. para. 7).

**ON A/C ALL

D. Close-Up

(1)De-energize the aircraft electrical network:

(a)If external electrical power used (Ref. 24-41-00, P. Block 301).

(b)If aircraft batteries used (Ref. 24-31-00, P. Block 1).

1 On panel 110VU, place PWR SUPPLY switch in NORM position and guarded.

(2)Close the access door 144DR.

(3)Remove the static electricity grounding and bonding connections in the order that follows:

(a)Disconnect the refueling hose(s) and replace the refuel/defuel coupling cap(s).

NOTE: If the refuel/defuel coupling and/or cap is found to be damaged and the cap cannot be fitted, make sure that:
- no fuel leak has been reported
- only the coupling has been damaged.
If no leak and no further damage has been reported then remove the cap (Ref. 28-25-11, P. Block 401) and allow dispatch of the aircraft in accordance with the CDL (Configuration Deviation List).

(b)Remove the fueling hose(s) and bonding cable pin(s) from the coupling grounding point(s).

(c)Disconnect the tanker bonding cable from the aircraft.

(d)If no longer required disconnect the aircraft and tanker ground cable(s) (if applicable).

(4)Remove the access platform.

(5)Make sure that the work area is clean and clear of tools and miscellaneous items of equipment.

(6)Remove the warning notices.

4. Suction Defueling with Aircraft Electrical Network De-energized

**ON A/C 001-100,

WARNING: DO NOT DEFUEL THE CENTER TANK AND WING TANKS IF THE TRIM TANK CONTAINS FUEL.

**ON A/C 101-200,

WARNING: DO NOT DEFUEL THE CENTER TANK, ACT (IF FITTED) AND WING TANKS IF THE TRIM TANK CONTAINS FUEL.

**ON A/C ALL

NOTE: The trim tank cannot be suction defueled if the aircraft electrical network is de-energized.

**ON A/C 101-200,

NOTE: The ACT(s) cannot be suction defueled if the aircraft electrical network is de-energized.

**ON A/C ALL

A. Equipment and Material

ITEM	DESIGNATION
A.	Access Platform 4 m (13 ft)
B.	Access Platform 2 m (6.5 ft)
C.	Defuel Tanker, Capable of 0.76 bar (11 psi), Negative Pressure at Refuel/Defuel Coupling
D.	Warning Notices - NO SMOKING
Referenced Procedures	
- 05-57-00, P. Block 1	Aircraft Stability
- 05-57-11, P. Block 1	Aircraft Stability With Fuel in Trim Tank
- 07-11-00, P. Block 1	Jacking For Aircraft Maintenance
- 12-11-28, P. Block 301	Replenishing of Fuel Tanks
- 12-31-28, P. Block 201	Cold Weather Maintenance
- 27-40-00, P. Block 1	Trimmable Horizontal Stabilizer
- 28-00-00, P. Block 301	Fuel - General
- 32-12-11, P. Block 301	Main Gear Main Door

B. Job Set-Up (Ref. Fig. 301, 302, 303)

**ON A/C 001-100,

(Ref. Fig. 307)

**ON A/C 101-200,

(Ref. Fig. 308)

**ON A/C ALL

CAUTION : WHEN YOU MUST OPERATE THE REFUEL/DEFUEL PANEL 110VU, IN AMBIENT TEMPERATURES BELOW -40 DEG. C. (-40 DEG. F.), REFER TO THE PROCEDURE FOR THE PREPARATION FOR OPERATION OF THE REFUEL/DEFUEL PANEL 110VU, BELOW -40 DEG. C. (-40 DEG. F.), (REF. 12-31-28, P. BLOCK 201).

(1)Not applicable.
(2)Observe the safety precautions as for refueling (Ref. 12-11-28, P. Block 301).
(3)Position the warning notices at the perimeter of the safety area.

CAUTION: DO NOT POSITION THE ACCESS PLATFORM UNDER THE WING.

(4)For defueling the wing tanks, position the access platform(s) and remove the access door 523(623)EB.

**ON A/C 001-100,

(5)For defueling the center tank, open the LH or RH main-landing-gear bay door (Ref. 32-12-11, P. Block 301), and position the access platform.

**ON A/C 101-200,

(5)For defueling the center tank or ACT (if fitted), open the LH or RH main-landing-gear bay door (Ref. 32-12-11, P. Block 301), and position the access platform.

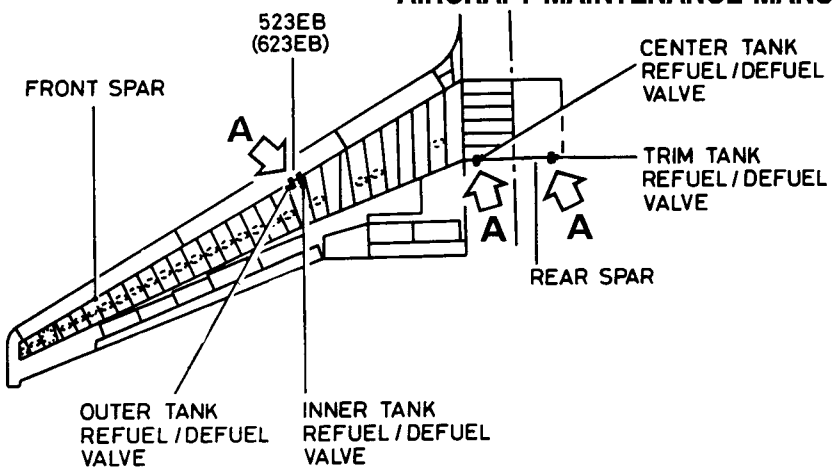
**ON A/C ALL

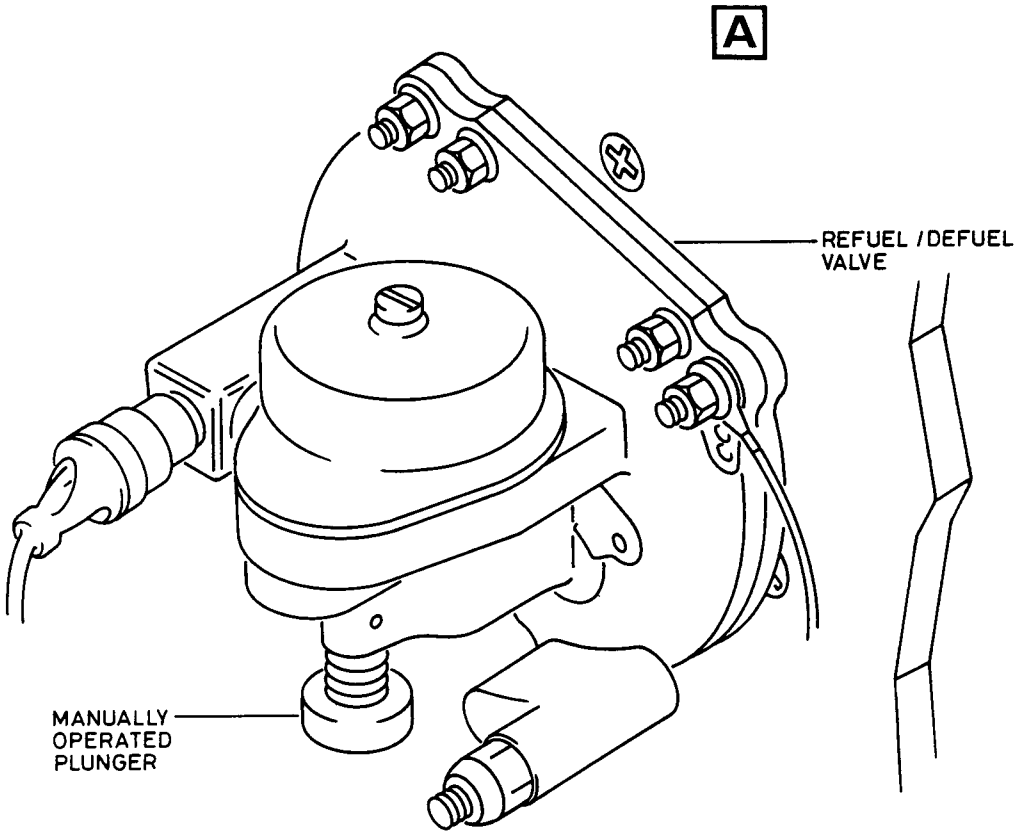
CAUTION: THE AREA AROUND THE TANKER MUST BE KEPT CLEAR TO ALLOW THE TANKER TO BE WITHDRAWN IN CASE OF DANGER.

(6)Position the defuel tanker adjacent to the refuel/defuel coupling(s).

WARNING: TO PREVENT ANY POSSIBILITY OF STATIC ELECTRICITY DISCHARGE WHICH MAY CAUSE FIRE OR EXPLOSION, THE AIRCRAFT AND THE TANKER MUST BE CORRECTLY BONDED.

(7)Observe the relevant safety precautions and make the static electricity grounding and bonding connections in the following order:





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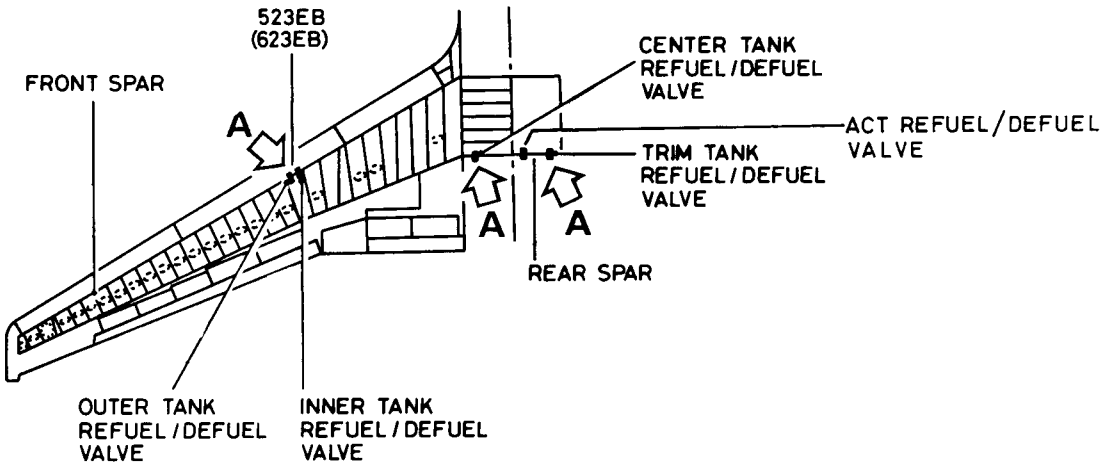
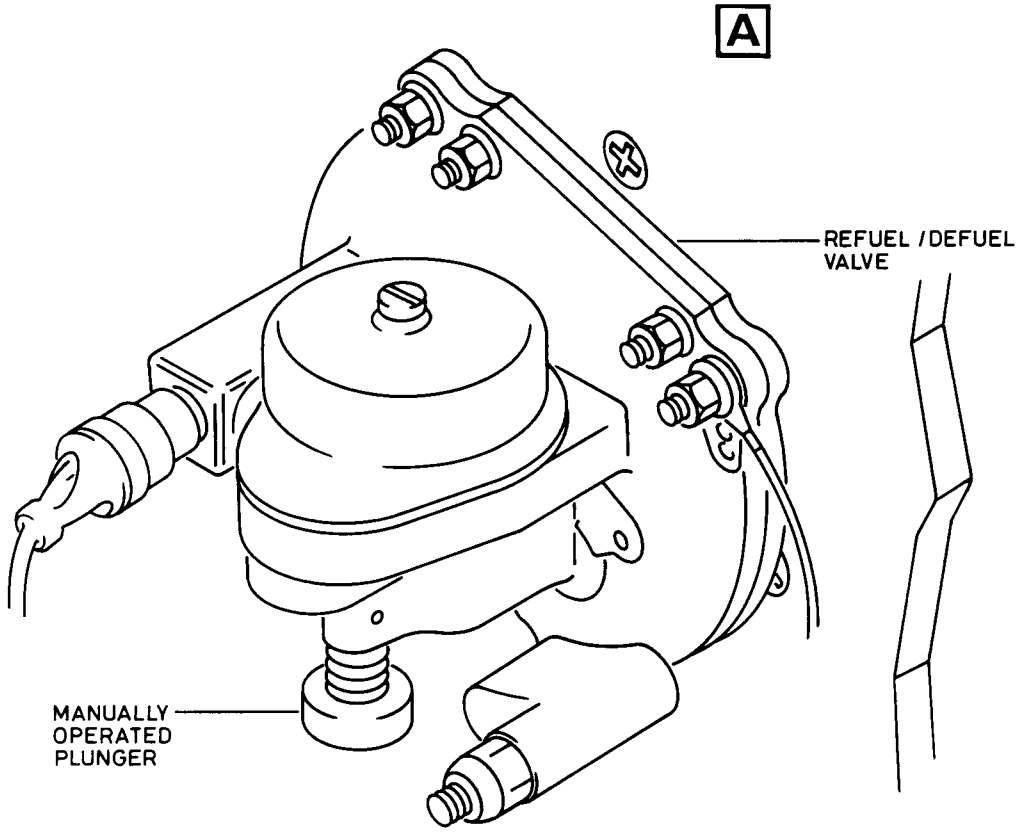
Refuel/Defuel Valves
Figure 307





BM8 28 25 00 3 TJFO 00

Refuel/Defuel Valves
Figure 308

R NOTE: Bonding is mandatory, for grounding you must obey the local area
R regulations.

(a)Make sure that the tanker is connected to an approved ground.
(b)Make sure that the aircraft ground cable is securely connected to one of the grounding points located on the main-landing-gear leg(s) upper torque link attachment point.
(c)Connect the bonding cable from the tanker to the aircraft.

CAUTION: DO NOT POSITION THE ACCESS PLATFORM UNDER THE WING.

**ON A/C 005-005,

(8)Put the access platform in position to get access to the refuel/defuel couplings in zone 623 on the RH wing, STA813 (RIB 13).

**ON A/C ALL

(9)Before removing the refuel/defuel coupling caps; insert the hose bonding cable pin into the grounding point near the couplings.
(10)Remove the refuel/defuel coupling cap(s) and connect the tanker hose(s) to the refuel/defuel coupling(s).
(11)Before commencing the defueling procedure determine the final magnetic level indicator readings required using the Tabular Data (Ref. 12-11-28, P. Block 301).
(12)During the defueling procedures a line of communication must be established between the:
- magnetic level indicator operator.
- refuel/defuel valve operator.
- tanker operator.

**ON A/C 001-100,

C. Procedure (Ref. Fig. 307)

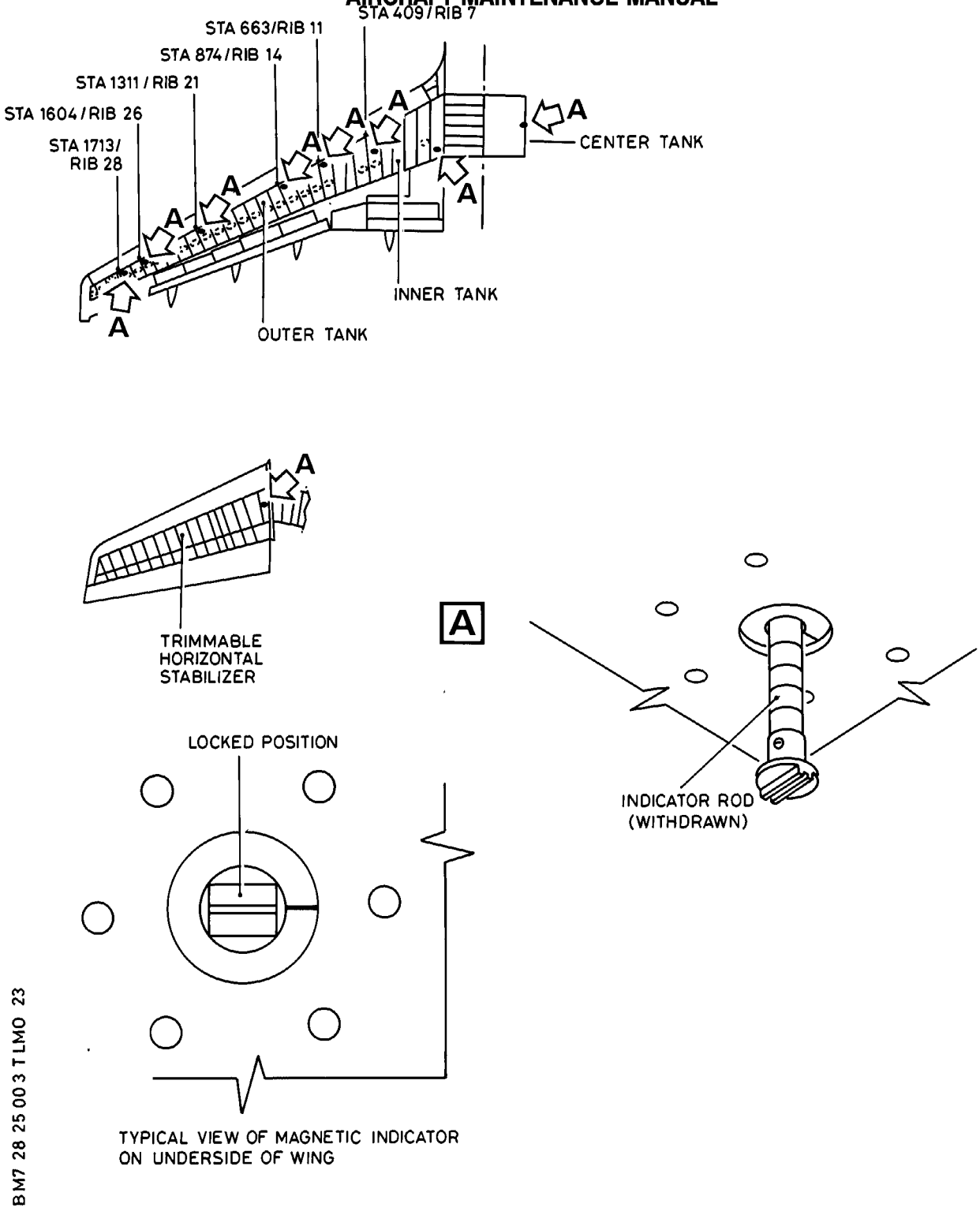
**ON A/C 101-200,

C. Procedure (Ref. Fig. 308)

**ON A/C ALL

(Ref. Fig. 309)
(1)Press manual plunger on refuel/defuel valve for tank(s) to be defueled. Hold plunger in pressed-in position.

CAUTION: FOR SUCTION DEFUELING, NEGATIVE PRESSURE MUST BE KEPT BETWEEN 0 AND 0.76 bar (0 AND 11 psi) AT THE AIRCRAFT COUPLING.



Magnetic Indication
Figure 309

(2)Start defueling..
(3)Monitor level of fuel in tank(s) on magnetic level indicators (Ref. 12-11-28, P. Block 301), and tanker flowmeter.
(4)When required fuel level is reached, release refuel/defuel valve manual plunger.
(5)Switch off tanker.
(6)If the tank is to be empty, drain the residual fuel (Ref. Para. 7.).

D. Close-Up
(1)Remove the static electricity grounding and bonding connections in the following order:
(a)Disconnect the refueling hose(s) and replace the refuel/defuel coupling cap(s).

NOTE: If the refuel/defuel coupling and/or cap is found to be damaged and the cap cannot be fitted, make sure that:
- no fuel leak has been reported
- only the coupling has been damaged.
If no leak and no further damage has been reported then remove the cap (Ref. 28-25-11, P. Block 401) and allow dispatch of the aircraft in accordance with the CDL (Configuration Deviation List).

(b)Remove the fueling hose(s) bonding cable pin(s) from the coupling grounding point(s).
(c)Disconnect the tanker bonding cable from the aircraft.
(d)If no longer required disconnect the aircraft and tanker ground cable(s) (if applicable).
(2)For wing tank defueling, install the access door(s) 523(623)EB and remove the access platform.

**ON A/C 001-100,

(3)For center tank defueling, remove the access platform and close the LH main landing gear bay door.

**ON A/C 101-200,

(3)For center tank or ACT (if fitted) defueling, remove the access platform and close LH or RH main landing gear bay door (Ref. 32-12-11, P. Block 301).

**ON A/C ALL

(4)Make sure that the work area is clean and clear of tools and miscellaneous items of equipment.
(5)Remove the warning notices.

**ON A/C 001-100,

5. Pressure Defueling-Wing and Center Tanks

WARNING: ALWAYS DEFUEL THE TRIM TANK BEFORE THE WING TANKS AND CENTER TANK.

**ON A/C 101-200,

5. Pressure-Defueling Wing and Center Tanks

WARNING: ALWAYS DEFUEL THE TRIM TANK BEFORE THE WING TANKS, CENTER TANK AND ACT(S) (IF FITTED).

**ON A/C ALL

NOTE: It may not be possible to defuel the trim tank directly to the defuel tanker if the initial quantity is less than 200 Kg (440 LB). In this case defuel the trim tank via the center tank using the AUTO MODE pushbutton switch (Ref. Para. 9. A. (3)).

**ON A/C 101-200,

NOTE: It is not possible to Pressure Defuel the ACT(S). The contents of the ACT(S) must first be transferred into the center tank (Ref. Para. 8.).

**ON A/C ALL

A. Equipment and Materials

ITEM	DESIGNATION
A.	Access Platform 4 m (13 ft)
B.	Defuel Tanker
C.	Warning Notices - NO SMOKING
D.	Circuit Breaker Safety Clip and Tag
Referenced Procedures	
- 05-57-00, P. Block 1	Aircraft Stability
- 05-57-11, P. Block 1	Aircraft Stability With Fuel in Trim Tank
- 07-11-00, P. Block 1	Jacking For Aircraft Maintenance
- 12-11-28, P. Block 301	Replenishing of Fuel Tanks
- 12-31-28, P. Block 201	Cold Weather Maintenance
- 24-41-00, P. Block 301	AC External Power Control
- 28-00-00, P. Block 301	Fuel - General
- 28-25-11, P. Block 401	Refuel/Defuel Coupling-Removal/Installation
- 28-42-38, P. Block 501	Fuel Quantity Computer (15QT)

**ON A/C 001-100,

B. Job Set-Up (Ref. Fig. 301, 302, 304)

**ON A/C 101-200,

B. Job Set-Up (Ref. Fig. 301, 302, 305)

**ON A/C 101-200,

Post SB 28-2108 For A/C 101-200,

B. Job Set-Up (Ref. Fig. 301, 302, 306)

**ON A/C ALL

(Ref. Fig. 303)

CAUTION : WHEN YOU MUST OPERATE THE REFUEL/DEFUEL PANEL 110VU, IN AMBIENT TEMPERATURES BELOW -40 DEG. C. (-40 DEG. F.), REFER TO THE PROCEDURE FOR THE PREPARATION FOR OPERATION OF THE REFUEL/DEFUEL PANEL 110VU, BELOW -40 DEG. C. (-40 DEG. F.), (REF. 12-31-28, P. BLOCK 201).

(1)Not applicable.
(2)Observe the safety precautions as for refueling (Ref. 12-11-28, P. Block 301).
(3)Position the warning notices at the perimeter of the safety area.

CAUTION: THE AREA AROUND THE TANKER MUST BE KEPT CLEAR TO ALLOW THE TANKER TO BE WITHDRAWN IN CASE OF DANGER.

(4)Position the defuel tanker adjacent to the refuel/defuel couplings.

WARNING: TO PREVENT ANY POSSIBILITY OF STATIC ELECTRICITY DISCHARGE WHICH MAY CAUSE FIRE OR EXPLOSION, THE AIRCRAFT AND THE TANKER MUST BE CORRECTLY BONDED.

(5)Observe the relevant safety precautions and make the static electricity grounding and bonding connections in the order that follows:

R NOTE: Bonding is mandatory, for grounding you must obey the local area
R regulations.

(a)Make sure that the tanker is connected to an approved ground.
(b)Make sure that the aircraft ground cable is securely connected to one

of the grounding points located on the main landing gear leg(s) upper torque link attachment point.

(c) Connect a bonding cable from the tanker to the aircraft.

(d) During defueling procedures, the refuel panel operator must establish a line of communication with the tanker operator.

CAUTION: DO NOT POSITION THE ACCESS PLATFORM UNDER THE WING.

(6) Put the access platform in position to get access to the refuel/defuel couplings in zone 623 on the RH wing, STA813 (RIB 13).

(7) Before removing the refuel/defuel coupling caps, insert the hose bonding cable pin into the grounding point near the coupling.

(8) Remove the refuel/defuel coupling cap(s) and connect the tanker hose(s) to the refuel/defuel coupling(s). Set the tanker to the defuel configuration.

CAUTION: DO NOT CLOSE THE ACCESS DOOR 144DR OR OPERATE THE ACCESS DOOR MICROSWITCH UNTIL THE FUEL TRANSFER IS COMPLETED.

(9) Open the access door 144DR to the refuel/defuel panel 110VU.

(10) On panel 110VU, make sure that the PWR SUPPLY switch is in the NORM position and guarded.

(11) Energize the aircraft electrical network (Ref. 24-41-00, P. Block 301).

(12) Make sure that the following circuit breakers are closed:

PANEL	SERVICE	IDENT.	LOCATION
133VU	ENGINES/ENG 1/FUEL HP VALVE		Line 333
133VU	ENGINES/ENG 2/FUEL HP VALVE		Line 333
132VU	FUEL/X FEED VALVE		Line 324
132VU	FUEL/FQI		Line 321
132VU	FUEL/FUELLING		Line 321
	- For left outer tank		
22VU	FUEL/OUTR TK PUMP 2/L TK/CTL	61QA	201/J15
22VU	FUEL/OUTR TK PUMP 2/L TK/WARN	13QA	201/J16
132VU	FUEL/L OUTR TK/PUMP 1 CTL	67QA	322/N56
132VU	FUEL/L OUTR TK/PUMP 1 WARN	15QA	323/M56
132VU	FUEL/ISOL VALVES/L OUTR TK/SUPPLY	1QB	324/L53
	- For left inner tank		
132VU	FUEL/L INR TK		Line 322
132VU	FUEL/L INR TK		Line 323
132VU	FUEL/ISOL VALVES/L INR TK/SUPPLY	3QB	324/L55
	- For center tank		
132VU	FUEL/CTR TK		Line 322
132VU	FUEL/CTR TK		Line 323
	- For right inner tank		
132VU	FUEL/R INR TK		Line 322
132VU	FUEL/R INR TK		Line 323

PANEL	SERVICE	IDENT.	LOCATION
132VU	FUEL/ISOL VALVES/R INR TK/SUPPLY	4QB	324/L56
	- For right outer tank		
22VU	FUEL/OUTR TK PUMP 2/R TK/WARN	16QA	201/J17
22VU	FUEL/OUTR TK PUMP 2/R TK/CTL	68QA	201/J18
132VU	FUEL/R OUTR TK/PUMP 1/WARN	14QA	322/N57
132VU	FUEL/R OUTR TK/PUMP 1/CTL	62QA	323/M57
132VU	FUEL/ISOL VALVES/R OUTR TK/SUPPLY	2QB	324/L58

(13)Open, safety and tag the following circuit breaker:

PANEL	SERVICE	IDENT.	LOCATION
132VU	FUEL/AUTO FEED/CTL	65QA	323/M55

NOTE: Circuit breaker 65QA isolates the automatic sequencing of the pumps, enabling all pumps to be run simultaneously.

(14)On panel 9VU, make sure that both engine HP fuel valves are closed.
(15)On panel 43OVU:
(a)Make sure that all the PUMP pushbutton switches are released (out) and the OFF legends are on.
(b)Make sure that all the wing tank ISOL VALVES pushbutton switches are pressed in and the in-line flowbars are on.
(16)Activate right ECAM display unit as follows:
(a)On the flight compartment center pedestal, press (in) the ECAM SGU 1 & 2 pushbutton switches.
(b)Turn the RIGHT DISPLAY rotary switch clockwise to switch on the display and adjust the brightness to the required level.
(c)Press the FUEL pushbutton switch to call up the fuel page.
(17)Do the functional test of the Fuel Quantity Computer (15QT) (Ref. 28-42-38, P. Block 501).

**ON A/C 001-100,

(18)On panel 11OVU:
(a)Hold the FUEL QTY switch in the TT position. If the trim tank contains fuel, perform pressure defueling of the trim tank (Ref. Para. 6).
(b)Release the FUEL QTY switch to the CTR & TT position.
(c)Make sure that the MODE SELECTOR switch is in the OFF position and guarded.
(d)Raise the guard and place the TRANSF. VALVE switch in the OPEN position. Make sure that the OPEN indicator light comes on.

**ON A/C 101-200,

(18)On panel 11OVU:

(a)Make sure that the FQI DISPLAY switch is in the CTR & AUX & TT position.
(b)Place the FQI DISPLAY switch in the TT position. If trim tank contains fuel, perform pressure defueling of the trim tank (Ref. Para. 6).
(c)Place the FQI DISPLAY switch in the CTR & AUX & TT position.
(d)Make sure that the MODE SELECTOR switch is in the OFF position and guarded.
(e)Raise the guard and place the TRANSF. VALVE switch in the OPEN position. Make sure that the OPEN indicator light comes on.

(19)If the ACT is to be emptied transfer the fuel to the center tank (Ref. Para. 8).

**ON A/C 101-200,

Post SB 28-2108 For A/C 101-200,

(18)On panel 110VU:
(a)Check the disposition of the fuel in the center tank, the trim tank, and the ACT(s) (if fitted) by placing the FQI DISPLAY switch on panel 110VU, in the CTR position, then in the TT position, then in the ACT 1 position (if fitted), and then in the ACT 2 position (if fitted).
(b)Place the FQI DISPLAY switch in the TT position. If the trim tank contains fuel, perform pressure defueling of the trim tank (Ref. Para. 6).
(c)Place the FQI DISPLAY switch in the ACT 1 position (if fitted) and then the ACT 2 position (if fitted). If the ACT(s) is (are) to be emptied, transfer the fuel into the center tank (Ref. Para. 8).
(d)Place the FQI DISPLAY switch in the CTR-TT & ACT position.
(e)Make sure that the MODE SELECT switch is in the OFF position and guarded.
(f)Raise the guard and place the TRANSF. VALVE switch in the OPEN position. Make sure that the OPEN indicator light comes on.

**ON A/C 001-100,

C. Procedure (Ref. Fig. 304)

**ON A/C 101-200,

C. Procedure (Ref. Fig. 305)

**ON A/C 101-200,

Post SB 28-2108 For A/C 101-200,

C. Procedure (Ref. Fig. 306)

**ON A/C 001-100,

(Ref. Fig. 310)

**ON A/C 101-200,

(Ref. Fig. 311)

**ON A/C 101-200,

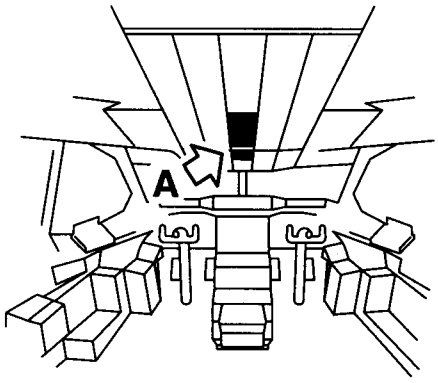
Post SB 28-2108 For A/C 101-200,

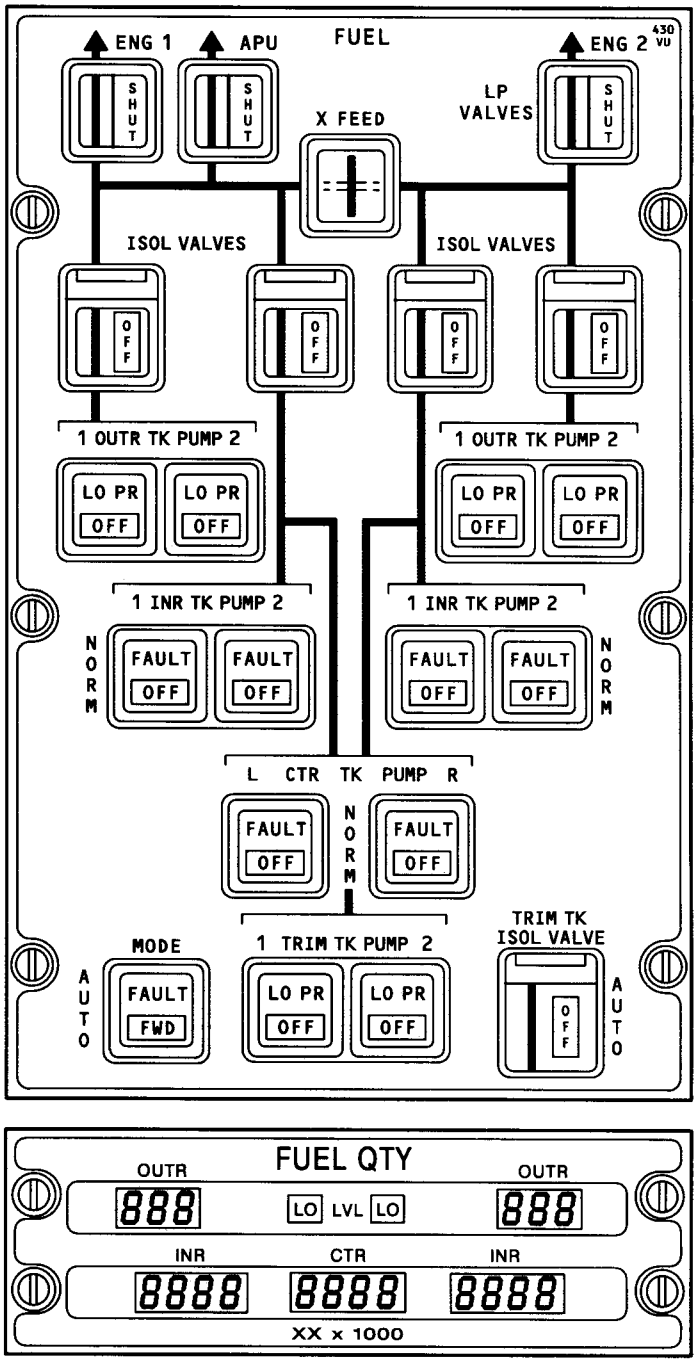
(Ref. Fig. 312)

**ON A/C ALL

(1)On panel 430VU:
(a)For the left tanks and the center tank defuel, press (in) the X FEED pushbutton switch. Make sure that the:
- crossline flowbar goes off.
- in-line flowbar comes on.
(b)Press (in) the following PUMP pushbutton switches for the tanks to be defueled:
1 For the inner left tank, run PUMP 2 only
2 For the inner right tank, run PUMP 1 only
3 For the outer and the center tanks, run both pumps
Make sure that the OFF legends go off and the pumps run.
(2)Monitor the fuel levels on the right ECAM display unit on the main instrument panel.
(3)On panel 430VU:
(a)If the tank is to be empty, continue to run the pump(s) for 5 minutes after the first LO PR or FAULT legend comes on.
(b)When the tank fuel levels reach the required figure, release (out) the appropriate PUMP pushbutton switches.
- the OFF legends come on.
- the pump(s) stop.
(c)If applicable, release (out) the X FEED pushbutton switch. Make sure that the:
- in-line flowbar goes off.
- crossline flowbar comes on.
(d)If the tank is to be empty, drain the residual fuel (Ref. Para. 7.).

D. Close-Up
(1)Remove safety clip and tag, and close circuit breaker 65QA.
(2)On panel 110VU, place TRANSF. VALVE switch in CLOSED position and guarded. Make sure that OPEN indicator light goes off.
(3)Close access door 144DR.
(4)Deactivate the right ECAM display unit as follows:
(a)On the flight compartment center pedestal turn the ECAM RIGHT DISPLAY

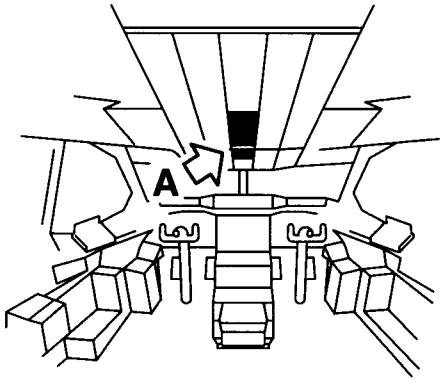


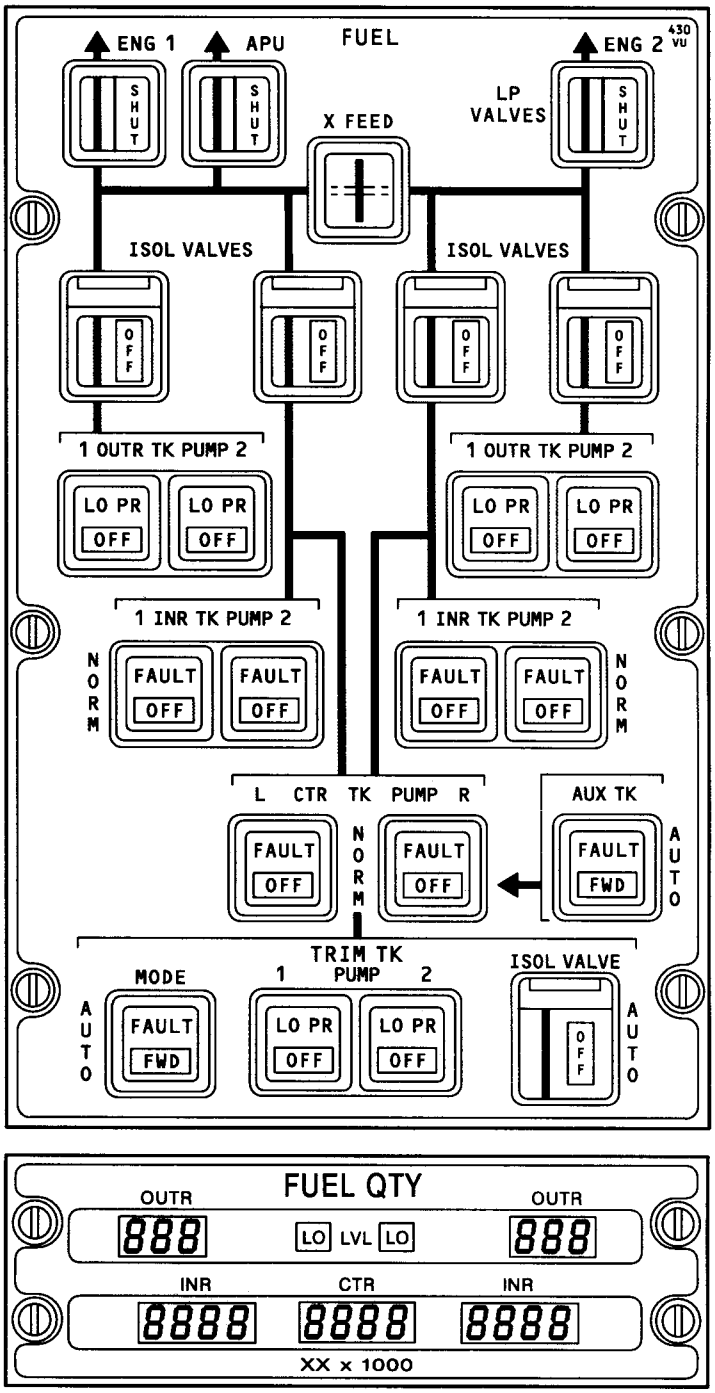


NOTE: XX = UNIT OF WEIGHT

BM8 28 25 00 3 TMMO 01

Flight Deck Fuel Panel
Figure 310

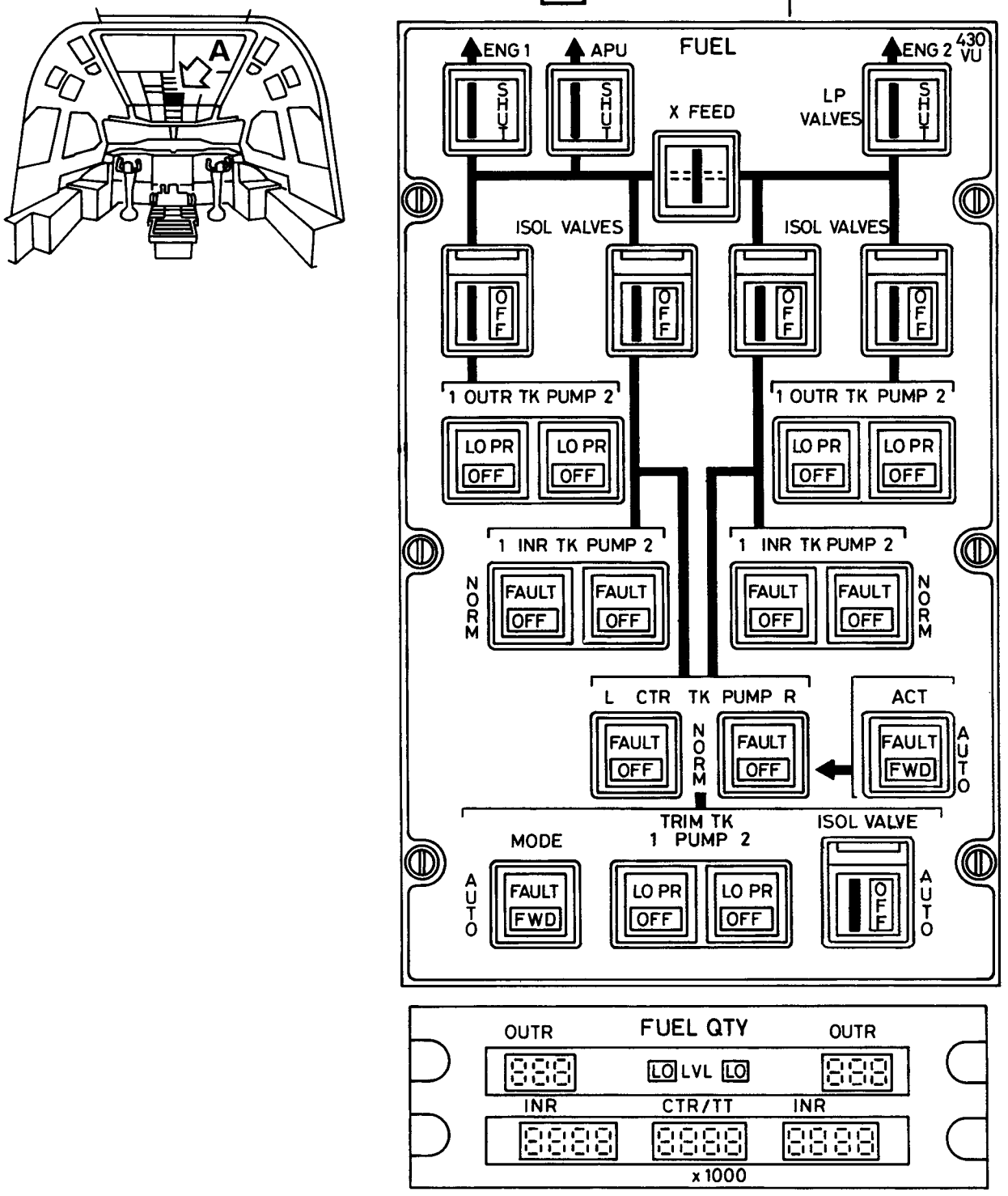




NOTE: XX = UNIT OF WEIGHT

BM8 28 25 00 3 TNSO 01

Flight Deck Fuel Panel
Figure 311



BM8 28 25 003 TXMO 00

Flight Deck Refuel Panel
Figure 312

rotary switch to OFF.
(b)Release (out) the ECAM SGU 1 and 2 pushbutton switches.
(5)De-energize the aircraft electrical network (Ref. 24-41-00, P. Block 301).
(6)Remove the static electricity grounding and bonding connections in the following order:
(a)Disconnect the refueling hose(s) and replace the refuel/defuel coupling cap(s).

NOTE: If the refuel/defuel coupling and/or cap is found to be damaged and the cap cannot be fitted, make sure that:
- no fuel leak has been reported
- only the coupling has been damaged.
If no leak and no further damage has been reported then remove the cap (Ref. 28-25-11, P. Block 401) and allow dispatch of the aircraft in accordance with the CDL (Configuration Deviation List).

(b)Remove the fueling hose(s) bonding cable pin(s) from the coupling grounding point(s).
(c)Disconnect the tanker bonding cable from the aircraft.
(d)If no longer required disconnect the aircraft and the tanker ground cable(s) (If applicable).
(7)Remove the access platform.
(8)Make sure that the work area is clean and clear of tools and miscellaneous items of equipment.
(9)Remove the warning notices.

6. Pressure Defueling - Trim Tank

WARNING: ALWAYS DEFUEL THE TRIM TANK BEFORE THE WING TANKS AND THE CENTER TANK.

NOTE: It may not be possible to defuel the trim tank directly to the defuel tanker if the initial quantity is less than 200 Kg (440 LB). In this case defuel the trim tank via the center tank using the AUTO MODE pushbutton switch (Ref. Para. 9. A. (3)).

A. Equipment and Materials

ITEM	DESIGNATION
A.	Access Platform 4 m (13 ft)
B.	Defuel Tanker
C.	Warning Notices - NO SMOKING
D.	Circuit Breaker Safety Clips and Tags
Referenced Procedures	
- 05-57-00, P. Block 1	Aircraft Stability
- 05-57-11, P. Block 1	Aircraft Stability With Fuel in Trim Tank
- 07-11-00, P. Block 1	Jacking For Aircraft Maintenance
- 12-11-28, P. Block 301	Replenishing of Fuel Tanks

ITEM	DESIGNATION
- 12-31-28, P. Block 201	Cold Weather Maintenance
- 24-41-00, P. Block 301	AC External Power Control
- 27-40-00, P. Block 1	Trimmable Horizontal Stabilizer
- 28-00-00, P. Block 301	Fuel - General
- 28-25-11, P. Block 401	Refuel/Defuel Coupling
- 28-42-38, P. Block 501	Fuel Quantity Computer (15QT)

B. Job Set-Up (Ref. Fig. 301, 302, 303)

CAUTION : WHEN YOU MUST OPERATE THE REFUEL/DEFUEL PANEL 110VU, IN AMBIENT TEMPERATURES BELOW -40 DEG. C. (-40 DEG. F.), REFER TO THE PROCEDURE FOR THE PREPARATION FOR OPERATION OF THE REFUEL/DEFUEL PANEL 110VU, BELOW -40 DEG. C. (-40 DEG. F.), (REF. 12-31-28, P. BLOCK 201).

(1)Not applicable.

(2)Make sure that the Trimmable Horizontal Stabilizer (THS) is in the 0 deg. position. If necessary, adjust manually on the pitch-trim control wheel (Ref. 27-40-00, P. Block 1).
(3)Observe the safety precautions as for refueling (Ref. 12-11-28, P. Block 301).
(4)Position the NO SMOKING notices at the perimeter of the safety area.

CAUTION: THE AREA AROUND THE TANKER MUST BE KEPT CLEAR TO ALLOW THE TANKER TO BE WITHDRAWN IN CASE OF DANGER.

(5)Position the defuel tanker next to the refuel/defuel couplings.

WARNING: TO PREVENT ANY POSSIBILITY OF STATIC ELECTRICITY DISCHARGE WHICH MAY CAUSE FIRE OR EXPLOSION, THE AIRCRAFT AND THE TANKER MUST BE CORRECTLY BONDED.

(6)Observe the relevant safety precautions and make the static electrical grounding and bonding connections in the order that follows:

R NOTE: Bonding is mandatory, for grounding you must obey the local area
R regulations.

(a)Make sure that the tanker is connected to an approved ground.
(b)Make sure that the aircraft ground cable is securely connected to one of the grounding points located on the main-landing-gear leg(s) upper torque link attachment point(s).
(c)Connect the bonding cable from the tanker to the aircraft.

CAUTION: DO NOT POSITION THE ACCESS PLATFORM UNDER THE WING

(7)Put the access platform in position to get access to the refuel/defuel

couplings in zone 623 on the RH wing, STA813 (RIB 13).

(8) Before you remove the refuel/defuel coupling cap(s), insert the hose bonding-cable pin into the grounding point near the coupling.

(9) Remove the refuel/defuel coupling cap(s) and connect the tanker hose(s) to the refuel/defuel couplings.

(10) Set the tanker to the defuel configuration.

(11) During defueling procedures, the refuel panel operator must make sure thera is a line of communication with the tanker operator.

(12) Energize the aircraft electrical network (Ref. 24-41-00, P. Block 301).

(13) On panel 430VU:

1 Make sure that the **TRIM TK AUTO MODE P/BSW** is released (out) and the **FWD** legend is off.

2 Make sure that all the pump **P/BSW**'s are released (out) and the **OFF** legends are on.

(14) Make sure that the circuit breakers that follow are closed:

PANEL	SERVICE	IDENT.	LOCATION
22VU	FUEL/TRIM TANK FWD XFR/PUMP 1/CTL	3QN	201/J22
22VU	FUEL/TRIM/TANK FWR XFR/PUMP 1/WARN	5QN	201/J23
132VU	FUEL/FUELLING/XFR VALVE	2QU	321/P55
132VU	FUEL/FUELLING/CTL & REFUEL VALVE	1QU	321/P56
132VU	FUEL/FUELLING/HI LVL	6QJ	321/P57
132VU	FUEL/FUELLING/OVERFLOW	5QJ	321/P58
132VU	FUEL/FQI/SUPPLY & IND	1QT	321/P59
132VU	FUEL/FQI/CHAN SUPPLY 1	3QT	321/P60
132VU	FUEL/FQI/CHAN SUPPLY 2	4QT	321/P61
132VU	FUEL/TRIM TANK/XFR PUMP 2/WARN	6QN	325/K54
132VU	FUEL/TRIM TANK/XFR PUMP 2/CTL	4QN	325/K55

(15) Open, safety and tag the circuit breakers that follow:

PANEL	SERVICE	IDENT.	LOCATION
22VU	FUEL/TRIM TANK/FWD XFR/AUX VALVE	2QL	201/J21
132VU	FUEL/TRIM TANK/FWD XFR MAIN VALVE	1QL	325/K53

(16) Do the functional test of the Fuel Quantity Computer (15QT) (Ref. 28-42-38, P. Block 501).

C. Procedure

**ON A/C 001-100,

(Ref. Fig. 304)

**ON A/C 101-200,

(Ref. Fig. 305)

**ON A/C 101-200,

Post SB 28-2108 For A/C 101-200,

(Ref. Fig. 306)

**ON A/C 001-100,

(Ref. Fig. 310)

**ON A/C 101-200,

(Ref. Fig. 311)

**ON A/C 101-200,

Post SB 28-2108 For A/C 101-200,

(Ref. Fig. 312)

**ON A/C ALL

CAUTION: DO NOT CLOSE THE ACCESS DOOR 144DR OR OPERATE THE ACCESS DOOR MICROSWITCH UNTIL THE DEFUELING IS COMPLETED.

(1)Open the access door 144DR to the refuel/defuel panel 110VU.

**ON A/C 001-100,

(2)On panel 110VU:
(a)Make certain POWER SUPPLY switch is in NORM position and guarded.
(b)Hold FUEL QTY switch in TT position. Record trim tank contents.
(c)Release FUEL QTY switch to CTR & TT position.
(d)Raise guard and place MODE SELECTOR switch in DEFUEL position.
(e)Raise guard and place TRIM TK REFUEL-DEFUEL-VALVES switch in OPEN position. Raise guards and place all other REFUEL-DEFUEL-VALVES switches in SHUT position.

**ON A/C 101-200,

(2)On panel 110VU:
(a)Make certain POWER SUPPLY switch is in NORM position and guarded.
(b)Place FQI DISPLAY switch in TT position. Record trim tank contents.

(c)Place FQI DISPLAY switch in CTR & AUX & TT position.
(d)Raise guard and place MODE SELECTOR switch in DEFUEL position.
(e)Raise guard and place TRIM TK REFUEL-DEFUEL-VALVES switch in OPEN position. Raise guards and place all other REFUEL-DEFUEL-VALVES switches in SHUT position.

**ON A/C 101-200,

Post SB 28-2108 For A/C 101-200,

(2)On panel 110VU:
(a)Make certain POWER SUPPLY switch is in NORM position and guarded.
(b)Place FQI DISPLAY switch in TT position. Record trim tank contents.
(c)Place FQI DISPLAY switch in CTR-TT & ACT position.
(d)Raise guard and place MODE SELECT switch in DEFUEL position.
(e)Raise guard and place TRIM TK REFUEL-DEFUEL-VALVES switch in OPEN position. Raise guards and place all other REFUEL-DEFUEL-VALVES switches in SHUT position.

**ON A/C ALL

(3)Start the right ECAM display unit (DU) as follows:
(a)On the flight compartment center-pedestal, push (in) the ECAM SGU 1 & 2 P/BSW's.
(b)Turn the RIGHT DISPLAY rotary switch clockwise to switch on the display and adjust the brightness to the required level.
(c)Push (in) the FUEL P/BSW to call up the fuel page.
(4)On panel 430VU:
(a)Push (in) the TRIM TK PUMP 1 and 2 P/BSW's:
- the OFF legends go off
- the pumps run.
(5)Monitor the fuel levels on the right ECAM DU on the main instrument panel.
(6)On panel 430VU:
(a)If the tank is to be empty, continue to run the two pumps for 5 minutes after the first LO PR legend comes on.
(b)When the trim tank contents reach the required figure release (out) the TRIM TK PUMP 1 and 2 P/BSW's:
- the LO PR legends go off
- the OFF legends come on
- the pumps stop.
(7)If the trim tank is to be empty, drain the residual fuel (Ref. Para. 7.).
(8)On panel 110VU:
(a)Put all the REFUEL-DEFUEL-VALVES switches in the NORM and guarded position.
(b)Put the MODE SELECTOR/SELECT switch in the OFF and guarded position.

D. Close-Up
(1)On panels 22VU and 132VU, remove the safety clips and tags and close the circuit breakers 2QL and 1QL.

(2)If applicable, manually adjust the pitch-trim control wheel to return the trimmable horizontal stabilizer to the 0 deg. position (Ref. 27-40-00, P. Block 1).
(3)Close access door 144DR.
(4)De-activate the right ECAM display unit:
(a)On the flight compartment center pedestal turn the ECAM RIGHT DISPLAY rotary switch to OFF.
(b)Release (out) the ECAM SGU 1 and 2 pushbutton switches.
(5)De-energize the aircraft electrical network (Ref. 24-41-00, P. Block 301).
(6)Remove the static electricity grounding and bonding connections in the following order:
(a)Disconnect the refueling hose(s) and replace the refuel/defuel coupling cap(s).

NOTE: If the refuel/defuel coupling and/or cap is found to be damaged and the cap cannot be fitted, make sure that:
- no fuel leak has been reported
- only the coupling has been damaged.
If no leak and no further damage has been reported then remove the cap (Ref. 28-25-11, P. Block 401) and allow dispatch of the aircraft in accordance with the CDL (Configuration Deviation List).

(b)Remove the fueling hose(s) bonding cable pin(s) from the coupling grounding point(s).
(c)Disconnect the tanker bonding cable from the aircraft.
(d)If no longer required disconnect the aircraft and the tanker ground cable(s) (If applicable).
(7)Remove the access platform.
(8)Make sure that the work area is clean and clear of tools and miscellaneous items of equipment.
(9)Remove the warning notices.

7. Drainage of Residual Fuel

**ON A/C 001-100,

(Ref. Fig. 313)

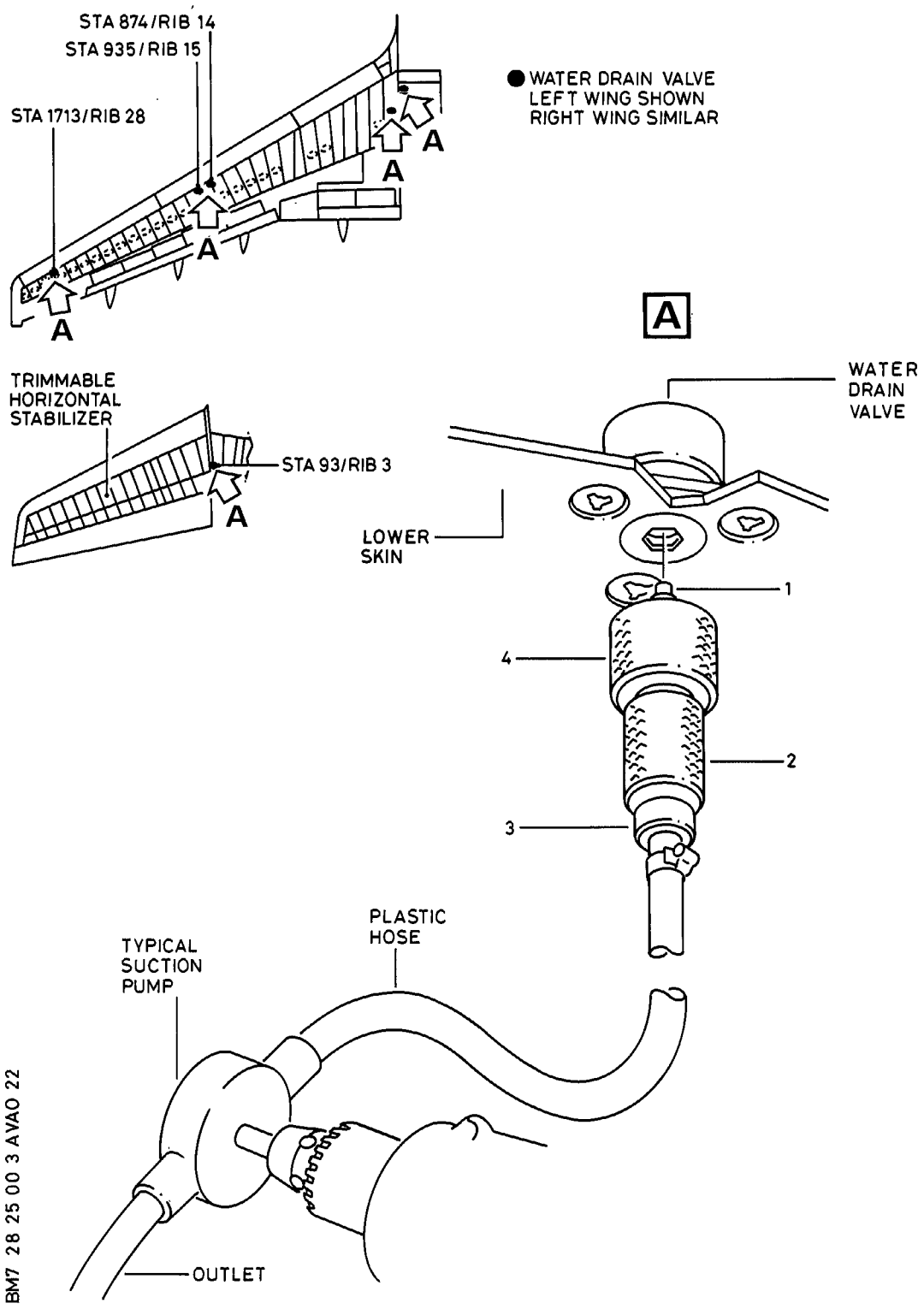
**ON A/C 101-200,

(Ref. Fig. 314)

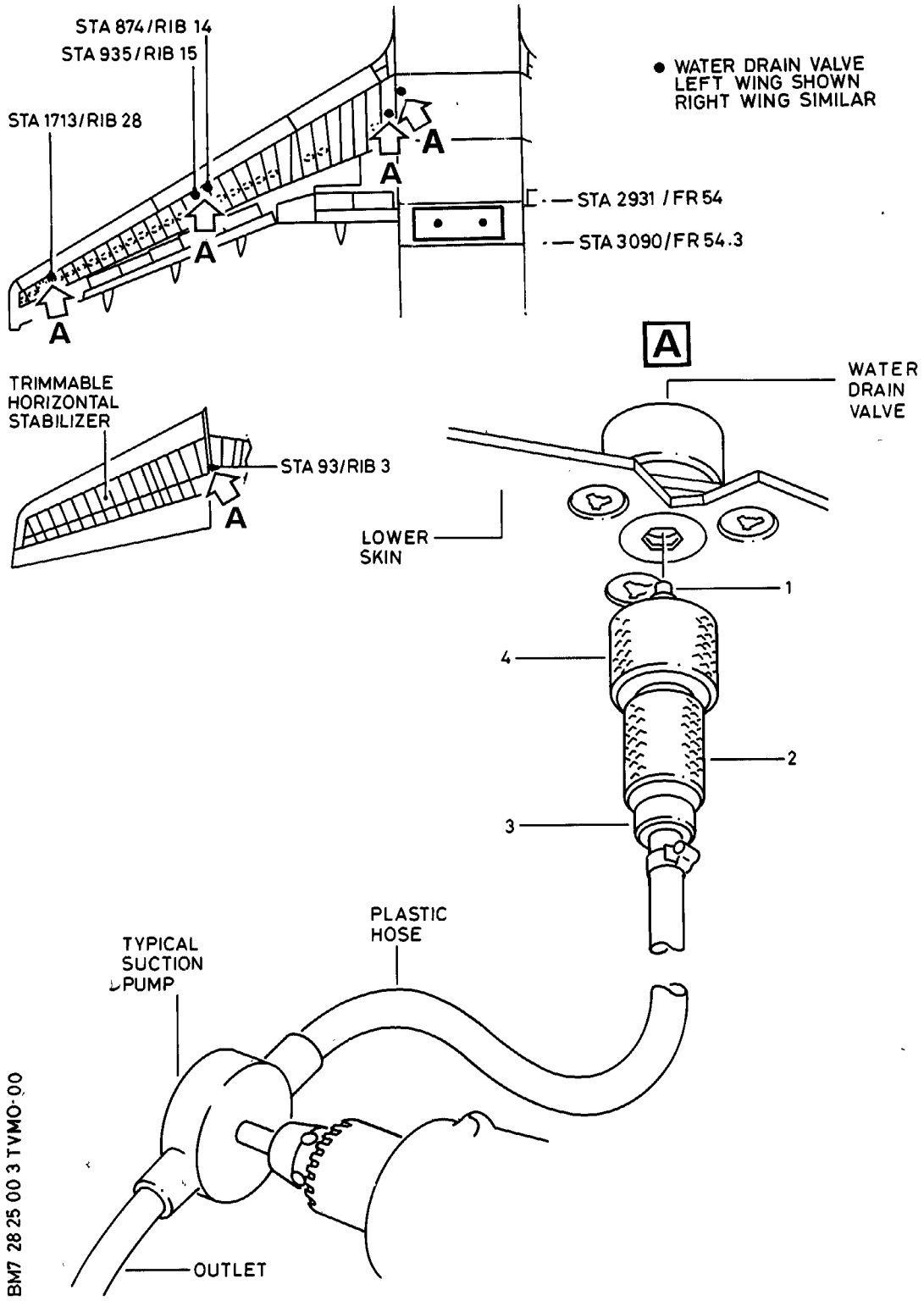
R **ON A/C 101-103, 105-200,

R Post SB 28-2105 For A/C 101-103,105-200,

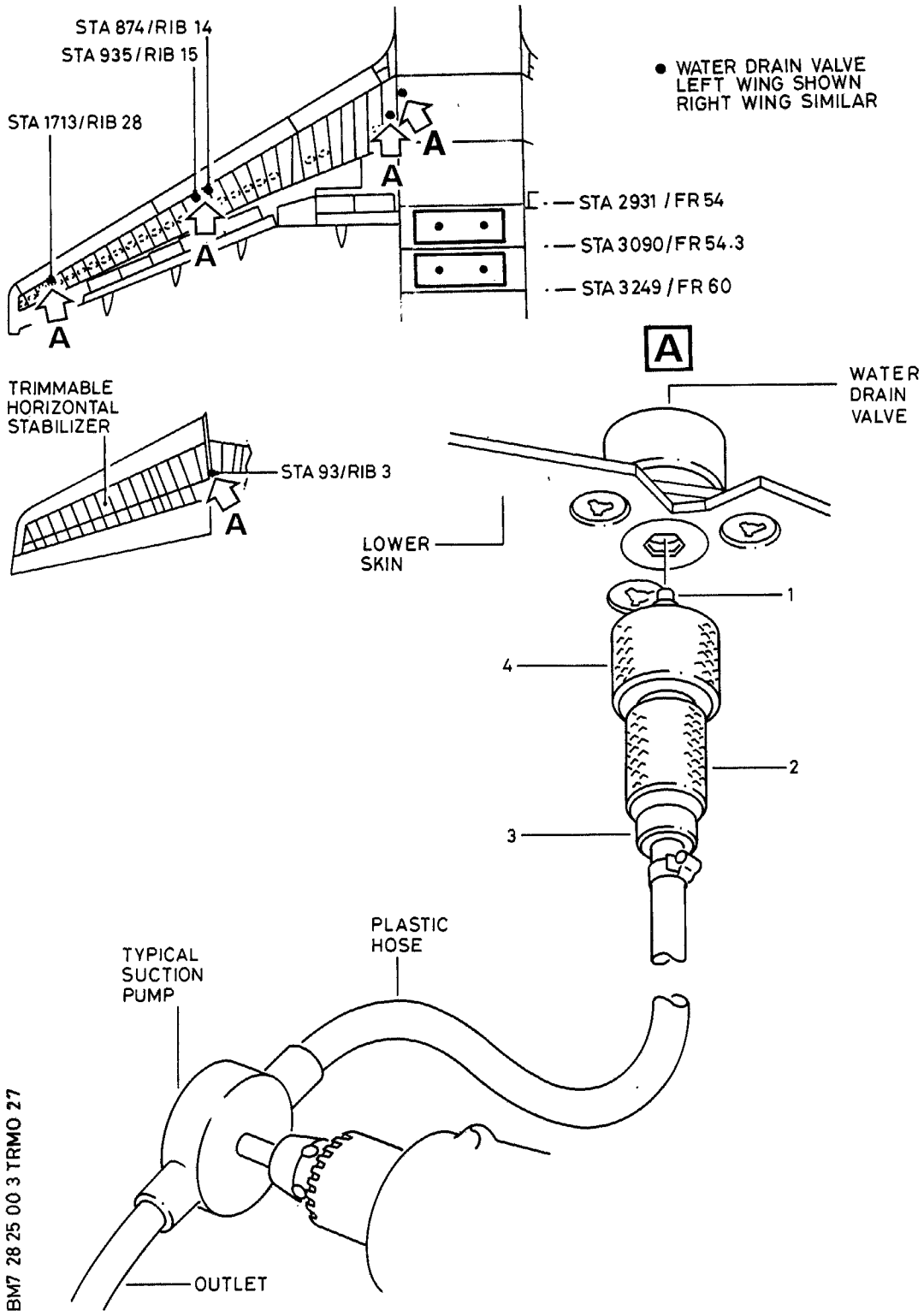
(Ref. Fig. 315)



Drainage of Residual Fuel
Figure 313



Drainage of Residual Fuel
Figure 314



Drainage of Residual Fuel
Figure 315

**ON A/C 001-100,

A. Equipment and Materials

ITEM	DESIGNATION
A.	Access Platform 4 m (13 ft) for wing tanks
B.	Access Platform 7 m (23 ft) for trim tank
C.	Containers (Ref. Table 301)
D.	Hose Clamps
E.	Plastic Hose
F.	Suction Pump, Constant Displacement, capable of 0.5 psi (0.03 bar) negative pressure
G.	Warning Notices - NO SMOKING
H. 98A28203000000	Test Equipment - Jet Pump
or alternative	
J. 97A28002117002	Purging Tool

**ON A/C 101-200,

A. Equipment and Materials

ITEM	DESIGNATION
A.	Access Platform 4 m (13 ft) for wing tanks
B.	Access Platform 7 m (23 ft) for trim tank
C.	Containers (Ref. Table 301)
D.	Hose Clamps
E.	Plastic Hose
F.	Suction Pump, Constant Displacement, capable of 0.5 psi (0.03 bar) negative pressure
G.	Warning Notices - NO SMOKING
H. 98A28108001000	Adaptor - ACT
J. 98A28203000000	Test Equipment - Jet Pump
or alternative	
97A28002117002	Purging Tool
K. TBA	Test Equipment - ACT Draining

**ON A/C 001-100,

ITEM	DESIGNATION
Referenced Procedures	
- 05-57-00, P. Block 1	Aircraft Stability
- 05-57-11, P. Block 1	Aircraft Stability With Fuel in Trim Tank
- 07-11-00, P. Block 1	Jacking For Aircraft Maintenance
- 12-31-28, P. Block 201	Cold Weather Maintenance
- 27-40-00, P. Block 1	Trimmable Horizontal Stabilizer

ITEM	DESIGNATION
- 28-00-00, P. Block 301	Fuel - General
- 28-11-21, P. Block 401	Water Drain Valve (Outer, Inner and Center Tank)
- 28-11-32, P. Block 401	Water Drain Valve - Trim Tank

B. Job Set-Up
(1)Put the access platform(s) in position below the water drain-valve(s).
(2)Put the applicable container(s) in position on the access platform(s), below the water drain-valve(s) (Refer to Table 301 for container size(s)).
(3)Put the warning notices in position at the perimeter of the safety area.

**ON A/C 101-200,

ITEM	DESIGNATION
Referenced Procedures	
- 05-57-00, P. Block 1	Aircraft Stability
- 05-57-11, P. Block 1	Aircraft Stability With Fuel in Trim Tank
- 07-11-00, P. Block 1	Jacking For Aircraft Maintenance
- 12-31-28, P. Block 201	Cold Weather Maintenance
- 27-40-00, P. Block 1	Trimmable Horizontal Stabilizer
- 28-00-00, P. Block 301	Fuel - General
- 28-11-21, P. Block 401	Water Drain Valve (Outer, Inner and Center Tank)
- 28-11-32, P. Block 401	Water Drain Valve - Trim Tank
- 28-11-39, P. Block 401	Water Drain Valve - Additional Center Tank

B. Job Set-Up
(1)Put the access platform(s) in position below the water drain-valve(s).
(2)Put the applicable container(s) in position on the access platform(s), below the water drain-valve(s) (Refer to Table 301 for container size(s)).
(3)Put the warning notices in position at the perimeter of the safety area.

**ON A/C ALL

(4)If the trim tank is to be drained, continue as follows:
(a)Make sure that the Trimmable Horizontal Stabilizer (THS) is in the 0 deg. position. If necessary, manually adjust the pitch-trim control wheel (Ref. 27-40-00, P. Block 1).
(5)Use the table that follows to check the residual fuel quantities:

TANK			CENTER	INNER	OUTER	TRIM
Residual Fuel	After Suction Defuel	Liters US gals	600 159	350 92	250 66	40 11

TANK			CENTER	INNER	OUTER	TRIM
(max)					(A/C NOSE 3 deg. UP)	
Residual Fuel (max)	After Pressure Defuel	Liters	216	60	40	14
		US gals	57	16	11	04
					(A/C NOSE 3 deg. UP)	

Residual Fuel Quantities
Table 301

NOTE : Table 301 gives the approximate maximum quantities of fuel that stays after a defuel. This fuel can be removed through the water drain valves. The quantities are shown to allow the correct size of container to be selected.

C. Procedure

CAUTION : DO NOT APPLY VERY HIGH LOADS TO THE DRAIN VALVE. IF THE DRAIN VALVE DOES NOT OPEN EASILY, FIND THE CAUSE. THE DRAIN VALVE CAN BE FROZEN IN LOW TEMPERATURES, REFER TO THE COLD WEATHER MAINTENANCE PROCEDURES (REF. 12-31-28, P. BLOCK 201).

(1)Install the test equipment PN98A28203000000 or the purging tool PN97A28002117002.

NOTE : To drain the residual fuel, the purging tool PN97A28002117002 can be used as an alternative to the test equipment PN98A28203000000.

(a)When you install the test equipment PN98A28203000000:
1 Make sure that the nut (4), the screw (3) and the plunger (1), complete with the screw, are fully retracted.
2 Engage the hexagonal end of the bush (2) in the base plate of the water drain valve. Turn the bush through 30 deg.
3 Turn the nut (4) until it contacts the wing lower surface and gets a seal between the test equipment and the wing skin.
4 Connect the plastic hose to the test equipment and the suction pump inlet. Put the pump outlet in position over the container.
5 Hold the bush (2) and turn the screw (3) until it bottoms and the plunger (1) opens the water drain valve.

(2)Operate the suction pump until the fuel flow stops.

NOTE : For the outer tanks, do the procedure again at each water drain valve.

(3)Disconnect the suction pump.
(4)Remove the test equipment PN98A28203000000 or the purging tool PN97A28002117002:
(a)When you remove the test equipment PN98A28203000000:

1 Hold the bush (2) and turn the screw (3) counterclockwise to close the water drain valve.
2 Disconnect the plastic hose and the suction pump.
3 Turn the nut (4) counterclockwise and turn the bush (2) thru 30 deg. to release the test equipment PN 98A2820000000 or PN97A28002117002 from the lower wing surfaces.

NOTE : After the tank(s) are refueled, you must examine the applicable drain valve(s) for leaks (Ref. 28-11-21 and/or 28-11-32, P. Block 401).

**ON A/C 101-200,

(5)To drain the residual fuel from the ACT(s) (if installed):
(a)Install the test equipment TBA, as follows:
1 Open the applicable access panels 153DL (154DR). Disconnect each safety cord and remove the access panels.
2 Connect the flange of the adaptor PN 98A28108001000 to the aircraft with the quick release fasteners.
3 Connect the test equipment PN TBA to the adaptor PN 98A28108001000 and drain the residual fuel until the fuel flow stops.
4 Remove the test equipment PN TBA and the adaptor PN 98A28108001000 from the aircraft skin.

NOTE : After the ACT(s) has/have been refueled, you must examine the applicable drain valve(s) for leaks (Ref. 28-11-39, P. Block 401).

5 Connect the safety cords and install the access panels 153DL (154DR).

**ON A/C ALL

D. Close-Up
(1)Remove the container(s) from the access platform(s).
(2)Remove the access platform(s) from below the water drain-valve(s).
(3)If necessary, put the Trimmable Horizontal Stabilizer (THS) back to the normal operation condition (Ref. 27-40-00, P. Block 1).
(3)Remove the warning notices.
(4)Make sure that the work area is clean and clear of tools and miscellaneous items of equipment.

**ON A/C 001-100,

R 8. Fuel Transfer - Wing Tanks and Center Tank

**ON A/C 101-200,

R 8. Fuel Transfer - Wing Tanks, Center Tank and ACT(S) (If Installed)

**ON A/C ALL

A. Equipment and Materials

ITEM	DESIGNATION
A.	Circuit Breaker Safety Clip and Tag
Referenced Procedures	
- 05-57-00, P. Block 1	Aircraft Stability
- 05-57-11, P. Block 1	Aircraft Stability With Fuel in Trim Tank
- 07-11-00, P. Block 1	Jacking For Aircraft Maintenance
- 12-11-28, P. Block 301	Replenishing of Fuel Tanks
- 12-31-28, P. Block 201	Cold Weather Maintenance
- 24-41-00, P. Block 301	AC External Power Control
- 28-00-00, P. Block 301	Fuel - General
- 28-42-38, P. Block 501	Fuel Quantity Computer (15QT)

B. Job Set-Up

CAUTION : WHEN YOU MUST OPERATE THE REFUEL/DEFUEL PANEL 110VU, IN AMBIENT TEMPERATURES BELOW -40 DEG. C. (-40 DEG. F.), REFER TO THE PROCEDURE FOR THE PREPARATION FOR OPERATION OF THE REFUEL/DEFUEL PANEL 110VU, BELOW -40 DEG. C. (-40 DEG. F.), (REF. 12-31-28, P. BLOCK 201).

(1)Not applicable.
(2)Energize the aircraft electrical network (Ref. 24-41-00, P. Block 301).
(3)Make sure that the following circuit breakers are closed:

**ON A/C 001-100,

PANEL	SERVICE	IDENT.	LOCATION
22VU	FUEL/TRIM TANK/FWD XFR		Line 201
133VU	ENGINES/ENG 1/FUEL HP VALVE		Line 333
133VU	ENGINES/ENG 2/FUEL HP VALVE		Line 333
132VU	FUEL/X FEED VALVE		Line 324
132VU	FUEL/FQI		Line 321
132VU	FUEL/FUELLING		Line 321
132VU	FUEL/TRIM TANK		Line 325
	- For left outer tank		
22VU	FUEL/OUTR TK PUMP 2/L TK/CTL	61QA	201/J15
22VU	FUEL/OUTR TK PUMP 2/L TK/WARN	13QA	201/J16
132VU	FUEL/L OUTR TK/PUMP 1/CTL	67QA	322/N56
132VU	FUEL/L OUTR TK/PUMP 1/WARN	15QA	323/M56
132VU	FUEL/ISOL VALVES/L OUTR TK/SUPPLY	1QB	324/L53
	- For left inner tank		

PANEL	SERVICE	IDENT.	LOCATION
132VU	FUEL/L INR TK		Line 322
132VU	FUEL/L INR TK		Line 323
132VU	FUEL/ISOL VALVES/L INR TK/SUPPLY	3QB	324/L55
	- For center tank		
132VU	FUEL/CTR TK		Line 322
132VU	FUEL/CTR TK		Line 323
	- For right inner tank		
132VU	FUEL/R INR TK		Line 322
132VU	FUEL/R INR TK		Line 323
132VU	FUEL/ISOL VALVES/R INR TK/SUPPLY	4QB	324/L56
	- For right outer tank		
22VU	FUEL/OUTR TK/PUMP 2/R TK/WARN	16QA	201/J17
22VU	FUEL/OUTR TK/PUMP 2/R TK/CTL	68QA	201/J18
132VU	FUEL/R OUTR TK/PUMP 1/WARN	14QA	322/N57
132VU	FUEL/R OUTR TK/PUMP 1/CTL	62QA	323/M57
132VU	FUEL/ISOL VALVES/R OUTR TK/SUPPLY	2QB	324/L58

**ON A/C 101-200,

PANEL	SERVICE	IDENT.	LOCATION
22VU	FUEL/TRIM TANK/FWD XFR		Line 201
133VU	ENGINES/ENG 1/FUEL HP VALVE		Line 333
133VU	ENGINES/ENG 2/FUEL HP VALVE		Line 333
132VU	FUEL/X FEED VALVE		Line 324
132VU	FUEL/FQI		Line 321
132VU	FUEL/FUELLING		Line 321
132VU	FUEL/TRIM TANK		Line 325
	- For left outer tank		
22VU	FUEL/OUTR TK PUMP 2/L TK/CTL	61QA	201/J15
22VU	FUEL/OUTR TK PUMP 2/L TK/WARN	13QA	201/J16
132VU	FUEL/L OUTR TK/PUMP 1/CTL	67QA	322/N56
132VU	FUEL/L OUTR TK/PUMP 1/WARN	15QA	323/M56
132VU	FUEL/ISOL VALVES/L OUTR TK/SUPPLY	1QB	324/L53
	- For left inner tank		
132VU	FUEL/L INR TK		Line 322
132VU	FUEL/L INR TK		Line 323
132VU	FUEL/ISOL VALVES/L INR TK/SUPPLY	3QB	324/L55
	- For center tank		
132VU	FUEL/CTR TK		Line 322
132VU	FUEL/CTR TK		Line 323

PANEL	SERVICE	IDENT.	LOCATION
	- For ACT(s) (if fitted)		
101VU	FUEL/CARGO TK/PUMP SUPPLY	1QH	GEN1/A02
132VU	FUEL/AUX TK VENT AND PRESS VALVE	3QH	325/K57
132VU	FUEL/AUX TK XFR VALVE/MOTOR 1	4QH	325/K58
132VU	FUEL/AUX TK PUMP CTL XFR VALVE/MOTOR 2	5QH	325/K59
	- For right inner tank		
132VU	FUEL/R INR TK		Line 322
132VU	FUEL/R INR TK		Line 323
132VU	FUEL/ISOL VALVES/R INR TK/SUPPLY	4QB	324/L56
	- For right outer tank		
22VU	FUEL/OUTR TK/PUMP 2/R TK/WARN	16QA	201/J17
22VU	FUEL/OUTR TK/PUMP 2/R TK/CTL	68QA	201/J18
132VU	FUEL/R OUTR TK/PUMP 1/WARN	14QA	322/N57
132VU	FUEL/R OUTR TK/PUMP 1/CTL	62QA	323/M57
132VU	FUEL/ISOL VALVES/R OUTR TK/SUPPLY	2QB	324/L58

**ON A/C ALL

(4)Open, safety and tag the following circuit breaker:

PANEL	SERVICE	IDENT.	LOCATION
132VU	FUEL/AUTO FEED/CTL	65QA	323/M55

NOTE: Circuit breaker 65QA isolates the automatic sequencing of the pumps, enabling all pumps to be run simultaneously.

(5)On panel 9VU, make sure that both the engine HP fuel valves are closed.
(6)On panel 430VU:
(a)Make sure that all the PUMP P/BSW's are released (out) and the OFF legends are on.
(b)Make sure that all the wing tank ISOL VALVES P/BSW's are pressed (in) and the in-line flowbars are on.
(7)Do the functional test of the Fuel Quantity Computer (15QT) (Ref. 28-42-38, P. Block 501).

CAUTION: DO NOT CLOSE THE ACCESS DOOR 144DR OR OPERATE THE ACCESS DOOR MICROSWITCH UNTIL THE FUEL TRANSFER IS COMPLETED.

(8)Open the access door 144DR to the refuel/defuel panel 110VU:

**ON A/C 001-100,

(9)On Panel 110VU:
(a)Make sure that the PWR SUPPLY switch is in the NORM position

and guarded.
(b)Make sure that the FUEL QTY switch is in the CTR & TT position.
(c)Place and hold FUEL QTY switch in TT position, and note trim tank fuel quantity. Release FUEL QTY switch to CTR & TT position.
(10)If trim tank contains fuel, perform manual forward transfer (Ref. Para. 9) or defuel trim tank (Ref. Para. 6) until trim tank low level sensor is dry and trim tank is completely defueled.

**ON A/C 101-200,

(9)On panel 110VU:
(a)Make sure that the PWR SUPPLY switch is in the NORM position and guarded.
(b)Make sure that the FQI DISPLAY switch is in CTR & AUX & TT position.
(c)Place the FQI DISPLAY switch in TT position, and note trim tank fuel quantity.
(d)Place the FQI DISPLAY switch in CTR & AUX & TT position.
(10)If trim tank contains fuel, perform manual forward transfer (Ref. Para. 9) or defuel trim tank (Ref. Para 6) until trim tank low level sensor is dry and trim tank is completely defueled.

**ON A/C 101-200,

Post SB 28-2108 For A/C 101-200,

(9)On panel 110VU:
(a)Make sure that the PWR SUPPLY switch is in the NORM position and guarded.
(b)Make sure that the FQI DISPLAY switch is in CTR-TT & ACT position.
(c)Place the FQI DISPLAY switch in TT position, and note trim tank fuel quantity.
(d)Place the FQI DISPLAY switch in CTR-TT & ACT position.
(10)If trim tank contains fuel, perform manual forward transfer (Ref. Para. 9) or defuel trim tank (Ref. Para 6) until trim tank low level sensor is dry and trim tank is completely defueled.

**ON A/C ALL

C. Procedure

R (1)Fuel transfer from the center tank to the inner tanks when the APU is in
R operation.
(a)On panel 110VU:
R 1 Raise the guard and place the MODE SELECTOR/SELECT switch in the
R REFUEL position.
R 2 Raise the guard and place the TRANSF. VALVE switch in the OPEN position. Make sure that the OPEN indicator light comes on.
R 3 Raise the guards on all the REFUEL-DEFUEL-VALVES switches:
R - place all the REFUEL-DEFUEL-VALVES switches in the SHUT position

R - then place only the L and R INNER TK REFUEL-DEFUEL-VALVES switches
R in the OPEN position.

(b)On panel 430VU:

R 1 Press (in) the X FEED pushbutton switch (P/BSW) and make sure that:
R - the crossline flowbar goes off
R - the in-line flowbar comes on.
R 2 Press (in) the L and R CTR TK PUMP P/BSW's:
R - the OFF legends go off
R - the pumps run.

R NOTE : Each center tank pump now supplies fuel through the transfer
R valve and the refuel/defuel gallery into the left and right
R inner tanks.

(c)On panel 110VU:

R 1 Monitor the fuel levels on the FQI. Hold/put the FUEL QTY/FQI
R DISPLAY switch in the CTR position to display the center tank
R contents only.

R NOTE : The fuel flow to individual tanks may be stopped at any time
R by placing the related REFUEL-DEFUEL-VALVES switch(es) in the
R SHUT position.

R (d)When the quantity of fuel in the center tank is 500 kg (1100 lb),
R on panel 430VU:

R **ON A/C 001-100,

R 1 Release (out) the X FEED P/BSW. Make sure that:
R - the in-line flowbar goes off
R - the cross-line flowbar comes on.
R 2 Press (in) the L INR TK PUMP 2 P/BSW (to supply fuel to the APU).
R Make sure that:
R - the OFF legend goes off
R - the pump runs.
R 3 Release (out) the L CTR TK PUMP P/BSW. Make sure that:
R - the OFF legend comes on
R - the pump stops.

R NOTE : The fuel transfer from the center tank to the left and right
R inner tanks will continue. But the fuel is now only
R supplied from the right center tank pump.

R (e)When the tank fuel quantities are at the required figures,
R on panel 430VU:
R 1 Release (out) the L INR TK PUMP 2 P/BSW. Make sure that:
R - the OFF legend comes on
R - the pump stops.
R 2 Release (out) the R CTR TK PUMP P/BSW. Make sure that:
R - the OFF legend comes on
R - the pump stops.

R (f)On panel 110VU:
R 1 If applicable, release the FUEL QTY switch to the CTR & TT position.
R 2 Place the MODE SELECTOR/SELECT switch in the OFF and guarded position.
R 3 Place the TRANSF. VALVE switch in the CLOSED and guarded position. Make sure that the OPEN indicator light goes off.
R 4 Place all the REFUEL-DEFUEL-VALVES switches in the NORM and guarded position.

R **ON A/C 101-200,

R 1 Release (out) the X FEED P/BSW. Make sure that:
R - the in-line flowbar goes off
R - the cross-line flowbar comes on.
R 2 Press (in) the L INR TK PUMP 2 P/BSW (to supply fuel to the APU). Make sure that:
R - the OFF legend goes off
R - the pump runs.
R 3 Release (out) the L CTR TK PUMP P/BSW. Make sure that:
R - the OFF legend comes on
R - the pump stops.

R NOTE : The fuel transfer from the center tank to the left and right inner tanks will continue. But the fuel is now only supplied from the right center tank pump.

R (e)When the tank fuel quantities are at the required figures, on panel 430VU:
R 1 Release (out) the L INR TK PUMP 2 P/BSW. Make sure that:
R - the OFF legend comes on
R - the pump stops.
R 2 Release (out) the R CTR TK PUMP P/BSW. Make sure that:
R - the OFF legend comes on
R - the pump stops.
R (f)On panel 110VU:
R 1 If applicable, put the FQI DISPLAY switch in the CTR & AUX & TT position.
R 2 Place the MODE SELECTOR/SELECT switch in the OFF and guarded position.
R 3 Place the TRANSF. VALVE switch in the CLOSED and guarded position. Make sure that the OPEN indicator light goes off.
R 4 Place all the REFUEL-DEFUEL-VALVES switches in the NORM and guarded position.

R **ON A/C 101-200,

R Post SB 28-2108 For A/C 101-200,

R 1 Release (out) the X FEED P/BSW. Make sure that:
R - the in-line flowbar goes off

R - the cross-line flowbar comes on.
R 2 Press (in) the L INR TK PUMP 2 P/BSW (to supply fuel to the APU).
R Make sure that:
R - the OFF legend goes off
R - the pump runs.
R 3 Release (out) the L CTR TK PUMP P/BSW. Make sure that:
R - the OFF legend comes on
R - the pump stops.

R NOTE : The fuel transfer from the center tank to the left and right
R inner tanks will continue. But the fuel is now only
R supplied from the right center tank pump.

R (e)When the tank fuel quantities are at the required figures,
R on panel 430VU:
R 1 Release (out) the L INR TK PUMP 2 P/BSW. Make sure that:
R - the OFF legend comes on
R - the pump stops.
R 2 Release (out) the R CTR TK PUMP P/BSW. Make sure that:
R - the OFF legend comes on
R - the pump stops.
R (f)On panel 110VU:
R 1 If applicable, put the FQI DISPLAY switch in the CTR-TT & ACT
R position.
R 2 Place the MODE SELECTOR/SELECT switch in the OFF and guarded
R position.
R 3 Place the TRANSF. VALVE switch in the CLOSED and guarded position.
R Make sure that the OPEN indicator light goes off.
R 4 Place all the REFUEL-DEFUEL-VALVES switches in the NORM and guarded
R position.

R **ON A/C ALL

R (2)Fuel transfer wing tanks and center tank.
R (a)On panel 110VU:
R 1 Raise the guard and place the MODE SELECTOR/SELECT switch in the
R REFUEL position.
R 2 Raise the guard and place the TRANSF. VALVE switch in the OPEN
R position. Make sure that the OPEN indicator light comes on.
R 3 Raise the guards on all the REFUEL-DEFUEL-VALVES switches:
R - for tanks that are to receive fuel, place the REFUEL-DEFUEL-VALVES
R switches in the OPEN position
R - place all the other REFUEL-DEFUEL-VALVES switches in the SHUT
R position.
R (b)On panel 430VU:
R 1 For fuel transfers from the left wing tanks or the center tank, press
R (in) the X FEED P/BSW. Make sure that:
R - the crossline flowbar goes off
R - the in-line flowbar comes on.
R 2 Press (in) the PUMP P/BSW's for the tank(s) that are to supply fuel.

R Make sure that the related:
R - OFF legends go off
R - pumps run.

R **ON A/C 001-100,

R (c)On panel 110VU:
R 1 Monitor the fuel levels on the FQI. Hold the FUEL QTY switch in the
R CTR position to display the contents of the center tank only.

R NOTE : Fuel flow to individual tanks may be stopped at any time by
R placing the related REFUEL-DEFUEL-VALVES switch(es) on panel
R 110VU, in the SHUT position.

R (d)On panel 430VU:
R 1 When the tank fuel levels reach the required figure, release (out)
R the PUMP P/BSW's for the tanks used to supply fuel. Make sure that:
R - the OFF legends come on
R - the pumps stop.
R 2 If applicable, release (out) the X FEED P/BSW. Make sure that:
R - the in-line flowbar goes off
R - the crossline flowbar comes on.
R (e)On panel 110VU:
R 1 If applicable, release the FUEL QTY switch to the CTR & TT position.
R 2 Place the MODE SELECTOR/SELECT switch in the OFF and guarded
R position.
R 3 Place the TRANSF. VALVE switch in the closed and guarded position.
R Make sure that the OPEN indicator light goes off.
R 4 Place all the REFUEL-DEFUEL-VALVES switches in the NORM and guarded
R position.

R **ON A/C 101-200,

R (c)On panel 110VU:
R 1 Monitor the fuel levels on the FQI. Put the FQI DISPLAY switch in
R the CTR position to display the contents of the center tank only.

R NOTE : Fuel flow to individual tanks may be stopped at any time by
R placing the related REFUEL-DEFUEL-VALVES switch(es) on panel
R 110VU, in the SHUT position.

R (d)On panel 430VU:
R 1 When the tank fuel levels reach the required figure, release (out)
R the PUMP P/BSW's for the tanks used to supply fuel. Make sure that:
R - the OFF legends come on
R - the pumps stop.
R 2 If applicable, release (out) the X FEED P/BSW. Make sure that:
R - the in-line flowbar goes off
R - the crossline flowbar comes on.
R (e)On panel 110VU:
R 1 If applicable, put the FQI DISPLAY switch to the CTR & AUX & TT

R position.
R 2 Place the MODE SELECTOR/SELECT switch in the OFF and guarded
R position.
R 3 Place the TRANSF. VALVE switch in the closed and guarded position.
R Make sure that the OPEN indicator light goes off.
R 4 Place all the REFUEL-DEFUEL-VALVES switches in the NORM and guarded
R position.

R **ON A/C 101-200,

R Post SB 28-2108 For A/C 101-200,

R (c)On panel 110VU:
R 1 Monitor the fuel levels on the FQI. Put the FQI DISPLAY switch in
R the CTR position to display the contents of the center tank only.

R NOTE : Fuel flow to individual tanks may be stopped at any time by
R placing the related REFUEL-DEFUEL-VALVES switch(es) on panel
R 110VU, in the SHUT position.

R (d)On panel 430VU:
R 1 When the tank fuel levels reach the required figure, release (out)
R the PUMP P/BSW's for the tanks used to supply fuel. Make sure that:
R - the OFF legends come on
R - the pumps stop.
R 2 If applicable, release (out) the X FEED P/BSW. Make sure that:
R - the in-line flowbar goes off
R - the crossline flowbar comes on.
R (e)On panel 110VU:
R 1 If applicable, put the FQI DISPLAY switch to the CTR-TT & ACT
R position.
R 2 Place the MODE SELECTOR/SELECT switch in the OFF and guarded
R position.
R 3 Place the TRANSF. VALVE switch in the closed and guarded position.
R Make sure that the OPEN indicator light goes off.
R 4 Place all the REFUEL-DEFUEL-VALVES switches in the NORM and guarded
R position.

R **ON A/C ALL

R (3)Fuel transfer wing outer tank(s) to wing inner tank(s).
R (a)On panel 110VU:
R 1 Raise the guard and place the MODE SELECTOR/SELECT switch in the
R REFUEL position.
R 2 Raise the guard and place the TRANSF. VALVE switch in the OPEN
R position. Make sure that the OPEN indicator light comes on.
R 3 Raise the guards on all the REFUEL-DEFUEL-VALVES switches:
R - for the inner tank that is to receive fuel, place the
R REFUEL-DEFUEL-VALVES switch in the OPEN position

R - place all the other REFUEL-DEFUEL-VALVES switches in the SHUT
R position.
R (b)On panel 430VU:
R 1 Press (in) the PUMP P/BSW's for the outer tank(s) that is/are to
R supply fuel. Make sure that the related:
R - OFF legends go off
R - pumps run.

R NOTE : Flow to individual tanks may be stopped at any time by
R placing the related REFUEL-DEFUEL-VALVES switch on panel
R 110VU, in the SHUT position.

R (c)On panel 110VU:
R 1 Monitor the fuel levels on the FQI.
R (d)On panel 430VU:
R 1 When the outer tank fuel levels reach the required figure, release
R (out) the PUMP P/BSW's for the tanks that supplied fuel. Make sure
R that:
R - the OFF legends come on
R - the pumps stop.
R (e)On panel 110VU:
R 1 Place the MODE SELECTOR/SELECT switch in the OFF and guarded
R position.
R 2 Place the TRANSF. VALVE switch in the closed and guarded position.
R Make sure that the OPEN indicator light goes off.
R 3 Place all the REFUEL-DEFUEL-VALVES switches in the NORM and guarded
R position.

R **ON A/C 101-200,

R (4)Fuel transfer from the ACT to the center tank in manual mode with the
R refuel panel door 144DR, closed.

R CAUTION : THE CENTER TANK MUST HAVE SUFFICIENT SPACE TO RECEIVE ALL THE
R FUEL YOU WILL TRANSFER FROM THE ACT.

R (a)On panel 110VU:
R 1 Put the FQI DISPLAY switch in the CTR position and the AUX position.
R Make a note of the fuel quantities in the center tank and the ACT.
R Make sure that there is sufficient space in the center tank to
R receive all the fuel you will transfer from the ACT. If necessary,
R transfer some of the fuel out of the center tank (Ref. Para. 8. C.
R steps (1) or (2)) then continue with this procedure.
R 2 Put the FQI DISPLAY switch in the CTR & AUX & TT position.
R 3 Make sure that the MODE SELECTOR/SELECT switch is in the OFF and
R guarded position.
R 4 Make sure that all the REFUEL-DEFUEL-VALVES switches are in the NORM
R and guarded position.
R 5 Make sure that the TRANSF. VALVE switch is in the closed and guarded
R position. Make sure that the OPEN indicator light is off.

R (b)Close the refuel panel door 144DR.
R (c)Activate the ECAM display units (DU's) as follows:
R - on the flight compartment center pedestal, push (in) the ECAM SGU 1 & 2 P/BSW's.
R - turn the LEFT and RIGHT DISPLAY rotary switches clockwise to switch on the display and adjust the brightness to the required level.
R - push (in) the FUEL P/BSW to call up the fuel page.
R (d)On panel 430VU:
R 1 Push (in) the AUX TK AUTO P/BSW:
R - the FWD legend (in the P/BSW) will come on
R On the center tank manhole cover 148AZ:
R - the ACT transfer valve will open
R - the ACT fuel pump will run.
R (e)Monitor the fuel transfer on the ECAM fuel page.
R (f)When the fuel quantities in the ACT and the center tank are at the required levels, on panel 430VU:
R 1 Release (out) the AUX TK AUTO P/BSW:
R - the FWD legend (in the P/BSW) goes off
R On the center tank manhole cover 148AZ:
R - the ACT fuel pump will stop
R - the ACT transfer valve will close.
R (g)De-activate the ECAM display units as follows:
R - on the flight compartment center pedestal, turn the ECAM LEFT and RIGHT DISPLAY rotary switches to OFF.
R - release (out) the ECAM SGU 1 and 2 P/BSW's.
R (h)Open the access door 144DR, to the refuel/defuel panel 110VU.

R **ON A/C 101-200,

R Post SB 28-2108 For A/C 101-200,

R (4)Fuel transfer from the ACT(s) to the center tank in manual mode with the refuel panel door 144DR, closed.

R CAUTION : THE CENTER TANK MUST HAVE SUFFICIENT SPACE TO RECEIVE ALL THE FUEL YOU WILL TRANSFER FROM THE ACT(S).

R (a)On panel 110VU:
R 1 Put the FQI DISPLAY switch in the CTR position, then the ACT1 position (if ACT1 installed) and then the ACT2 position (if ACT2 installed). Make a note of the fuel quantities in the center tank and each ACT. Make sure that there is sufficient space in the center tank to receive all the fuel you will transfer from the ACT(s). If necessary, transfer some of the fuel out of the center tank (Ref. Para. 8. C. steps (1) or (2)) then continue with this procedure.
R 2 Put the FQI DISPLAY switch in the CTR-TT & ACT position.
R 3 Make sure that the MODE SELECTOR/SELECT switch is in the OFF and guarded position.

R 4 Make sure that all the REFUEL-DEFUEL-VALVES switches are in the NORM
R and guarded position.
R 5 Make sure that the TRANSF. VALVE switch is in the closed and guarded
R position. Make sure that the OPEN indicator light is off.
R (b)Close the refuel panel door 144DR.
R (c)Activate the ECAM display units (DU's) as follows:
R - on the flight compartment center pedestal, push (in) the ECAM SGU
R 1 & 2 P/BSW's.
R - turn the LEFT and RIGHT DISPLAY rotary switches clockwise to switch
R on the display and adjust the brightness to the required level.
R - push (in) the FUEL P/BSW to call up the fuel page.
R (d)On panel 430VU:
R 1 Push (in) the ACT AUTO P/BSW:
R - the FWD legend (in the P/BSW) will come on
R On the center tank manhole cover 148AZ:
R - the ACT(s) transfer valve will open
R - the ACT(s) fuel pump will run.

R NOTE : If the ACT2 is installed and the low level sensor in the ACT2
R is 'wet', then the selector valve will move to the ACT2
R position. The selector valve will stay in the ACT2 position
R until the low level and calibration sensors (in the ACT2) both
R go 'dry'. Then the selector valve will move to the ACT1
R position.

R (e)Monitor the fuel transfer on the ECAM fuel page.
R (f)When the fuel quantities in the ACT(s) and the center tank are at the
R required levels, on panel 430VU:
R 1 Release (out) the ACT AUTO P/BSW:
R - the FWD legend (in the P/BSW) goes off
R On the center tank manhole cover 148AZ:
R - the ACT(s) fuel pump will stop
R - the ACT(s) transfer valve will close.
R (g)De-activate the ECAM display units as follows:
R - on the flight compartment center pedestal, turn the ECAM LEFT and
R RIGHT DISPLAY rotary switches to OFF.
R - release (out) the ECAM SGU 1 and 2 P/BSW's.
R (h)Open the access door 144DR, to the refuel/defuel panel 110VU.

R **ON A/C 101-200,

R (5)Fuel transfer from the ACT to the center tank in manual mode with the
R refuel panel door 144DR, open.

R CAUTION : THE CENTER TANK MUST HAVE SUFFICIENT SPACE TO RECEIVE ALL THE
R FUEL YOU WILL TRANSFER FROM THE ACT.

R (a)On panel 110VU:
R 1 Put the FQI DISPLAY switch in the CTR position and the AUX position.
R Make a note of the fuel quantities in the center tank and the ACT.

R Make sure that there is sufficient space in the center tank to
R receive all the fuel you will transfer from the ACT. If necessary,
R transfer some of the fuel out of the center tank (Ref. Para. 8. C.
R steps (1) or (2)) then continue with this procedure.
R 2 Put the FQI DISPLAY switch in the CTR & AUX & TT position.
R 3 Make sure that all the REFUEL-DEFUEL-VALVES switches are in the NORM
R and guarded position.
R 4 Raise the guard and put the REFUEL-DEFUEL-VALVES switch for the ACT
R in the OPEN position.
R 5 Raise the guard and put the MODE SELECTOR/SELECT switch in the REFUEL
R position.

R NOTE : When you do this procedure you must put the the REFUEL-DEFUEL-
R VALVES switch for the ACT in the OPEN position and the MODE
R SELECTOR/SELECT switch in the REFUEL position. This is
R because when you operate the ACT AUTO P/BSW (on panel 430VU),
R the inlet valve for the ACT will not open when the refuel
R panel door is open.

R 6 Make sure that the TRANSF. VALVE switch is in the closed and guarded
R position. Make sure that the OPEN indicator light is off.
R (b)Let the refuel panel door 144DR, stay open.
R (c)Activate the ECAM display units (DU's) as follows:
R - on the flight compartment center pedestal, push (in) the ECAM SGU
R 1 & 2 P/BSW's.
R - turn the LEFT and RIGHT DISPLAY rotary switches clockwise to switch
R on the display and adjust the brightness to the required level.
R - push (in) the FUEL P/BSW to call up the fuel page.
R (d)On panel 430VU:
R 1 Push (in) the AUX TK AUTO P/BSW:
R - the FWD legend (in the P/BSW) will come on
R On the center tank manhole cover 148AZ:
R - the ACT transfer valve will open
R - the ACT fuel pump will run.
R (e)Monitor the fuel transfer on the ECAM fuel page.
R (f)When the fuel quantities in the ACT and the center tank are at the
R required levels, on panel 430VU:
R 1 Release (out) the AUX TK AUTO P/BSW:
R - the FWD legend (in the P/BSW) goes off
R On the center tank manhole cover 148AZ:
R - the ACT fuel pump will stop
R - the ACT transfer valve will close.
R (g)De-activate the ECAM display units as follows:
R - on the flight compartment center pedestal, turn the ECAM LEFT and
R RIGHT DISPLAY rotary switches to OFF.
R - release (out) the ECAM SGU 1 and 2 P/BSW's.
R (h)On panel 110VU:
R 1 Put the REFUEL-DEFUEL-VALVES switch for the ACT in the NORM and
R guarded position.
R 2 Put the MODE SELECTOR/SELECT switch in the OFF and guarded position.

R **ON A/C 101-200,

R Post SB 28-2108 For A/C 101-200,

R (5)Fuel transfer from the ACT(s) to the center tank in manual mode with
R the refuel panel door 144DR, open.

R CAUTION : THE CENTER TANK MUST HAVE SUFFICIENT SPACE TO RECEIVE ALL THE
R FUEL YOU WILL TRANSFER FROM THE ACT(S).

R (a)On panel 110VU:
R 1 Put the FQI DISPLAY switch in the CTR position, then the ACT1
R position and then the ACT2 position (if ACT2 installed). Make a note
R of the fuel quantities in the center tank and each ACT. Make sure
R that there is sufficient space in the center tank to receive all the
R fuel you will transfer from the ACT(s). If necessary, transfer some
R of the fuel out of the center tank (Ref. Para. 8.C. steps (1) or (2))
R then continue with this procedure.
R 2 Put the FQI DISPLAY switch in the CTR-TT & ACT position.
R 3 Make sure that all the REFUEL-DEFUEL-VALVES switches are in the NORM
R and guarded position.
R 4 Raise the guards and put the REFUEL-DEFUEL-VALVES switches for the
R ACT2 (if installed) and the ACT1 in the OPEN position.
R 5 Raise the guard and put the MODE SELECTOR/SELECT switch in the REFUEL
R position.

R NOTE : When you do this procedure you must put the the REFUEL-DEFUEL-
R VALVES switch(es) for the ACT(s) in the OPEN position and the
R MODE SELECTOR/SELECT switch in the REFUEL position. This is
R because when you operate the ACT AUTO P/BSW (on panel 430VU),
R the inlet valve(s) for the ACT(s) will not open when the
R refuel panel door is open.

R 6 Make sure that the TRANSF. VALVE switch is in the closed and guarded
R position. Make sure that the OPEN indicator light is off.
R (b)Let the refuel panel door 144DR, stay open.
R (c)Activate the ECAM display units (DU's) as follows:
R - on the flight compartment center pedestal, push (in) the ECAM SGU
R 1 & 2 P/BSW's.
R - turn the LEFT and RIGHT DISPLAY rotary switches clockwise to switch
R on the display and adjust the brightness to the required level.
R - push (in) the FUEL P/BSW to call up the fuel page.
R (d)On panel 430VU:
R 1 Push (in) the ACT AUTO P/BSW:
R - the FWD legend (in the P/BSW) will come on
R On the center tank manhole cover 148AZ:
R - the ACT(s) transfer valve will open
R - the ACT(s) fuel pump will run.

R NOTE : If the ACT2 is installed and the low level sensor in the ACT2
R is 'wet', then the inlet valve in the ACT2 will open. The
R inlet valve will stay open until the low level and calibration
R sensors in the ACT2 both go 'dry'. Then the inlet valve in
R the ACT2 will close and the inlet valve in the ACT1 will open.

R (e)Monitor the fuel transfer on the ECAM fuel page.
R (f)When the fuel quantities in the ACT(s) and the center tank are at the
R required levels, on panel 430VU:
R 1 Release (out) the ACT AUTO P/BSW:
R - the FWD legend (in the P/BSW) goes off
R On the center tank manhole cover 148AZ:
R - the ACT(s) fuel pump will stop
R - the ACT(s) transfer valve will close.
R (g)De-activate the ECAM display units as follows:
R - on the flight compartment center pedestal, turn the ECAM LEFT and
R RIGHT DISPLAY rotary switches to OFF.
R - release (out) the ECAM SGU 1 and 2 P/BSW's.
R (h)On panel 110VU:
R 1 Put the REFUEL-DEFUEL-VALVES switches for the ACT2 (If installed) and
R the ACT1 in the NORM and guarded position.
R 2 Put the MODE SELECTOR/SELECT switch in the OFF and guarded position.

R **ON A/C ALL

R 5 Close the access door 144DR.

D. Close-Up
(1)On panel 132VU remove the safety clip and tag and close the circuit breaker 65QA, (line 323/M55).
(2)De-energize the aircraft electrical network (Ref. 24-41-00, P. Block 301).
(3)Make sure that the work area is clean and clear of tools and miscellaneous items of equipment.

9. Manual Fuel Transfer - Trim Tank

A. Forward Transfer under Gravity

NOTE : In the procedure that follows, the fuel is transferred from the trim tank into the center tank.

**ON A/C 001-100,

(Ref. Fig. 304)

**ON A/C 101-200,

(Ref. Fig. 305)

**ON A/C 101-200,

Post SB 28-2108 For A/C 101-200,

(Ref. Fig. 306)

**ON A/C 001-100,

(Ref. Fig. 310)

**ON A/C 101-200,

(Ref. Fig. 311)

**ON A/C 101-200,

Post SB 28-2108 For A/C 101-200,

(Ref. Fig. 312)

**ON A/C ALL

(1)Equipment and Materials

ITEM	DESIGNATION
Referenced Procedures - 05-57-00, P. Block 1	Aircraft Stability

ITEM	DESIGNATION
- 05-57-11, P. Block 1	Aircraft Stability With Fuel in Trim Tank
- 07-11-00, P. Block 1	Jacking For Aircraft Maintenance
- 12-31-28, P. Block 201	Cold Weather Maintenance
- 12-31-31, P. Block 1	Cold Weather Maintenance Indications/ Recording Systems and Navigation
- 24-41-00, P. Block 301	AC External Power Control
- 27-40-00, P. Block 1	Trimmable Horizontal Stabilizer
- 28-00-00, P. Block 301	Fuel - General
- 28-42-38, P. Block 501	Fuel Quantity Computer (15QT)
- 28-42, P. Block 1	TSM - Fault Symptoms

(2)Job Set-Up

CAUTION : WHEN YOU MUST OPERATE THE REFUEL/DEFUEL PANEL 110VU, IN AMBIENT TEMPERATURES BELOW -40 DEG. C. (-40 DEG. F.), REFER TO THE PROCEDURE FOR THE PREPARATION FOR OPERATION OF THE REFUEL/DEFUEL PANEL 110VU, BELOW -40 DEG. C. (-40 DEG. F.), (REF. 12-31-28, P. BLOCK 201).

CAUTION : WHEN YOU OPERATE THE ECAM IN AMBIENT TEMPERATURES BELOW -15 DEG. C. (+5 DEG. F.), REFER TO THE PROCEDURE FOR INDICATING/ RECORDING SYSTEMS AND NAVIGATION (REF. 12-31-31, P. BLOCK 1).

(a)Energize the aircraft electrical network (Ref. 24-41-00, P. Block 301).
(b)Not applicable.
(c)Make sure that the Trimmable Horizontal Stabilizer (THS) is in the 0 deg. position. If necessary, adjust manually on the pitch-trim control wheel (Ref. 27-40-00, P. Block 1).
(d)Make sure that the following circuit breakers are closed:

PANEL	SERVICE	IDENT.	LOCATION
21VU	ECAM		Line 108
22VU	FUEL/TRIM TANK/FWD XFR/AUX VALVE	2QL	201/J21
132VU	FUEL/FQI		Line 321
132VU	FUEL/TRIM TANK/FWD XFR/MAIN VALVE	1QL	325/K53

(e)The fuel transfer can be monitored on either the ECAM RIGHT DU or on the FQI on panel 110VU.
(f)If it is to be monitored on the ECAM RIGHT DU:
1 On the flight compartment center-pedestal, push (in) the ECAM SGU 1 and 2, p/bsw's.
2 Turn the RIGHT DISPLAY rotary switch clockwise to switch on the display and adjust the brightness to the required level.
3 Push (in) the FUEL p/bsw to call up the fuel page.
4 Do the functional test of the Fuel Quantity Computer (15QT) (Ref. 28-42-38, P. Block 501).

NOTE : The refuel panel door 144DR, can be shut when you do step 4.

(g)If the fuel transfer is to be monitored on the external fuel panel 110VU:

CAUTION : DO NOT CLOSE THE ACCESS DOOR 144DR OR OPERATE THE ACCESS DOOR MICROSWITCH UNTIL THE FUEL TRANSFER IS COMPLETED.

1 Open the access door 144DR to the refuel/defuel panel 110VU.
2 Not applicable.
3 On panel 110VU:
- Make sure that the PWR SUPPLY switch is in the NORM position and guarded.
4 Do the functional test of the Fuel Quantity Computer (15QT) (Ref. 28-42-38, P. Block 501).
5 On panel 110VU:
- Put the FUEL QTY/FQI DISPLAY switch in the TT position and then the CTR position. Record the tank contents. Leave the FUEL QTY/FQI DISPLAY switch in the CTR position.

(3)Procedure

CAUTION : FUEL TRANSFER FROM THE TRIM TANK INTO THE CENTER TANK IS NOT STOPPED BY THE HIGH LEVEL SENSORS. MAKE SURE THAT THE FUEL TRANSFER FROM THE TRIM TANK IS NOT MORE THAN THE CAPACITY OF THE CENTER TANK.

(a)On panel 430VU:
1 Make sure that all the pump p/bsw's are released (out) and the p/bsw OFF legends, are on.
2 Make sure that the TRIM TK ISOL VALVE p/bsw is pushed (in) and the flowbar is on.

NOTE : The flowbar will only be on if the access door 144DR is open.

3 Push (in) the TRIM TK AUTO MODE p/bsw:
- the TRIM TK AUTO MODE FWD legend comes on
- in the center tank, the transfer control valve and the auxiliary transfer valve, open.

(b)Monitor the fuel transfer on the ECAM DU fuel page or, on the FUEL QTY indicator on panel 110VU.

NOTE : If any of the FUEL QTY indicator displays, show blanks or dashes, refer to the TSM 28-42.

(c)When the fuel transfer is complete, on panel 430VU, release (out) the TRIM TK AUTO MODE p/bsw:
- the TRIM TK AUTO MODE FWD legend goes off
- in the center tank, the transfer control valve and the auxiliary transfer valve, close.

(4)Close-Up
(a)If the ECAM fuel page was used to monitor the fuel transfer, continue as follows:
1 On the flight compartment center-pedestal, turn the ECAM RIGHT DISPLAY rotary switch to OFF.
2 Release (out) the ECAM SGU 1 and 2 p/bsw's.

**ON A/C 001-100,

(b)If the FUEL QTY indicator on panel 110VU, was used to monitor the fuel transfer, continue as follows:
1 On panel 110VU:
- Put the FUEL QTY switch to the CTR & TT position.
- Close the access door 144DR.
(c)De-energize the aircraft electrical network (Ref. 24-41-00, P. Block 301).

**ON A/C 101-200,

(b)If the FUEL QTY indicator was used to monitor the fuel transfer, continue as follows:
1 On panel 110VU:
- Put the FQI DISPLAY switch in the CTR & AUX & TT position.
- Close the access door 144DR.
(c)De-energize the aircraft electrical network (Ref. 24-41-00, P. Block 301).

**ON A/C 101-200,

Post SB 28-2108 For A/C 101-200,

(b)If the FUEL QTY indicator was used to monitor the fuel transfer, continue as follows:
1 On panel 110VU:
- Put the FQI DISPLAY switch in the CTR-TT & ACT position.
- Close the access door 144DR.
(c)De-energize the aircraft electrical network (Ref. 24-41-00, P. Block 301).

**ON A/C 001-100,

B. Forward Pressure Transfer with ECAM (Ref. Fig. 304)

**ON A/C 101-200,

B. Forward Pressure Transfer with ECAM (Ref. Fig. 305)

**ON A/C 101-200,

Post SB 28-2108 For A/C 101-200,

B. Forward Pressure Transfer with ECAM (Ref. Fig. 306)

**ON A/C 001-100,

(Ref. Fig. 310)

**ON A/C 101-200,

(Ref. Fig. 311)

**ON A/C 101-200,

Post SB 28-2108 For A/C 101-200,

(Ref. Fig. 312)

**ON A/C ALL

CAUTION : WHEN YOU OPEN THE TRIM-TANK REFUEL/DEFUEL VALVE AND A REFUEL/DEFUEL VALVE FOR ANOTHER TANK, FUEL CAN START TO TRANSFER FORWARD IMMEDIATELY. THIS IS BECAUSE OF THE EFFECT OF GRAVITY ON THE FUEL IN THE TRIM TANK.

WHEN YOU OPEN THE TRIM-TANK REFUEL/DEFUEL VALVE, FUEL CAN IMMEDIATELY START TO TRANSFER FORWARD THROUGH THE REFUEL GALLERY DRAIN VALVES INTO THE INNER TANKS. THIS IS BECAUSE THE REFUEL GALLERY DRAIN-VALVES ARE OPEN WHEN THE GALLERY IS NOT PRESSURIZED AND BECAUSE OF THE EFFECT OF GRAVITY ON THE FUEL IN THE TRIM TANK.

ALWAYS CLOSE THE TRIM-TANK REFUEL/DEFUEL VALVE IMMEDIATELY AFTER YOU SWITCH OFF THE TRIM TANK PUMPS. THIS WILL STOP THE TRANSFER OF FUEL CAUSED BY THE EFFECT OF GRAVITY.

(1)Equipment and Materials

ITEM	DESIGNATION
A.	Circuit Breaker Safety Clips and Tags
Referenced Procedures - 05-57-00, P. Block 1	Aircraft Stability

ITEM	DESIGNATION
- 05-57-11, P. Block 1	Aircraft Stability With Fuel in Trim Tank
- 07-11-00, P. Block 1	Jacking For Aircraft Maintenance
- 12-31-28, P. Block 201	Cold Weather Maintenance
- 12-31-31, P. Block 1	Cold Weather Maintenance Indicating/Recording Systems and Navigation
- 24-41-00, P. Block 301	AC External Power Control
- 27-40-00, P. Block 1	Trimmable Horizontal Stabilizer
- 28-00-00, P. Block 301	Fuel - General
- 28-42-38, P. Block 501	Fuel Quantity Computer (15QT)

(2)Job Set-Up

CAUTION : WHEN YOU MUST OPERATE THE REFUEL/DEFUEL PANEL 110VU, IN AMBIENT TEMPERATURES BELOW -40 DEG. C. (-40 DEG. F.), REFER TO THE PROCEDURE FOR THE PREPARATION FOR OPERATION OF THE REFUEL/DEFUEL PANEL 110VU, BELOW -40 DEG. C. (-40 DEG. F.), (REF. 12-31-28, P. BLOCK 201).

CAUTION : WHEN YOU OPERATE THE ECAM IN AMBIENT TEMPERATURES BELOW -15 DEG. C. (+5 DEG. F.), REFER TO THE PROCEDURE FOR INDICATING/RECORDING SYSTEMS AND NAVIGATION (REF. 12-31-31, P. BLOCK 1).

(a)Energize the aircraft electrical network (Ref. 24-41-00, P. Block 301).
(b)Not applicable.
(c)Make sure that the Trimmable Horizontal Stabilizer (THS) is in the 0 deg. position. If necessary, adjust manually on the pitch-trim control wheel (Ref. 27-40-00, P. Block 1).
(d)Make sure that the circuit breakers that follow, are closed:

PANEL	SERVICE	IDENT.	LOCATION
21VU	ECAM		Line 108
22VU	FUEL/TRIM TANK FWD XFR		Line 201
132VU	FUEL/FUELLING		Line 321
132VU	FUEL/FQI		Line 321
132VU	FUEL/TRIM TANK		Line 325

(e)On panel 430VU:
1 Make sure that the TRIM TK PUMP 1 and 2 p/bsw's are released (out) and that the OFF legends are on.
2 Make sure that the TRIM TK AUTO MODE p/bsw is released (out) and the FWD legend is off.
3 Make sure that the TRIM TK ISOL VALVE p/bsw is pushed (in).
(f)Start the ECAM RIGHT DU as follows:
1 On the flight compartment center-pedestal, push (in) the ECAM SGU 1 & 2 p/bsw's.
2 Turn the RIGHT DISPLAY rotary switch clockwise, to switch on the display and adjust the brightness to the required level.

3 Push (in) the FUEL p/bsw to call up the fuel page.

(g)Do the functional test of the Fuel Quantity Computer (15QT) (Ref. 28-42-38, P. Block 501).

NOTE : The refuel panel door 144DR, can be shut when you do step (g).

CAUTION : DO NOT CLOSE THE ACCESS DOOR 144DR OR OPERATE THE ACCESS DOOR MICROSWITCH, UNTIL THE FUEL TRANSFER IS COMPLETED.

(h)Open the access door 144DR to the refuel/defuel panel 110VU.

NOTE : The trim-tank isolation-valve actuator will now move the isolation valve to the open position. On panel 430VU, the flowbar in the TRIM TK ISOL VALVE p/bsw will come on.

(j)Not applicable.

(k)To transfer the fuel into the center tank by use of the:
- refuel/defuel valves and the trim tank pumps, then do step (3)
- TRIM TK AUTO MODE p/bsw and the trim tank pumps, then do step (4).

(3)Forward fuel transfer by use of the refuel/defuel valves and the trim tank pumps.

NOTE : In the procedure that follows, fuel is transferred from the trim tank into the center tank.

(a)Open, safety and tag the circuit breakers that follow:

PANEL	SERVICE	IDENT.	LOCATION
22VU	FUEL/TRIM TANK/FWD XFR/AUX VALVE	2QL	201/J21
132VU	FUEL/TRIM TANK/FWD XFR/MAIN VALVE	1QL	325/K53

(b)Make sure that the circuit breakers that follow are closed:

PANEL	SERVICE	IDENT.	LOCATION
22VU	FUEL/TRIM TANK/FWD XFR PUMP 1/CTL	3QN	201/J22
22VU	FUEL/TRIM TANK/FWD XFR PUMP 1/WARN	5QN	201/J23
101VU	FUEL/TRIM TANK PUMP 1 SUPPLY	1QN	GEN 1/B01
101VU	FUEL/TRIM TANK PUMP 2 SUPPLY	2QN	GEN 2/C02
132VU	FUEL/TRIM TANK/XFR PUMP 2/WARN	6QN	325/K54
132VU	FUEL/TRIM TANK/XFR PUMP 2/CTL	4QN	325/K55

(c)On panel 110VU:

1 Make sure that the PWR SUPPLY switch is in the NORM and guarded position.

2 Make sure that the MODE SELECTOR/SELECT switch is in the OFF position and the guard is lowered.

3 Lift the guards and put all the REFUEL-DEFUEL-VALVES switches in the

SHUT position.

CAUTION : WITH THE MODE SELECTOR/SELECT SWITCH IN THE DEFUEL POSITION, THE AUTOMATIC SHUT-OFF OF THE FUEL FLOW INTO THE CENTER TANK WHEN IT REACHES HIGH LEVEL, IS NOT STOPPED BY THE HIGH LEVEL SENSORS. MAKE SURE THAT THE FUEL TRANSFER FROM THE TRIM TANK DOES NOT EXCEED THE MAXIMUM CAPACITY OF THE CENTER TANK.

4 Lift the guard and put the MODE SELECTOR/SELECT switch in the DEFUEL position.
5 Put the REFUEL-DEFUEL-VALVES switches for the CTR TK and the TRIM TK in the OPEN position.

(d)On panel 430VU:
1 Push (in) the TRIM TK PUMP 1 and 2 p/bsw's:
- the OFF legends go off
- the pumps run.

(e)On the ECAM RIGHT DU fuel page, monitor the fuel transfer. Make sure that:
- the center tank contents, increase
- the trim tank contents, decrease.

(f)When the fuel transfer is complete, release (out) the TRIM TK PUMP 1 and 2 p/bsw's on panel 430VU:
- the OFF legends come on
- the pumps stop.

(g)On panel 110VU:
1 Put the REFUEL-DEFUEL-VALVES switches for the TRIM TK and the CTR TK in the SHUT position.
2 Put the MODE SELECTOR/SELECT switch in the OFF and guarded position.

(h)Continue with the close-up procedure (Ref. para. 9. B. step (6)).

(4)Forward fuel transfer by use of the TRIM TK AUTO MODE p/bsw and the trim tank pumps.

NOTE : In the procedure that follows, fuel is transferred from the trim tank into the center tank.

(a)Make sure that the circuit breakers that follow, are closed:

PANEL	SERVICE	IDENT.	LOCATION
22VU	FUEL/TRIM TANK/FWD XFR PUMP 1/CTL	3QN	201/J22
22VU	FUEL/TRIM TANK/FWD XFR PUMP 1/WARN	5QN	201/J23
22VU	FUEL/TRIM TANK/FWD XFR/AUX VALVE	2QL	201/J21
101VU	FUEL/TRIM TANK/PUMP 1/SUPPLY	1QN	GEN 1/B01
101VU	FUEL/TRIM TANK/PUMP 2/SUPPLY	2QN	GEN 2/C02
132VU	FUEL/TRIM TANK/XFR PUMP 2/WARN	6QN	325/K54
132VU	FUEL/TRIM TANK/XFR PUMP 2/CTL	4QN	325/K55
132VU	FUEL/TRIM TANK/FWD XFR/MAIN VALVE	1QL	325/K53

CAUTION : WITH THE MODE SELECTOR/SELECT SWITCH IN THE OFF POSITION, THE AUTOMATIC SHUT-OFF OF THE FUEL FLOW INTO THE CENTER-TANK, WHEN IT REACHES HIGH LEVEL, IS NOT STOPPED BY THE HIGH LEVEL SENSORS. MAKE SURE THAT THE FUEL TRANSFER FROM THE TRIM-TANK, DOES NOT EXCEED THE CENTER-TANK MAXIMUM CAPACITY.

(b)On panel 110VU:
1 Make sure that the PWR SUPPLY switch is in the NORM and guarded position.
2 Lift the guards and put all the REFUEL-DEFUEL-VALVES switches in the SHUT position.
(c)On panel 430VU:
1 Push (in), the TRIM TK AUTO MODE p/bsw:
- the TRIM TK AUTO MODE FWD legend comes on
- in the center tank, the transfer control valve and the auxiliary transfer valve open.
2 Push (in) the TRIM TK PUMP 1 and 2 p/bsw's:
- the OFF legends go off
- the pumps run.
(d)On the ECAM RIGHT DU, monitor the fuel transfer. Make sure that:
- the center tank contents, increase
- the trim tank contents, decrease.
(e)When the fuel transfer is complete, on panel 430VU:
1 Release (out) the TRIM TK PUMP 1 and 2 p/bsw's:
- the OFF legends come on
- the pumps stop.
2 Release (out), the TRIM TK AUTO MODE p/bsw:
- the TRIM TK AUTO MODE FWD legend goes off
- in the center tank, the transfer control valve and the auxiliary transfer valve close.
(f)Continue with the close-up (Ref. Para. 9. B. step (6)).

(5)If the trim tank fuel is to be transferred into the inner or outer tank(s), continue as follows:
(a)Open, safety and tag the circuit breakers that follow:

PANEL	SERVICE	IDENT.	LOCATION
22VU	FUEL/TRIM TANK/FWD XFR/AUX VALVE	2QL	201/J21
132VU	FUEL/TRIM TANK/FWD XFR/MAIN VALVE	1QL	325/K53

(b)Make sure that the circuit breakers that follow are closed:

PANEL	SERVICE	IDENT.	LOCATION
22VU	FUEL/TRIM TANK/FWD XFR PUMP 1/CTL	3QN	201/J22
22VU	FUEL/TRIM TANK/FWD XFR PUMP 1/WARN	5QN	201/J23
101VU	FUEL/TRIM TANK PUMP 1 SUPPLY	1QN	GEN 1/B01
101VU	FUEL/TRIM TANK PUMP 2 SUPPLY	2QN	GEN 2/C02
132VU	FUEL/TRIM TANK/XFR PUMP 2/WARN	6QN	325/K54
132VU	FUEL/TRIM TANK/XFR PUMP 2/CTL	4QN	325/K55

(c)On panel 110VU:
1 Make sure that the MODE SELECTOR/SELECT switch is in the OFF position and the guard is lowered.
2 Lift the guards and put all the REFUEL-DEFUEL-VALVES switches in the SHUT position.

CAUTION : WITH THE MODE SELECTOR/SELECT SWITCH IN THE DEFUEL POSITION, THE AUTOMATIC SHUT-OFF OF THE FUEL FLOW TO THE TANK(S) TO RECEIVE THE FUEL IS NOT STOPPED, WHEN IT REACHES HIGH LEVEL, BY THE RELATED HIGH LEVEL SENSORS. MAKE SURE THAT THE CAPACITY OF THE TANK(S) TO RECEIVE THE FUEL, IS SUFFICIENT.

3 Lift the guard and put the MODE SELECTOR/SELECT switch in the DEFUEL position.
4 Put the REFUEL-DEFUEL-VALVES switches for the tank(s) that are to receive fuel and the TRIM TK, in the OPEN position.
(d)On Panel 430VU:
1 Push (in) the TRIM TK PUMP 1 and 2 p/bsw's:
- the OFF legends go off
- the pumps run.
(e)On the ECAM RIGHT DU, monitor the fuel transfer. Make sure that:
- the contents of the tank(s) that receive fuel, increase
- the trim tank contents, decrease.
(f)When the fuel transfer is complete, on panel 430VU:
1 Release (out) the TRIM TK PUMP 1 and 2 p/bsw's:
- the OFF legends come on
- the pumps stop.
(g)On panel 110VU:
1 Put the REFUEL-DEFUEL-VALVES switches for the TRIM TK and the tank(s) that have received fuel, in the SHUT position.
2 Put the MODE SELECTOR/SELECT switch in the OFF and guarded position.

(6)Close-Up
(a)On panel 430VU, make sure that:
- the TRIM TK PUMP 1 and 2 p/bsw's are released (out) and the OFF legends are on
- the TRIM TK AUTO MODE p/bsw is released (out) and the FWD legend is off.
(b)Make sure that the circuit breakers 1QL (line 325/K53) and 2QL (line 201/J21) are closed.

(c)On the flight compartment center-pedestal, turn the ECAM RIGHT DU rotary switch to OFF.
(d)Release (out) the ECAM SGU 1 and 2 p/bsw's.
(e)On panel 110VU:
1 Put all the REFUEL-DEFUEL-VALVES switches in the NORM position and lower the guards.
2 Make sure that the MODE SELECTOR/SELECT switch is in the OFF position and the guard is lowered.
(f)Close the access door 144DR.

NOTE : The trim-tank isolation-valve actuator will now move the isolation valve to the SHUT position. On panel 430VU, the flowbar in the TRIM TK ISOL VALVE p/bsw, will go off.

(g) De-energize the aircraft electrical network (Ref. 24-41-00, P. Block 301).

**ON A/C 001-100,

C. Forward Pressure Transfer without ECAM (Ref. Fig. 304)

**ON A/C 101-200,

C. Forward Pressure Transfer without ECAM (Ref. Fig. 305)

**ON A/C 101-200,

Post SB 28-2108 For A/C 101-200,

C. Forward Pressure Transfer without ECAM (Ref. Fig. 306)

**ON A/C 001-100,

(Ref. Fig. 310)

**ON A/C 101-200,

(Ref. Fig. 311)

**ON A/C 101-200,

Post SB 28-2108 For A/C 101-200,

(Ref. Fig. 312)

**ON A/C ALL

CAUTION : WHEN YOU OPEN THE TRIM TANK REFUEL/DEFUEL VALVE AND A REFUEL/DEFUEL VALVE FOR ANOTHER TANK, FUEL CAN START TO TRANSFER FORWARD IMMEDIATELY. THIS IS BECAUSE OF THE EFFECT OF GRAVITY ON THE FUEL IN THE TRIM TANK.

WHEN YOU OPEN THE TRIM TANK REFUEL/DEFUEL VALVE, FUEL CAN IMMEDIATELY START TO TRANSFER FORWARD THROUGH THE REFUEL GALLERY DRAIN VALVES INTO THE INNER TANKS. THIS IS BECAUSE THE REFUEL GALLERY DRAIN-VALVES ARE OPEN WHEN THE GALLERY IS NOT PRESSURIZED AND BECAUSE OF THE EFFECT OF GRAVITY ON THE FUEL IN THE TRIM TANK.

ALWAYS CLOSE THE TRIM TANK REFUEL/DEFUEL VALVE IMMEDIATELY AFTER YOU SWITCH OFF THE TRIM TANK PUMPS. THIS WILL STOP THE TRANSFER OF FUEL CAUSED BY THE EFFECT OF GRAVITY.

(1)Equipment and Materials

ITEM	DESIGNATION
A.	Circuit Breaker Safety Clips and Tags
Referenced Procedures - 05-57-00, P. Block 1	Aircraft Stability

ITEM	DESIGNATION
- 05-57-11, P. Block 1	Aircraft Stability With Fuel in Trim Tank
- 07-11-00, P. Block 1	Jacking For Aircraft Maintenance
- 12-31-28, P. Block 201	Cold Weather Maintenance
- 24-41-00, P. Block 301	AC External Power Control
- 27-40-00, P. Block 1	Trimmable Horizontal Stabilizer
- 28-00-00, P. Block 301	Fuel - General
- 28-42-38, P. Block 501	Fuel Quantity Computer (15QT)
- 28-42, P. Block 1	TSM - Fault Symptoms

(2)Job Set-Up

CAUTION : WHEN YOU MUST OPERATE THE REFUEL/DEFUEL PANEL 110VU, IN AMBIENT TEMPERATURES BELOW -40 DEG. C. (-40 DEG. F.), REFER TO THE PROCEDURE FOR THE PREPARATION FOR OPERATION OF THE REFUEL/DEFUEL PANEL 110VU, BELOW -40 DEG. C. (-40 DEG. F.), (REF. 12-31-28, P. BLOCK 201).

(a)Energize the aircraft electrical network (Ref. 24-41-00, P. Block 301).
(b)Not applicable.
(c)Make sure that the Trimmable Horizontal Stabilizer (THS) is in the 0 deg. position. If necessary, adjust manually on the pitch-trim control wheel (Ref. 27-40-00, P. Block 1).
(d)Make sure that the circuit breakers that follow, are closed:

PANEL	SERVICE	IDENT.	LOCATION
22VU	FUEL/TRIM TANK/FWD XFR		Line 201
132VU	FUEL/FUELLING		Line 321
132VU	FUEL/FQI		Line 321
132VU	FUEL/TRIM TANK		Line 325

(e)On panel 430VU:
1 Make sure that the TRIM TK PUMP 1 and 2 p/bsw's are released (out) and the OFF legends are on.
2 Make sure that the TRIM TK AUTO MODE p/bsw is released (out) and the FWD legend is off.
3 Make sure that the TRIM TK ISOL VALVE p/bsw is pushed (in).

CAUTION : DO NOT CLOSE THE ACCESS DOOR 144DR OR OPERATE THE ACCESS DOOR MICROSWITCH, UNTIL THE FUEL TRANSFER IS COMPLETED.

(f)Open the access door 144DR to the refuel/defuel panel 110VU.

NOTE : The trim-tank isolation-valve actuator will now move the isolation valve to the open position. On panel 430VU, the flowbar in the TRIM TK ISOL VALVE p/bsw, will come on.

(g)Not applicable.

(h)On panel 110VU:
- Make sure that the PWR SUPPLY switch is in the the NORM position and guarded.

(j)Do the functional test of the Fuel Quantity Computer (15QT) (Ref. 28-42-38, P. Block 501).

(k)To transfer the fuel into the center tank by use of the:
- refuel/defuel valves and the trim tank pumps, then do step (3)
- TRIM TK AUTO MODE p/bsw and the trim tank pumps, then do step (4).

(3)Forward fuel transfer by use of the refuel/defuel valves and the trim tank pumps.

NOTE : In the procedure that follows, fuel is transferred from the trim tank into the center tank.

(a)Open, safety and tag the circuit breakers that follow:

PANEL	SERVICE	IDENT.	LOCATION
22VU	FUEL/TRIM TANK FWD XFR/AUX VALVE	2QL	201/J21
132VU	FUEL/TRIM TANK FWD XFR/MAIN VALVE	1QL	325/K53

(b)Make sure that the circuit breakers that follow are closed:

PANEL	SERVICE	IDENT.	LOCATION
22VU	FUEL/TRIM TANK/FWD XFR PUMP 1/CTL	3QN	201/J22
22VU	FUEL/TRIM TANK/FWD XFR PUMP 1/WARN	5QN	201/J23
101VU	FUEL/TRIM TANK PUMP 1 SUPPLY	1QN	GEN 1/B01
101VU	FUEL/TRIM TANK PUMP 2 SUPPLY	2QN	GEN 2/C02
132VU	FUEL/TRIM TANK/XFR PUMP 2/WARN	6QN	325/K54
132VU	FUEL/TRIM TANK/XFR PUMP 2/CTL	4QN	325/K55

(c)On panel 110VU,

1 Make sure that the MODE SELECTOR/SELECT switch is in the OFF position and the guard is lowered.

2 Put the FUEL QTY/FQI DISPLAY switch in the CTR position and record the center tank contents.

3 Put the FUEL QTY/FQI DISPLAY switch in the TT position.

4 Lift the guards and put all the REFUEL-DEFUEL-VALVES switches in the SHUT position.

CAUTION : WITH THE MODE SELECTOR/SELECT SWITCH IN THE DEFUEL POSITION, THE AUTOMATIC SHUT-OFF OF THE FUEL FLOW INTO THE CENTER TANK WHEN IT REACHES HIGH LEVEL, IS NOT STOPPED BY THE HIGH LEVEL SENSORS. MAKE SURE THAT THE FUEL TRANSFER FROM THE TRIM TANK DOES NOT EXCEED THE CENTER TANK MAXIMUM CAPACITY.

5 Lift the guard and put the MODE SELECTOR/SELECT switch in the DEFUEL position.

6 Put the REFUEL-DEFUEL-VALVES switches for the CTR TK and the TRIM TK

in the OPEN position.

(d)On panel 430VU:

1 Push (in) the TRIM TK PUMP 1 and 2 p/bsw's:
- the OFF legends go off
- the pumps run.

(e)Use the FUEL QTY/FQI DISPLAY switch on panel 110VU, to monitor the fuel transfer on the FUEL QTY indicator. Make sure that:
- the center tank contents, increase
- the trim tank contents, decrease.

NOTE : If any of the FUEL QTY indicator displays, show blanks or dashes, refer to the TSM 28-42.

(f)When the fuel transfer is complete, release (out) the TRIM TK PUMP 1 and 2 p/bsw's on panel 430VU:
- the OFF legends come on
- the pumps stop.

(g)On panel 110VU:

1 Put the REFUEL-DEFUEL-VALVES switches for the TRIM TK and the CTR TK in the SHUT position.

2 Put the MODE SELECTOR/SELECT switch in the OFF and guarded position.

(h)Continue with the close-up procedure (Ref. Para. 9. C. step (6)).

(4)Forward fuel transfer by use of the TRIM TK AUTO MODE p/bsw and the trim tank pumps.

NOTE : In the procedure that follows, fuel is transferred from the trim tank into the center tank.

(a)Make sure that the circuit breakers that follow, are closed:

PANEL	SERVICE	IDENT.	LOCATION
22VU	FUEL/TRIM TANK FWD XFR/AUX VALVE	2QL	201/J21
22VU	FUEL/TRIM TANK/FWD XFR PUMP 1/CTL	3QN	201/J22
22VU	FUEL/TRIM TANK/FWD XFR PUMP 1/WARN	5QN	201/J23
101VU	FUEL/TRIM TANK/PUMP 1/SUPPLY	1QN	GEN 1/B01
101VU	FUEL/TRIM TANK/PUMP 2/SUPPLY	2QN	GEN 2/C02
132VU	FUEL/TRIM TANK FWD XFR/MAIN VALVE	1QL	325/K53
132VU	FUEL/TRIM TANK/XFR PUMP 2/WARN	6QN	325/K54
132VU	FUEL/TRIM TANK/XFR PUMP 2/CTL	4QN	325/K55

CAUTION : WITH THE MODE SELECTOR/SELECT SWITCH IN THE OFF POSITION, THE AUTOMATIC SHUT-OFF OF THE FUEL FLOW INTO THE CENTER TANK WHEN IT REACHES HIGH LEVEL, IS NOT STOPPED BY THE HIGH LEVEL SENSORS. MAKE SURE THAT THE FUEL TRANSFER FROM THE TRIM TANK, DOES NOT EXCEED THE MAXIMUM CAPACITY OF THE CENTER TANK.

(b)On panel 110VU:

1 Put the FUEL QTY/FQI DISPLAY switch in the CTR position and record the center tank contents.

2 Put the FUEL QTY/FQI DISPLAY switch in the TT position.
3 Lift the guards and put all the REFUEL-DEFUEL-VALVES switches in the SHUT position.

(c)On panel 430VU:
1 Push (in), the TRIM TK AUTO MODE p/bsw:
- the TRIM TK AUTO MODE FWD legend comes on
- in the center tank, the transfer control valve and the auxiliary transfer valve open.
2 Push (in) the TRIM TK PUMP 1 and 2 p/bsw's:
- the OFF legends go off
- the pumps run.

(d)Use the FUEL QTY/FQI DISPLAY switch on panel 110VU, to monitor the fuel transfer. Make sure that:
- the center tank contents increase
- the trim tank contents decrease.

NOTE : If any of the FUEL QTY indicator displays, show blanks or dashes, refer to the TSM 28-42.

(e)When the fuel transfer is complete, on panel 430VU:
1 Release (out) the TRIM TK PUMP 1 and 2 p/bsw's:
- the OFF legends come on
- the pumps stop.
2 Release (out), the TRIM TK AUTO MODE p/bsw:
- the TRIM TK AUTO MODE FWD legend goes off
- in the center tank, the transfer control valve and the auxiliary transfer valve close.

(f)Continue with the close-up procedure (Ref. Para. 9. C. step (6)).

(5)If the trim tank fuel is to be transferred into the inner or outer tanks, continue as follows:
(a)Open, safety and tag the circuit breakers that follow:

PANEL	SERVICE	IDENT.	LOCATION
22VU	FUEL/TRIM TANK FWD XFR/AUX VALVE	2QL	201/J21
132VU	FUEL/TRIM TANK FWD XFR/MAIN VALVE	1QL	325/K53

(b)Make sure that the circuit breakers that follow are closed:

PANEL	SERVICE	IDENT.	LOCATION
22VU	FUEL/TRIM TANK/FWD XFR PUMP 1/CTL	3QN	201/J22
22VU	FUEL/TRIM TANK/FWD XFR PUMP 1/WARN	5QN	201/J23
101VU	FUEL/TRIM TANK PUMP 1 SUPPLY	1QN	GEN 1/B01
101VU	FUEL/TRIM TANK PUMP 2 SUPPLY	2QN	GEN 2/C02
132VU	FUEL/TRIM TANK/XFR PUMP 2/WARN	6QN	325/K54
132VU	FUEL/TRIM TANK/XFR PUMP 2/CTL	4QN	325/K55

(c)On panel 110VU:
1 Make sure that the MODE SELECTOR/SELECT switch is in the OFF

position and the guard is lowered.
2 Lift the guards and put all the REFUEL-DEFUEL-VALVES switches in the SHUT position.

CAUTION : WITH THE MODE SELECTOR/SELECT SWITCH IN THE DEFUEL POSITION, THE AUTOMATIC SHUT-OFF OF THE FUEL FLOW INTO THE INNER OR OUTER TANKS, WHEN THEY REACH HIGH LEVEL, IS NOT STOPPED BY THE RELATED HIGH LEVEL SENSORS. MAKE SURE THAT THE FUEL TRANSFER FROM THE TRIM TANK, DOES NOT EXCEED THE MAXIMUM CAPACITY OF THE INNER OR OUTER TANK.

3 Lift the guard and put the MODE SELECTOR/SELECT switch in the DEFUEL position.
4 Put the REFUEL-DEFUEL-VALVES switches for the tanks that are to receive the fuel and the TRIM TK, in the OPEN position.

(d)On panel 430VU:
1 Push (in) the TRIM TK PUMP 1 and 2 p/bsw's:
- the OFF legends go off
- the pumps run.

(e)Use the FUEL QTY/FQI DISPLAY switch on panel 110VU, to monitor the fuel transfer on the FUEL QTY indicator. Make sure that:
- the contents of the tank(s) that receive fuel, increase
- the trim tank contents, decrease.

NOTE : If any of the FUEL QTY indicator displays, show blanks or dashes, refer to the TSM 28-42.

(f)When the fuel transfer is complete, on panel 430VU:
1 Release (out) the TRIM TK PUMP 1 and 2 p/bsw's:
- the OFF legends come on
- the pumps stop.

(g)On panel 110VU:
1 Put the REFUEL-DEFUEL-VALVES switches for the TRIM TK and the tank(s) that have received fuel in the SHUT position.
2 Put the MODE SELECTOR/SELECT switch in the OFF and guarded position.

(6)Close-Up
(a)On panel 430VU, make sure that:
- the TRIM TK PUMP 1 and 2 p/bsw's are released (out) and the OFF legends are on
- the TRIM TK AUTO MODE p/bsw is released (out) and the FWD legend is off.

(b)Make sure that circuit breaker 2QL (line 201/J21) on panel 22VU, and circuit breaker 1QL (line 325/K53) on panel 132VU, are closed.

(c)On panel 110VU:
1 Put all the REFUEL-DEFUEL-VALVES switches in the NORM position and lower the guards.
2 Make sure that the MODE SELECTOR/SELECT switch is in the OFF position and the guard is lowered.

**ON A/C 001-100,

3 Put the FUEL QTY switch in the CTR & TT position.

**ON A/C 101-200,

3 Put the FQI DISPLAY switch in the CTR & AUX & TT position.

**ON A/C 101-200,

Post SB 28-2108 For A/C 101-200,

3 Put the FQI DISPLAY switch in the CTR-TT & ACT position.

**ON A/C ALL

(d)Close the access door 144DR.

NOTE : The trim-tank isolation-valve actuator will now move the isolation valve to the SHUT position. On panel 430VU, the flowbar in the TRIM TK ISOL VALVE p/bsw, will go off.

(e)De-energize the aircraft electrical network (Ref. 24-41-00, P. Block 301).

**ON A/C 001-100,

D. Rearward Transfer with ECAM (Ref. Fig. 304)

**ON A/C 101-200,

D. Rearward Transfer with ECAM (Ref. Fig. 305)

**ON A/C 101-200,

Post SB 28-2108 For A/C 101-200,

D. Rearward Transfer with ECAM (Ref. Fig. 306)

**ON A/C 001-100,

(Ref. Fig. 310)

**ON A/C 101-200,

(Ref. Fig. 311)

**ON A/C 101-200,

Post SB 28-2108 For A/C 101-200,

(Ref. Fig. 312)

**ON A/C ALL

CAUTION : WHEN YOU OPEN THE TRIM TANK REFUEL/DEFUEL VALVE, FUEL CAN IMMEDIATELY START TO TRANSFER FORWARD THROUGH THE REFUEL GALLERY DRAIN VALVES INTO THE INNER TANKS. THIS IS BECAUSE THE REFUEL GALLERY DRAIN-VALVES ARE OPEN WHEN THE GALLERY IS NOT PRESSURIZED AND BECAUSE OF THE EFFECT OF GRAVITY ON THE FUEL IN THE TRIM TANK.

(1)Equipment and Materials

ITEM	DESIGNATION
A.	Circuit Breaker Safety Clips and Tags
Referenced Procedures	
- 05-57-00, P. Block 1	Aircraft Stability
- 05-57-11, P. Block 1	Aircraft Stability
- 07-11-00, P. Block 1	Jacking For Aircraft Maintenance
- 12-11-28, P. Block 301	Replenishing of Fuel Tanks
- 12-31-28, P. Block 201	Cold Weather Maintenance
- 12-31-31, P. Block 1	Cold Weather Maintenance Indicating/Recording Systems and Navigation
- 24-41-00, P. Block 301	AC External Power Control
- 28-00-00, P. Block 301	Fuel - General
- 28-42-38, P. Block 501	Fuel Quantity Computer (15QT)

WARNING : THE LEFT AND RIGHT INNER TANKS MUST BE FULL DURING REARWARD TRANSFER AND WHILE THE TRIM TANK CONTAINS FUEL.

FOLLOW THE AIRCRAFT STABILITY PRECAUTIONS (REF. 05-57-11, P. BLOCK 1), WHEN YOU DO A REARWARD FUEL TRANSFER TO THE TRIM TANK.

(2)Job Set-Up

CAUTION : WHEN YOU MUST OPERATE THE REFUEL/DEFUEL PANEL 110VU, IN AMBIENT TEMPERATURES BELOW -40 DEG. C. (-40 DEG. F.), REFER TO THE PROCEDURE FOR THE PREPARATION FOR OPERATION OF THE REFUEL/DEFUEL PANEL 110VU, BELOW -40 DEG. C. (-40 DEG. F.), (REF. 12-31-28, P. BLOCK 201).

CAUTION : WHEN YOU MUST OPERATE THE ECAM IN AMBIENT TEMPERATURES BELOW -15 DEG. C. (+5 DEG. F.), REFER TO THE PROCEDURE FOR INDICATING/ RECORDING SYSTEMS AND NAVIGATION (REF. 12-31-31, P. BLOCK 1).

(a)Energize the aircraft electrical network (Ref. 24-41-00, P. Block 301).
(b)Not applicable.
(c)Make sure that the circuit breakers that follow are closed:

PANEL	SERVICE	IDENT.	LOCATION
21VU	ECAM		Line 108
132VU	FUEL/FUELLING		Line 321
132VU	FUEL/FQI		Line 321
132VU	FUEL/CTR TK		Line 322
132VU	FUEL/CTR TK		Line 323
132VU	FUEL/INR TK		Line 322
132VU	FUEL/INR TK		Line 323
132VU	FUEL/X FEED VALVE		Line 324

(d)Activate the right ECAM DU:
1 On the flight compartment center-pedestal, push (in) the ECAM SGU 1 and 2 p/bsw.
2 Turn the RIGHT DISPLAY rotary switch clockwise, to switch on the display and adjust the brightness to the required level.
3 Push (in) the FUEL p/bsw to call up the fuel page.
(e)Do the functional test of the Fuel Quantity Computer (15QT) (Ref. 28-42-38, P. Block 501).

NOTE : The refuel panel door 144DR, can be shut when you do step (e).

(f)On panel 430VU:
1 Make sure that all the pump p/bsw's are released (out) and p/bsw OFF legends are on.
2 Make sure that all the INR TK ISOL VALVES p/bsw's are pushed (in) and the in-line flowbars are on.

3 Make sure that the TRIM TK AUTO MODE p/bsw is released (out) and the FWD legend is off.
4 Make sure that the OUTR TK and TRIM TK ISOL VALVES p/bsw's are released (out) and the OFF legends are on.
5 Push (in) the X FEED valve p/bsw. Make sure that the:
- cross-line flowbar goes off
- in-line flowbar comes on.

CAUTION : DO NOT CLOSE THE ACCESS DOOR 144DR OR OPERATE THE ACCESS DOOR MICROSWITCH UNTIL THE FUEL TRANSFER IS COMPLETED.

(g)Open the access door 144DR, to the refuel/defuel panel 110VU.

(h)Not applicable.
(j)On panel 110VU:
1 Make sure that the PWR SUPPLY switch is in the NORM and guarded position.
2 Put the FUEL QTY/FQI DISPLAY switch in the CTR position.
3 Make sure that there is sufficient fuel available for transfer from the center tank, and that the left and right inner tanks are full (L and R INNER TK HIGH LEVEL lights are on). Refuel if necessary (Ref. 12-11-28, P. Block 301).

**ON A/C 001-100,

4 Put the FUEL QTY switch in the CTR & TT position.

**ON A/C 101-200,

4 Put the FQI DISPLAY switch in the CTR & AUX & TT position.

**ON A/C 101-200,

Post SB 28-2108 For A/C 101-200,

4 Put the FQI DISPLAY switch in the CTR-TT & ACT position.

**ON A/C ALL

5 Make sure that the MODE SELECTOR/SELECT switch is in the OFF position and the guard is lowered.
6 Lift the guards and put all the REFUEL-DEFUEL-VALVES switches in the SHUT position.
7 Lift the guard and put the MODE SELECTOR/SELECT switch in the REFUEL position.
8 Put the TRIM TK REFUEL-DEFUEL-VALVES switch in the OPEN position.
9 Lift the guard and put the TRANSF. VALVE switch in the OPEN position. Check that the OPEN indicator light comes on.

(3)Procedure

NOTE : In the procedure that follows, fuel is transferred from the center tank into the trim tank.

(a)On panel 430VU:
1 Push (in) the L and R CTR TK PUMP p/bsw's. Make sure that:
- the OFF legends go off
- the FAULT legends do not stay on.

2 Push (in) the TRIM TK ISOL VALVE p/bsw. Make sure that:
- the OFF legend goes off
- the flowbar comes on.

(b)Monitor the fuel transfer on the RIGHT ECAM DU on the main instrument panel.

When the transfer is complete;

(c)On panel 430VU:
1 Release (out) the L and R CTR TK PUMP p/bsw's. Make sure that:
- the OFF legends come on
- the pumps stop.

2 Release (out) the TRIM TK ISOL VALVE p/bsw. Make sure that:
- the flowbar goes off
- the OFF legend comes on.

3 Release (out) the X FEED valve p/bsw. Make sure that:
- the in-line flowbar goes off
- the cross-line flowbar comes on.

(d)On panel 110VU:
1 Put the TRIM TK REFUEL-DEFUEL-VALVES switch in the SHUT position.
2 Put the MODE SELECTOR/SELECT switch in the OFF position and lower the guard.
3 Put all the REFUEL-DEFUEL-VALVES switches in the NORM position and lower the guards.
4 Put the TRANSF. VALVE switch in the CLOSED position and lower the guard. Make sure that the OPEN indicator light goes off.

(4)Close-Up
(a)Close the access door 144DR.

(b)On panel 430VU:
1 Push (in) the TRIM TK ISOL VALVE p/bsw.

NOTE : The isolation valve will not open because the refuel panel access door 144DR is closed.

2 Push (in) the OUTR TK ISOL VALVES p/bsw's. Make sure that:
- the OFF legends go off
- the flowbars come on.

(c)On the flight compartment center-pedestal, turn the ECAM RIGHT DU rotary switch to OFF.
(d)Release (out) the ECAM SGU 1 and 2 p/bsw's.
(e)De-energize the aircraft electrical network (Ref. 24-41-00, P. Block 301).

**ON A/C 001-100,

E. Rearward Transfer without ECAM (Ref. Fig. 304)

**ON A/C 101-200,

E. Rearward Transfer without ECAM (Ref. Fig. 305)

**ON A/C 101-200,

Post SB 28-2108 For A/C 101-200,

E. Rearward Transfer without ECAM (***//CHPO//***)

**ON A/C 001-100,

(Ref. Fig. 310)

**ON A/C 101-200,

(Ref. Fig. 311)

**ON A/C 101-200,

Post SB 28-2108 For A/C 101-200,

(Ref. Fig. 312)

**ON A/C ALL

CAUTION : WHEN YOU OPEN THE TRIM TANK REFUEL/DEFUEL VALVE, FUEL CAN IMMEDIATELY START TO TRANSFER FORWARD THROUGH THE REFUEL GALLERY DRAIN VALVES INTO THE INNER TANKS. THIS IS BECAUSE THE REFUEL GALLERY DRAIN-VALVES ARE OPEN WHEN THE GALLERY IS NOT PRESSURIZED AND BECAUSE OF THE EFFECT OF GRAVITY ON THE FUEL IN THE TRIM TANK.

(1)Equipment and Materials

ITEM	DESIGNATION
A.	Circuit Breaker Safety Clip and Tag
Referenced Procedures	
- 05-57-00, P. Block 1	Aircraft Stability
- 05-57-11, P. Block 1	Aircraft Stability
- 07-11-00, P. Block 1	Jacking For Aircraft Maintenance
- 12-11-28, P. Block 301	Replenishing of Fuel Tanks
- 12-31-28, P. Block 201	Cold Weather Maintenance
- 24-41-00, P. Block 301	AC External Power Control
- 28-00-00, P. Block 301	Fuel - General
- 28-42, P. Block 1	TSM - Fault Symptoms
- 28-42-38, P. Block 501	Fuel Quantity Computer (15QT)

WARNING : FOLLOW THE AIRCRAFT STABILITY PRECAUTIONS (REF. 05-57-11, P. BLOCK 1), WHILE REARWARD FUEL TRANSFER TO THE TRIM TANK CONTINUES.

LEFT AND RIGHT INNER TANKS MUST BE FULL DURING REARWARD TRANSFER AND WHILE THE TRIM TANK CONTAINS FUEL.

(2)Job Set-Up

CAUTION : WHEN YOU MUST OPERATE THE REFUEL/DEFUEL PANEL 110VU, IN AMBIENT TEMPERATURES BELOW -40 DEG. C. (-40 DEG. F.), REFER TO THE PROCEDURE FOR THE PREPARATION FOR OPERATION OF THE REFUEL/DEFUEL PANEL 110VU, BELOW -40 DEG. C. (-40 DEG. F.), (REF. 12-31-28, P. BLOCK 201).

(a)Energize the aircraft electrical network (Ref. 24-41-00, P. Block 301).
(b)Not applicable.
(c)Make sure that the cicuit breakers that follow are closed:

PANEL	SERVICE	IDENT.	LOCATION
132VU	FUEL/FUELLING		Line 321
132VU	FUEL/FQI		Line 321
132VU	FUEL/CTR TK		Line 322
132VU	FUEL/CTR TK		Line 323
132VU	FUEL/INR TK		Line 322
132VU	FUEL/INR TK		Line 323
132VU	FUEL/X FEED VALVE		Line 324

(d)On panel 430VU:
1 Make sure that all the PUMP p/bsw's are released (out) and the OFF legends are on.
2 Make sure that all the INR TK ISOL VALVES p/bsw's are pushed (in) and the in-line flowbars are on.
3 Make sure that the TRIM TK AUTO MODE p/bsw is released (out) and the FWD legend is off.
4 Make sure that the OUTR TK and TRIM TK ISOL VALVES p/bsw's are released (out) and the OFF legends are on.
5 Push (in) the X FEED valve p/bsw. Make sure that:
- The crossline flowbar goes off
- The in-line flowbar comes on.

CAUTION : DO NOT CLOSE THE ACCESS DOOR 144DR OR OPERATE THE ACCESS DOOR MICROSWITCH UNTIL THE FUEL TRANSFER IS COMPLETED

(e)Open the access door 144DR, to the refuel/defuel panel 110VU.
(f)Not applicable.
(g)On panel 110VU:
1 Make sure that the PWR SUPPLY switch is in the NORM and guarded position.

(h)Do the functional test of the Fuel Quantity Computer (15QT) (Ref. 28-42-38, P. Block 501).
(j)On panel 110VU:
1 Put the FUEL QTY/FQI DISPLAY switch in the CTR position.
(k)Make sure that there is sufficient fuel available for transfer from the center tank, and that the left and right inner tanks are full (L and R INNER TK HIGH LEVEL lights are on). Refuel if necessary (Ref. 12-11-28 P. Block 301). Leave the refuel panel door 144DR, open.
(l)On panel 110VU:

**ON A/C 001-100,

1 Put the FUEL QTY switch in the CTR & TT position.

**ON A/C 101-200,

1 Put the FQI DISPLAY switch in the CTR & AUX & TT position.

**ON A/C 101-200,

Post SB 28-2108 For A/C 101-200,

1 Put the FQI DISPLAY switch in the CTR-TT & ACT position.

**ON A/C ALL

2 Make sure that the MODE SELECTOR/SELECT switch is in the OFF position and the guard is lowered.
3 Lift the guards and put all the REFUEL-DEFUEL-VALVES switches in the SHUT position.
4 Lift the guard and put the MODE SELECTOR/SELECT switch in the REFUEL position.
5 Put the TRIM TK REFUEL-DEFUEL-VALVES switch in the OPEN position.
6 Lift the guard and put the TRANSF. VALVE switch in the OPEN position. Make sure that the OPEN indicator light comes on.

(3)Procedure

NOTE : In the procedure that follows, fuel is transferred from the center tank into the trim tank.

(a)On panel 430VU:
1 Push (in) the L and R CTR TK PUMP p/bsw's. Make sure that:
- the OFF legends go off
- the FAULT legends do not stay on.
2 Push (in) the TRIM TK ISOL VALVE p/bsw. Make sure that:
- the OFF legend goes off
- the flowbar comes on.
(b)On panel 110VU:
1 Put the FUEL QTY/FQI DISPLAY switch in the CTR and TT positions to

monitor the fuel transfer on the FUEL QTY indicator.

NOTE : If any of the FUEL QTY indicator displays, show blanks or dashes, refer to the TSM 28-42.

When the fuel transfer is complete:
(c)On panel 430VU:
1 Release (out) the L and R CTR TK PUMP p/bsw's. Make sure that:
- the OFF legends come on
- the pumps stop.
2 Release (out) the TRIM TK ISOL VALVE p/bsw. Make sure that:
- the flowbar goes off
- the OFF legend comes on.
3 Release (out) the X FEED valve p/bsw. Make sure that:
- the in-line flowbar goes off
- the cross-line flowbar comes on.
(d)On panel 110VU:
1 Put the TRIM TK REFUEL-DEFUEL-VALVES switch in the SHUT position.
2 Put the MODE SELECTOR/SELECT switch in the OFF position and lower the guard.
3 Put all the REFUEL-DEFUEL-VALVES switches in the NORM position and lower the guards.
4 Put the TRANSF. VALVE switch in the closed position and lower the guard. Make sure that the OPEN indicator light goes OFF.

**ON A/C 001-100,

5 Put the FUEL QTY switch in the CTR & TT position.

**ON A/C 101-200,

5 Put the FQI DISPLAY switch in the CTR & AUX & TT position.

**ON A/C 101-200,

Post SB 28-2108 For A/C 101-200,

5 Put the FQI DISPLAY switch in the CTR-TT & ACT position.

**ON A/C ALL

(4)Close-Up
(a)Close the access door 144DR.
(b)On panel 430VU:
1 Push (in) the TRIM TK ISOL VALVE p/bsw.

NOTE : The isolation valve will not open because the refuel-panel access door 144DR, is closed.

2 Push (in) the OUTR TK ISOL VALVES p/bsw's. Make sure that:
- the OFF legends go off
- the flowbars come on.

(c)De-energize the aircraft electrical network (Ref. 24-41-00, P. Block 301).

10. Not applicable.

11. Rearward Transfer to Trim Tank For Water Drainage

A. Equipment and Materials

ITEM	DESIGNATION
A.	Circuit Breaker Safety Clips and Tags
Referenced Procedures	
- 05-57-00, P. Block 1	Aircraft Stability
- 05-57-11, P. Block 1	Aircraft Stability With Fuel in Trim Tank
- 07-11-00, P. Block 1	Jacking For Aircraft Maintenance
- 12-11-28, P. Block 301	Replenishing of Fuel Tanks
- 12-31-28, P. Block 201	Cold Weather Maintenance
- 24-41-00, P. Block 301	AC External Power Control
- 28-42-38, P. Block 501	Fuel Quantity Computer (15QT)

B. Job Set-Up

CAUTION: THIS TRANSFER PROCEDURE MAY ONLY BE USED FOR MAINTENANCE PROCEDURES. IT MUST NEVER BE USED TO MANUALLY REFUEL THE TRIM TANK.

ONLY SUFFICIENT FUEL MAY BE TRANSFERRED REARWARDS TO ACHIEVE A TRIM TANK FUEL QUANTITY OF 700 Kg (1540 LB). TRANSFER MUST BE CAREFULLY MONITORED ON THE FUEL QUANTITY INDICATOR OR THE ECAM FUEL PAGE.

CAUTION : WHEN YOU MUST OPERATE THE REFUEL/DEFUEL PANEL 110VU, IN AMBIENT TEMPERATURES BELOW -40 DEG. C. (-40 DEG. F.), REFER TO THE PROCEDURE FOR THE PREPARATION FOR OPERATION OF THE REFUEL/DEFUEL PANEL 110VU, BELOW -40 DEG. C. (-40 DEG. F.), (REF. 12-31-28, P. BLOCK 201).

WARNING: TO MAKE SURE THAT THE AIRCRAFT STABILITY WILL BE SATISFACTORY AFTER FUEL TRANSFER, FOLLOW THE AIRCRAFT STABILITY PRECAUTIONS (REF. 05-57-11, P. BLOCK 1) BEFORE REARWARD FUEL TRANSFER TO THE TRIM TANK.

NOTE: Both the outer tanks and/or both the inner tanks and/or the center tank can be used as donor tanks to transfer fuel into the trim tank.

(1)Energize the aircraft electrical network (Ref. 24-41-00, P. Block 301).

(2)Not applicable.

(3)Do the functional test of the Fuel Quantity Computer (15QT) (Ref. 28-42-38, P. Block 501).

CAUTION: DO NOT CLOSE THE ACCESS DOOR 144DR OR OPERATE THE ACCESS DOOR MICROSWITCH UNTIL THE FUEL TRANSFER IS COMPLETED.

(4)Open the access door 144DR.
(4)On panel 110VU:
(a)Make sure that the PWR SUPPLY switch is in the NORM position and guarded.
(5)Make sure using the FUEL QTY indicator that the doner tank(s) has a combined fuel quantity of at least 3000 Kg (6600 LB). If necessary, refuel the doner tank(s) (Ref. 12-11-28, P. Block 301).

NOTE: A fuel quantity of 3000 Kg (6600 LB) is required in the doner tank(s) to transfer 700 Kg (1500 LB) to the trim tank. This is because:
- the refuel/defuel valves of the center tank and trim tank are open at the same time due to the interlocks.
- fuel flow into the center tank is greater than fuel flow into the trim tank.

(6)If the ECAM is to be used to monitor the fuel transfer then:
(a)On the flight compartment center pedestal, press (in) the ECAM SGU 1 & 2 P/BSW's.
(b)Turn the RIGHT DISPLAY rotary switch clockwise to switch on the display and adjust the brightness to the required level.
(c)Press (in) the FUEL P/BSW to call up the fuel page.
(7)On panel 110VU:
(a)Raise the guard and place the MODE SELECTOR switch in the REFUEL position.
(b)Raise the guards and put all the REFUEL-DEFUEL VALVES switches in the SHUT position. Put the CTR TK and the TRIM TK REFUEL-DEFUEL-VALVES switches in the OPEN position.

WARNING: DISCONNECT ANY OF THE EXTERNAL REFUELING EQUIPMENT CONNECTED TO THE AIRCRAFT BEFORE OPENING THE TRANSFER VALVE.

(c)Raise the guard and put the TRANSF. VALVE switch in the OPEN position. Make sure that the OPEN indicator light comes on.

NOTE: The transfer valve will only open when the trim tank is empty or the inner tanks are refueled to high level. If the trim tank contains fuel, defuel or transfer fuel (Ref. Para's 3. thru 9.) until the low level sensors are dry and the FUEL QTY indicator shows empty.

(8)Open, safety and tag the following circuit breakers:

PANEL	SERVICE	IDENT.	LOCATION
132VU	FUEL/FUELLING XFR VALVE	2QU	321/P55
132VU	FUEL/AUTO FEED/CTL	65QA	323/M55

C. Procedure

(1)On panel 430VU:

Press (in) the X FEED valve P/BSW. Make sure that:

- the cross-line flowbar goes off
- the in-line flowbar comes on.

(a)If the wing tanks are to be the donor tanks:

1 Make sure that the outer and inner tank ISOL VALVES P/BSWs are pressed (in) and the in-line flowbars are on.

(b)If the outer and inner tanks are to be the donor tanks:

1 Press (in) the OUTR, INR and CTR TK PUMP P/BSW's:

- the OFF legends go off.
- the LO PR/FAULT legends come on momentarily then go off as the pumps run.

(c)If only the inner tanks are to be the doner tanks:

1 Press (in) the INR and CTR TK PUMP P/BSW's:

- the OFF legends go off.
- the FAULT legends come on momentarily and then go off as the pumps run.

(d)If only the center tank is to be the doner tank:

1 Press (in) the CTR TK PUMP P/BSW's:

- the OFF legends go off.
- the FAULT legends come on momentarily and then go off as the pumps run.

(2)If the FUEL QTY indicator on panel 110VU is to be used to monitor the fuel transfer:

(a)Place/hold the FUEL QTY/FQI DISPLAY switch in the TT position.

(3)Monitor the trim tank contents on the FUEL QTY indicator on panel 110VU, or on the ECAM fuel page on the main instrument panel.

(4)When the trim tank fuel quantity reaches 700 Kg (1500 LB) on panel 430VU:

(a)Release (out) all the PUMP pushbutton switches selected in step (1) (b) or (1) (c) or (1) (d).

1 The pumps stop.

2 The OFF legends come on.

(b)Release (out) the X FEED valve P/BSW. Make sure that:

1 The In-line flowbar goes off.

2 The cross-line flowbar comes on.

(c)On panel 110VU, put the CTR TK and the TRIM TK REFUEL-DEFUEL-VALVES switches in the SHUT position.

D. Close-Up

(1)On panel 132VU, remove the safety clips and tags and close circuit breakers 2QU (line 321/P55) and 65QA (line 323/M55).

NOTE: Transfer valve closes.

(2)If required, defuel or transfer fuel from trim tank (Ref. Para's 3. thru 9).
(3)If ECAM fuel page used to monitor trim tank contents, perform the following:
(a)On flight compartment center pedestal, turn ECAM RIGHT DISPLAY rotary switch to OFF.
(b)Release (out) ECAM SGU 1 & 2 pushbutton switches.

**ON A/C 001-100,

(4)On panel 110VU:
(a)If FUEL QTY indicator used to monitor trim tank contents; release FUEL QTY switch to CTR & TT position.

**ON A/C 101-200,

(4)On panel 110VU:
(a)If FUEL QTY indicator used to monitor trim tank contents; place FQI DISPLAY switch in CTR & AUX & TT position.

**ON A/C 101-200,

Post SB 28-2108 For A/C 101-200,

(4)On panel 110VU:
(a)If FUEL QTY indicator used to monitor trim tank contents; place FQI DISPLAY switch in CTR-TT & ACT position.

**ON A/C ALL

(b)Put the TRANSF. VALVE switch in the CLOSED and guarded position. Make sure that the OPEN indicator light goes off.
(c)Put the MODE SELECTOR/SELECT switch in the OFF and guarded position.
(d)Put all the REFUEL-DEFUEL-VALVES switches in the NORM and guarded position.

(5)Close access door 144DR.

(6)Not applicable.

(7)De-energize the aircraft electrical network (Ref. 24-41-00, P. Block 301).

12.Refuel of Trim Tank to Test The TRIM TANK Naca Vent Seal

WARNING : THIS REFUEL PROCEDURE MAY ONLY BE USED TO TEST THE TRIM-TANK NACA VENT SEAL. ONLY LOAD SUFFICIENT FUEL INTO THE TRIM TANK TO ACTIVATE THE TRIM TANK OVERFLOW SENSOR. THE TRANSFER MUST BE CAREFULLY MONITORED ON THE FUEL QUANTITY INDICATOR ON REFUEL PANEL 110VU.

A. Equipment and Materials

ITEM	DESIGNATION
A.	Access Platform 4 m (13 ft)
B.	Access Platform 2.5 m (8 ft)
C.	Access Platform 6 m (19.6 ft)
D.	Tanker, Capable of 3.45 bar (50 psi) Delivery
E.	Warning Notices - No Smoking
Referenced Procedures	
- 05-57-00, P. Block 1	Aircraft Stability
- 05-57-11, P. Block 1	Aircraft Stability With Fuel in Trim Tank
- 07-11-00, P. Block 1	Jacking For Aircraft Maintenance
- 12-31-28, P. Block 201	Cold Weather Maintenance
- 24-41-00, P. Block 301	AC External Power Control
- 28-00-00, P. Block 301	Fuel - General
- 28-13-00, P. Block 501	External Ventilation System
- 28-25-11, P. Block 401	Refuel/Defuel Coupling
- 28-42-38, P. Block 501	Fuel Quantity Computer (15QT)
- 32-12-11, P. Block 301	Main Gear - Main Door
- 55-00-00, P. Block 301	Stabilizers - Standard Warnings and Procedures

B. Job Set-Up

CAUTION : WHEN YOU MUST OPERATE THE REFUEL/DEFUEL PANEL 110VU, IN AMBIENT TEMPERATURES BELOW -40 DEG. C. (-40 DEG. F.), REFER TO THE PROCEDURE FOR THE PREPARATION FOR OPERATION OF THE REFUEL/DEFUEL PANEL 110VU, BELOW -40 DEG. C. (-40 DEG. F.), (REF. 12-31-28, P. BLOCK 201).

(Ref. Fig. 301, 302, 303)
(Ref. Fig. 316)

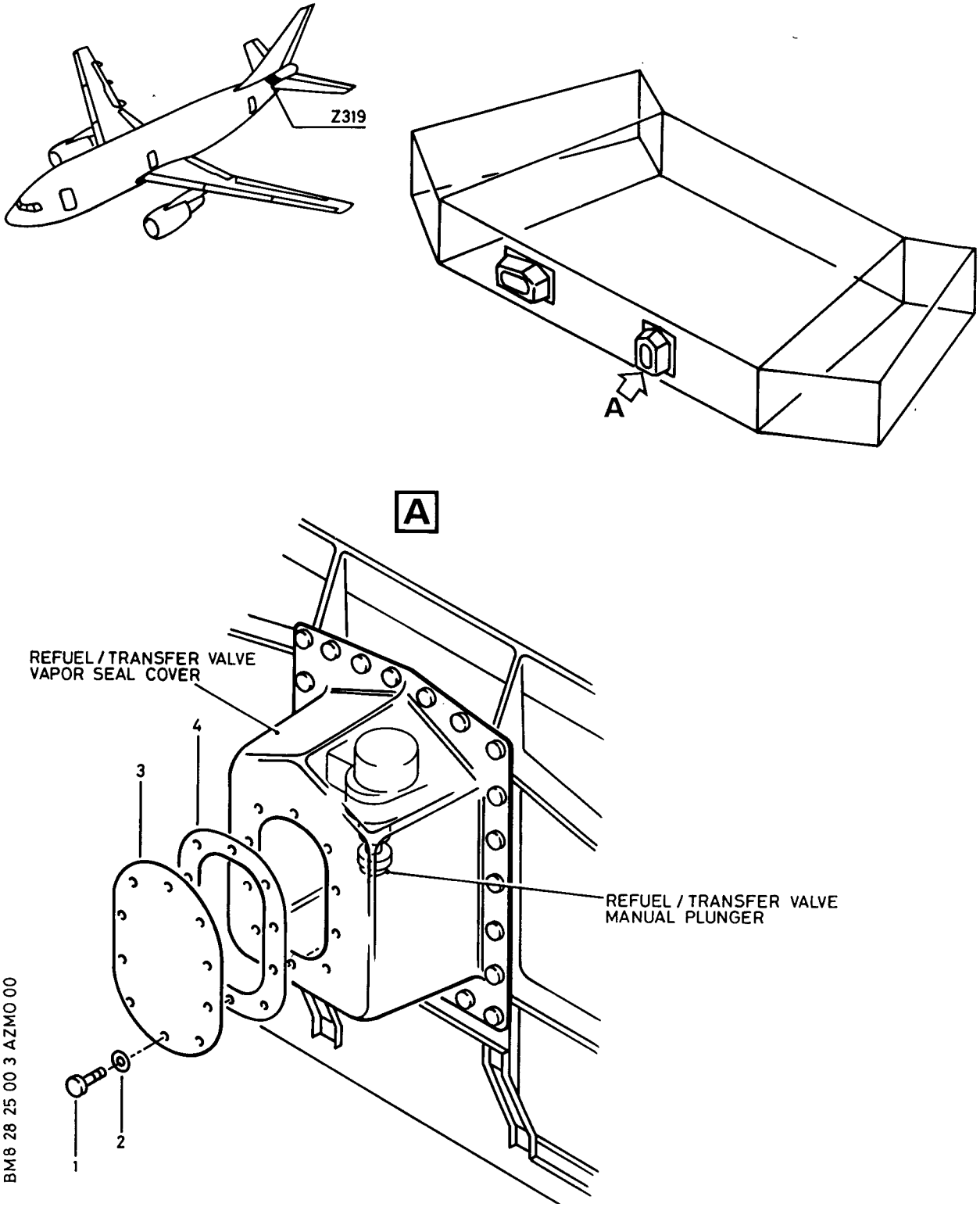
WARNING: FOLLOW THE AIRCRAFT STABILITY PRECAUTIONS (REF. 05-57-11, P. BLOCK 1), TO ENSURE AIRCRAFT REMAINS WITHIN SAFE CG LIMITS WHILE REARWARD FUEL MOVEMENT TO THE TRIM TANK IS TAKING PLACE.

(1)Not applicable.

(2)Make the Trimmable Horizontal Stabilizer (THS) and vertical stabilizer safe (Ref. 55-00-00, P. Block 301).

(3)Position the warning notices at the perimeter of the safety area.

CAUTION: THE AREA AROUND THE TANKER MUST BE KEPT CLEAR TO ALLOW THE TANKER TO BE WITHDRAWN IN CASE OF DANGER.



Trim Tank Refuel/Transfer Valve Vapor Seal Cover
Figure 316

(4)Position the tanker adjacent to the refuel/defuel couplings.

CAUTION: DO NOT POSITION THE ACCESS PLATFORM UNDER THE WING.

(5)Put the 4 m (13 ft) access platform in position to get access to the refuel/defuel couplings in zone 623 on the RH wing, STA813 (RIB 13).

WARNING: TO PREVENT ANY POSSIBILITY OF STATIC ELECTRICITY DISCARGE WHICH MAY CAUSE FIRE OR EXPLOSION THE AIRCRAFT AND THE TANKER MUST BE CORRECTLY BONDED.

(6)Observe the relevant safety precautions and make the static electricity grounding and bonding connections in the following order.

NOTE: Bonding is mandatory, for grounding you must obey the local area regulations.

(a)Make sure that the tanker is connected to an approved earthground.
(b)Make sure that the aircraft earthground cable is securely connected to one of the grounding points located on the main landing gear legs upper torque link attachment point.
(c)Connect the bonding cable from the tanker to the aircraft.
(d)Before removing the refuel/defuel coupling cap(s); insert the hose bonding cable pin into the grounding point near the coupling.

(7)Remove the aircraft refuel/defuel coupling caps. Caps remain suspended by chains.
(8)Connect not more than two refuel hoses to the aircraft refuel/defuel couplings.
(9)Prepare access to the trim tank refuel/defuel valve:
(a)Open the RH main landing gear bay door (Ref. 32-12-11, P. Block 301).
(b)Position the 2.5 m (8 ft) access platform.
(10)Prepare access to the trim tank refuel transfer valve:
(a)Position the 6 m (19.6 ft) access platform in ZONE 311 and open the access door 312AR.
(b)Gain access to the trim tank refuel/transfer valve vapor seal cover on the front spar of the trim tank.
(c)Loosen the bolts (1) in the access panel (3) (in the vapor seal cover) in a symmetrical diagonal pattern.
(d)Remove the bolts (1) and the sealing washers (2).
(e)Remove the access panel (3) and the seal (4).
(11)Make sure that the following circuit breakers are closed:

PANEL	SERVICE	IDENT.	LOCATION
132VU	FUEL/FQI		Line 321
132VU	FUEL/FUELLING		Line 321

(12)Do the functional test of the Fuel Quantity Computer (15QT) (Ref. 28-42-38, P. Block 501).
(13)Energize the aircraft electrical network (Ref. 24-41-00, P. Block 301).

C. Procedure

CAUTION: DO NOT CLOSE THE ACCESS DOOR 144DR OR OPERATE THE ACCESS DOOR MICROSWITCH UNTIL THE FUEL TRANSFER IS COMPLETED.

(1)Open the access door 144DR to the refuel/defuel panel 110VU.
(2)On panel 110VU:
  (a)Make sure that the PWR SUPPLY switch is in NORM position and guarded.
  (b)Raise REFUEL-DEFUEL-VALVES switch guards and place all switches in SHUT position.
  (c)Make sure that the TRANSF. VALVE switch is in the CLOSED position and guarded, and that OPEN indicator light is off.
  (d)Raise guard and place MODE SELECTOR/SELECT switch in REFUEL position.

    NOTE: FUEL QTY indicators may show dashes in least significant digit on inner tanks only until one minute after fuel flow begins.

  (e)Place CTR TK and TRIM TK REFUEL-DEFUEL-VALVES switches in OPEN position.

    NOTE: The Trim tank cannot be refueled unless the center tank refuel/defuel valve is open, or both inner tanks are filled to high level.

CAUTION: MAXIMUM REFUELING PRESSURE IS 3.45 bar (50 psi).

(3)Start refueling at tanker.
(4)On panel 110VU:
  (a)Monitor the individual tank contents on the FUEL QTY indicator.
  (b)When the HIGH LEVEL indicator lights come on, place the CTR TK and TRIM TK REFUEL-DEFUEL-VALVES switches in the SHUT position.
(5)Stop refueling at tanker.

CAUTION: DURING THE FOLLOWING REFUELING OPERATION THE TRIM TANK OVERFLOW WARNING LIGHT MUST BE MONITORED AND THE TRIM TANK REFUEL/DEFUEL VALVE MANUAL PLUNGER MUST BE MANUALLY RELEASED IMMEDIATELY THE OVERFLOW WARNING LIGHT ON PANEL 110VU COMES ON.

(6)Position an operative at the Refuel panel 110VU.
(7)Establish a line of communication between the operator at the Refuel panel 110VU and the tanker operator.

CAUTION: REFUELING PRESSURE MUST NOT EXCEED 1.37 BAR (20 PSI).

(8)Reduce tanker refueling pressure to 1.37 bar (20 psi).
(9)Start refueling at tanker.

WARNING: MAKE SURE THAT DURING THIS PROCESS YOU OBEY THE AIRCRAFT STABILITY PRECAUTIONS (REF. 05-57-11, P. BLOCK 1).

(10)Refuel the trim tank until the high level indicator light comes on (Ref. 28-25-00, P. Block 301).
(11)You must:
(a)Set the refuel/defuel valve switch to the defuel position.
(b)Set the inner and outer refuel valve switches to the closed position.
(c)Set the trim tank refuel/defuel valve switch to the open position.
(12)Use the ECAM to do a Rearward transfer to overflow the trim tank (Ref. 28-25-00, P. Block 301).

NOTE: The trim tank transfer valve will only open when the trim tank is empty or the inner tanks are refueled to the high level.

(13)If the trim tank contains fuel, defuel or transfer the fuel (Ref. 28-25-00, P. Block 301).

NOTE: During the aft transfer make sure that the inner tanks are at high level.

During refuel the trim tank cannot be refueled unless the center tank refuel/defuel valve is open or both the inner tanks are filled to high level.

(14)Do the steps that follow:
(a)Monitor the trim tank OVERFLOW light on the refuel panel 110VU.
(b)When the OVERFLOW light comes ON close the trim tank refuel/defuel valve.
(c)Make sure that the trim tank transfer valve is closed and the aft transfer from the inner tanks stop.

D. Close-Up
(1)On panel 110VU:
(a)Place all REFUEL-DEFUEL-VALVES switches in NORM position and guarded.
(b)Place MODE SELECTOR/SELECT switch in OFF position and guarded.
(2)Make sure that operatives positioned in step C. (6) are clear of the aircraft.
(3)Defuel or transfer fuel from the trim tank (Ref. 28-25-00, P. Block 301). until on panel 110VU:
(a)TT OVERFLOW light goes off.
(b)TRIM TK HIGH LEVEL light goes off.
(4)Defuel or transfer fuel from the center tank and trim tank as required (Ref. 28-25-00, P.Block 301).
(5)Close access door 144DR.
(6)De-energize the aircraft electrical network (Ref. 24-41-00, P. Block 301).
(7)Remove the static electricity grounding and bonding connections in the following order:
(a)Disconnect the refueling hose(s) and replace the refuel/defuel coupling caps.

NOTE: If the refuel/defuel coupling and/or cap is found to be damaged and the cap cannot be fitted, make sure that:

- no fuel leak has been reported
- only the coupling has been damaged.

If no leak and no further damage has been reported then remove the cap (Ref. 28-25-11, P. Block 401) and allow dispatch of the aircraft in accordance with the CDL (Configuration Deviation List).

(b) Remove the refueling hose(s) bonding cable pin(s) from the coupling grounding point(s).
(c) Disconnect the tanker bonding cable from the aircraft.
(d) Make sure that the aircraft earthground cable is still connected (If applicable).
(8) Check the trim tank refuel/transfer valve access panel seal (4) for correct condition. If necessary, discard and replace the seal.
(9) Check the trim tank refuel/transfer valve access panel sealing washers (2) for correct condition. If necessary, discard and replace the sealing washers.
(10) Install the access panel (3) and the seal (4) in the refuel/transfer valve cover on the trim tank front spar. Install the bolts (1) and the sealing washers (2) and tighten the bolts (1) in a symmetrical diagonal pattern.
(11) Do the leak test of the refuel/transfer valve cover on the front spar of the trim tank (Ref. 28-13-00, P. Block 501 Paragraph 2. E.).
(12) Make sure that the working area is clean and clear of tools and miscellaneous items of equipment.
(13) Close access door 312AR.
(14) Remove all access platforms.
(15) Close RH main landing gear bay door (Ref. 32-12-11, P. Block 301).
(16) Remove warning notices.
(17) Return (THS) and vertical stabilizer to normal operating condition. (Ref. 55-00-00, P. Block 301).
(18) If no longer required, disconnect the aircraft earthground cable (If applicable).

REFUEL/DEFUEL SYSTEM - ADJUSTMENT/TEST

R WARNING : LANDING GEAR - MAKE SURE THAT THE GROUND SAFETIES AND CHOCKS ARE IN POSITION.

R FLIGHT CONTROLS - MAKE SURE THAT THE GROUND SAFETIES AND NOTICES ARE
R IN POSITION.

OBSERVE THE SAFETY PRECAUTIONS IN 28-00-00, P. BLOCK 301.

R MAKE SURE THAT THE FIRE FIGHTING EQUIPMENT IS AVAILABLE AND IS
R ADEQUATE.

R MAKE SURE THAT YOU ISOLATE THE ELECTRICAL CIRCUITS UPON WHICH WORK IS
R IN PROGRESS.

1. Functional Test - Refueling

A. Equipment and Materials

ITEM	DESIGNATION
A.	Refuel Tanker, capable of 3.45 bar (50 psi)
B.	Access Platform 4.5 m (15 ft)
Referenced Procedures	
- 05-57-11, P. Block 1	Aircraft Stability with Fuel in Trim Tank
- 12-11-28, P. Block 301	Replenishing of Fuel Tanks
- 24-41-00, P. Block 301	AC External Power Control
- 28-00-00, P. Block 301	Fuel - General
- 28-25-00, P. Block 301	Refuel/Defuel System
- 28-42-38, P. Block 501	Fuel Quantity Computer

B. Procedure

(1)Job Set-Up

(a)Make certain that the following circuit breakers are closed:

PANEL	SERVICE	IDENT.	LOCATION
132VU	FUEL/CTR TK/L/PUMP/CTL	63QA	322/N58
132VU	FUEL/CTR TK/R/PUMP/CTL	64QA	323/M59
132VU	FUEL/ISOL VALVE/L INR TK/SUPPLY	3QB	324/L55
132VU	FUEL/ISOL VALVE/R INR TK/SUPPLY	4QB	324/L56
132VU	FUEL/X FEED VALVE POS ANN	3QE	324/L59
132VU	FUEL/X FEED VALVE MOTOR 1	2QE	324/L60
132VU	FUEL/X FEED VALVE MOTOR 2	1QE	324/L61
132VU	FUEL/FUELLING XFR VALVE	2QU	321/P55
132VU	FUEL/FUELLING CTL & REFUEL VALVE	1QU	321/P56
132VU	FUEL/FUELLING HI LVL	6QJ	321/P57
132VU	FUEL/FUELLING OVERFLOW AND CAL	5QJ	321/P58

PANEL	SERVICE	IDENT.	LOCATION
132VU	FUEL/FQI SUPPLY & IND	1QT	321/P59
132VU	FUEL/FQI CHAN SUPPLY 1	3QT	321/P60
132VU	FUEL/FQI CHAN SUPPLY 2	4QT	321/P61

(b)Open access door 144DR.
(c)On panel 110VU, make certain that:
1 PWR SUPPLY switch is in NORM position and guarded.
2 TRANSF.VALVE switch is in CLOSED position and guarded and open indicator light is off.

R **ON A/C 101-200,

3 FQI DISPLAY switch is in CTR & AUX & TT position.

R **ON A/C 101-200,

R Post SB 28-2105 For A/C 101-200,

3 FQI DISPLAY switch is in CTR-TT & ACT position.

R **ON A/C 001-100,

3 FUEL QTY switch is in the CTR & TT position.

R **ON A/C ALL

(d)Connect refuel tanker to refuel/defuel couplings (Ref. 12-11-28, P. Block 301).
(e)Defuel all tanks (Ref. 28-25-00, P. Block 301).
(f)Energize the aircraft electrical network (Ref. 24-41-00, P. Block 301).
(g)Do the functional test of the Fuel Quantity Computer (15QT) (Ref. 28-42-38, P. Block 501).
(2)Test

ACTION	RESULT
1. On panel 110VU: - make certain that all REFUEL-DEFUEL-VALVES switches are in NORM position and guarded - raise guard and place MODE SELECTOR switch in REFUEL position - set PRESELECTED quantity to zero	On panel 110VU:

ACTION	RESULT
2. Set tanker delivery pressure to 3.45 bar (50 psi) and apply fuel pressure at refuel/defuel couplings for two minutes	On panel 110VU: - FUEL QTY indicator readings and PRESELECTED and ACTUAL readings remain unchanged
Stop tanker delivery	
**ON A/C 001-100,	
3. On panel 110VU: - set PRESELECTED quantity to 35,000 Kg (77,200 LB)	
Start refueling	On panel 110VU: - FUEL QTY indicator readings display increase for all tanks except trim tank
**ON A/C 101-200,	
Post SB 28-2105 For A/C 101-200,	
R Post SB 28-2126 For A/C 104-104,	
3. On panel 110VU: - set PRESELECTED quantity to 35000 kg (77,200 lb)	
Start refueling	On panel 110VU: - FUEL QTY indicator readings display increase for all tanks except ACT(s) (if fitted) and trim tank
**ON A/C 101-200,	
3. On panel 110VU: - set PRESELECTED quantity to 77,200 LB (35,000 Kg)	
Start refueling	On panel 110VU: - FUEL QTY indicator readings

ACTION	RESULT
	display increase for all tanks except ACT (if fitted) and trim tank
**ON A/C 001-100,	
4. On panel 110VU: - in sequence OUTERS, INNERS, CTR, TRIM TK, raise guards and place REFUEL/DEFUEL VALVES switches in SHUT position	- FUEL QTY indicator readings stabilize as REFUEL-DEFUEL VALVES are shut
**ON A/C 101-200,	
4. On panel 110VU: - in sequence OUTERS, INNERS, CTR ACT (if fitted) and TRIM TK, raise guards and place REFUEL-DEFUEL-VALVES switches in SHUT position	- FUEL QTY indicator readings stabilize as REFUEL-DEFUEL-VALVES are shut
**ON A/C 101-200,	
Post SB 28-2105 For A/C 101-200,	
R Post SB 28-2126 For A/C 104-104,	
4. On panel 110VU: - in sequence OUTERS, INNERS, CTR ACT(s) (if installed) and TRIM TK, raise guards and place the REFUEL-DEFUEL-VALVES switches in the SHUT position	- FUEL QTY indicator readings stabilize as the REFUEL-DEFUEL-VALVES are shut
**ON A/C ALL	
- place L OUTER TK REFUEL-DEFUEL-VALVES switch in OPEN position	- FUEL QTY indicator left OUTR reading increases
- place L OUTER TK REFUEL-DEFUEL-VALVES switch in SHUT position	- FUEL QTY indicator left OUTR reading stabilizes
- repeat previous two steps for all REFUEL-DEFUEL-VALVES in OUTER, INNER and CTR TKS	

ACTION	RESULT
Stop refueling at tanker. - set **PRESELECTED** quantity to agree with **ACTUAL** quantity	
5. On panel 110VU: - press to test **TRANSF.VALVE OPEN** indicator light	- **OPEN** indicator light comes on, then goes off
- raise guard and place **TRANSF. VALVE** switch in **OPEN** position	- **OPEN** indicator light comes on
- place L and **R OUTER TK REFUEL-DEFUEL-VALVES** switches in **OPEN** position	
6. On panel 430VU: - make certain that **INR TK ISOL VALVES** pushbutton switches are pressed (in)	On panel 430VU: - **ISOL VALVES** flowbars are on
- press **X FEED** pushbutton switch	- crossline flowbar goes off in-line flowbar comes on
- press **CTR TK** L and **R PUMP** pushbutton switches	- **OFF** legends go off - **FAULT** legends come on momentarily then go off when pumps run - **FUEL QTY** indicator **CTR** tank reading decreases - left and right **OUTR** tank readings increase
- monitor **FUEL QTY** indicator **CTR** tank contents until reading stabilizes	- **CTR TK** L and **R PUMP FAULT** legends come on when pumps stop
- release **CTR TK** L and **R PUMP** pushbutton switches	- **FAULT** legends go off - **OFF** legends come on
- release **X FEED** pushbutton switch	- in-line flowbar goes off - crossline flowbar comes on

WARNING : FOLLOW THE AIRCRAFT STABILITY PRECAUTIONS (REF. 05-57-11, P. BLOCK 1), WHILE REARWARD FUEL TRANSFER TO THE TRIM TANK IS TAKING PLACE

7. On panel 110VU: - place **TRANSF VALVE** switch in **CLOSED**	- **OPEN** indicator light goes off

ACTION	RESULT
position and guarded	
- place all **REFUEL-DEFUEL-VALVES** switches in **NORM** position and guarded	- **FUEL QTY** indicator readings for all tanks remain unchanged
- set the **PRESELECTED** quantity to 12500 kg (27,600 lb) to fill the outer tanks and partially fill the the inner tanks	
**ON A/C 101-200,	
Continue refueling	
On panel 110VU: - raise guard and place **TRIM TK REFUEL-DEFUEL-VALVES** switch in **OPEN** position	
- place **FQI DISPLAY** switch in **TT** position	- **FUEL QTY** indicator **CTR/TT** reading remains unchanged
- raise guard and place **CTR TK REFUEL-DEFUEL-VALVES** switch in **OPEN** position	- **FUEL QTY** indicator **CTR/TT** reading displays increase
- place **FQI DISPLAY** switch in **CTR** position	- **FUEL QTY** indicator **CTR/TT** reading displays increase
- place **CTR TK** and **TRIM TK REFUEL-DEFUEL-VALVES** switches in **NORM** position and guarded	- reading stabilizes
**ON A/C 001-100,	
Continue refueling from tanker	
On panel 110VU: - raise guard and place **TRIM TK REFUEL-DEFUEL-VALVES** switch in **OPEN** position	
- hold **FUEL QTY** switch in **TT** position	On panel 110VU: - **FUEL QTY** indicator **CTR/TT** reading remains unchanged

ACTION	RESULT
- raise guard and place **CTR TK REFUEL-DEFUEL-VALVES** switch in **OPEN** position	- **FUEL QTY** indicator **TT** reading displays increase
- release **FUEL QTY** switch to **CTR & TT** position	- **FUEL QTY** indicator displays **CTR/TT** contents
- place **CTR TK** and **TRIM TK REFUEL-DEFUEL-VALVES** switches in **NORM** position and guarded and hold **FUEL QTY** switch in **TT** position	- **FUEL QTY** indicator **TT** reading stabilizes
**ON A/C 101-200,	
- place **FQI DISPLAY** switch in **CTR & AUX & TT** position	- **FUEL QTY** indicator displays **CTR/TT** contents
**ON A/C 101-200,	
Post **SB 28-2105** For **A/C 101-200,**	
- place **FQI DISPLAY** switch in **CTR-TT & ACT** position	- **FUEL QTY** indicator displays **CTR/TT** contents
**ON A/C 001-100,	
- release **FUEL QTY** switch to **CTR & TT** position	- **FUEL QTY** indicator displays **CTR/TT** contents
**ON A/C ALL	
Continue refueling	On panel 110VU: - **FUEL QTY** indicator **OUTR** and **INR** tank readings increase - **INR** tank readings stabilize as **OUTR** tank levels approach full - **L** and **R OUTER TK HIGH LEVEL** indicator lights come on. **FUEL QTY** indicator **OUTR** tank readings stabilize - **FUEL QTY** indicator **INR** tank readings increase - **CTR/TT** display remains unchanged

ACTION	RESULT
8. On the preselector, make sure the ACTUAL quantity agrees with the PRESELECTED quantity.	- refueling stops automatically - INR tank readings stabilize - the outer tanks are now fully refueled.

**ON A/C 101-200,

CAUTION : WHEN REFUELING CENTER TANK, PERIODICALLY PLACE FQI DISPLAY SWITCH IN AUX POSITION AND TT POSITION TO MAKE CERTAIN ACT (IF FITTED) AND TRIM TANK DO NOT RECEIVE FUEL.

**ON A/C 101-200,

Post SB 28-2105 For A/C 101-200,

R Post SB 28-2126 For A/C 104-104,

CAUTION : WHEN REFUELING CENTER TANK PERIODICALLY PLACE FQI DISPLAY SWITCH IN TT, ACT 1 AND ACT 2 POSITIONS TO MAKE CERTAIN TRIM TANK AND ACT(S) (IF FITTED) DO NOT RECEIVE FUEL.

**ON A/C 001-100,

CAUTION : ON PANEL 110VU, PERIODICALLY HOLD FUEL QTY SWITCH IN TT POSITION TO MAKE CERTAIN TRIM TANK FUEL QUANTITY DOES NOT INCREASE WHILE CENTER AND INNER TANKS ARE BEING REFUELED.

9. On panel 110VU:
   - set the PRESELECTED quantity to 35000 kg (77,200 lb) to fill the inner tanks and partially fill the center tank.

10. Not applicable.

**ON A/C 101-200,

Post SB 28-2105 For A/C 101-200,

R Post SB 28-2126 For A/C 104-104,

ACTION	RESULT
9. With ACT 1 installed proceed with steps 17 thru 24. With ACT 1 & 2 installed proceed with steps 17 thru 28. With ACT(s) not installed proceed with steps 10 thru 16.	
10. With ACT(s) not installed, on panel 110VU: - set the PRESELECTED quantity to 35000 kg (77,200 lb) to fill the inner tanks and partially fill the center tank	
**ON A/C 101-200,	
9. With ACT installed, proceed with steps 17 thru 24. With ACT not installed, proceed with steps 10 thru 16.	
10. With ACT not installed, on panel 110VU: - set the PRESELECTED quantity to 77,200 lb (35000 kg) to fill the inner tanks and partially fill the center tank	
**ON A/C 001-100,	
Continue refueling	On panel 110VU: - FUEL QTY indicator INR and CTR tank readings increase - CTR tank reading stabilizes as INR tank levels approach full - L and R INNER TK HIGH LEVEL indicator lights come on. FUEL QTY indicator INR tank readings stabilize
- hold the FUEL QTY switch in the TT position	- make sure that the FUEL QTY indicator TT reading remains unchanged
- release the FUEL QTY switch	- FUEL QTY indicator displays CTR/TT contents - FUEL QTY indicator CTR tank reading increases

ACTION	RESULT
11.On the preselector, make sure that the **ACTUAL** quantity agrees with the **PRESELECTED** quantity	- Refueling stops automatically - **FUEL QTY** indicator **CTR/TT** reading stabilizes - the outer and inner tanks are now fully refueled
**ON A/C 101-200,	
Continue refueling	On panel 110VU: - **FUEL QTY** indicator **INR** and **CTR/TT** readings increase - **CTR/TT** reading stabilizes as **INR** tank levels approach full - L and R **INNER TK HIGH LEVEL** indicator lights come on. **FUEL QTY** indicator **INR** tank readings stabilize
- put the **FQI DISPLAY** switch in the **TT** position	- make sure that the **FUEL QTY** indicator **CTR/TT** reading remains unchanged
- put the **FQI DISPLAY** switch in the **CTR & AUX & TT** position	- **FUEL QTY** indicator displays **CTR/TT** contents - **FUEL QTY** indicator **CTR/TT** reading increases
11.On the preselector, make sure that the **ACTUAL** quantity agrees with the **PRESELECTED** quantity	- refueling stops automatically - **FUEL QTY** indicator **CTR/TT** reading stabilizes - the outer and inner tanks are now fully refueled
**ON A/C 101-200,	
Post **SB** 28-2108 For **A/C** 101-200,	
Continue refueling	On panel 110VU: - **FUEL QTY** indicator **INR** and **CTR/TT** readings increase - **CTR/TT** reading stabilizes as **INR** tank levels approach full - L and R **INNER TK HIGH LEVEL**

ACTION	RESULT
	indicator lights come on. FUEL QTY indicator INR tank readings stabilize
- put the FQI DISPLAY switch in the TT position	- make sure that the FUEL QTY indicator CTR/TT reading remains unchanged
- put the FQI DISPLAY in the CTR-TT & ACT position	- FUEL QTY indicator displays CTR/TT contents - FUEL QTY indicator CTR/TT reading increases
11.On the preselector, make sure that the ACTUAL quantity agrees with the PRESELECTED quantity	- refueling stops automatically - FUEL QTY indicator CTR/TT reading stabilizes - the outer and inner tanks are now fully refueled
**ON A/C ALL	
12.On panel 110VU: - set the PRESELECTED quantity to 46000 kg (101,400 lb) to fill the center tank and partially fill the trim tank	
**ON A/C 001-100,	
Continue refueling	On panel 110VU: - FUEL QTY indicator CTR/TT reading increases - CTR TK HIGH LEVEL indicator light comes on
- put and hold FUEL QTY switch in CTR position	- FUEL QTY indicator CTR/TT reading stabilizes
- put and hold the FUEL QTY switch in the TT position	- FUEL QTY indicator CTR/TT reading increases
- release the FUEL QTY switch	- FUEL QTY indicator displays CTR/TT contents
13.On the preselector, make sure that the ACTUAL quantity agrees with the PRESELECTED quantity	- refueling stops automatically - FUEL QTY indicator CTR/TT reading stabilizes

ACTION	RESULT
	- the outer, inner and center tanks are now fully refueled
**ON A/C 101-200,	
Continue refueling	
	On panel 110VU:
- put the FQI DISPLAY switch in the CTR position	- FUEL QTY indicator CTR/TT reading increases
- put the FQI DISPLAY switch the in TT position	- FUEL QTY indicator CTR/TT reading increases then stabilizes as center tank level approaches full
	- CTR TK HIGH LEVEL indicator light comes on
- put the FQI DISPLAY switch in the CTR position	- FUEL QTY indicator CTR/TT reading stabilizes
- put the FQI DISPLAY switch the in TT position	- FUEL QTY indicator CTR/TT reading increases
- put the FQI DISPLAY switch in CTR & AUX & TT position	- FUEL QTY indicator displays CTR/TT contents - FUEL QTY indicator CTR/TT reading increases
13. On the preselector, make sure that the ACTUAL quantity agrees with the PRESELECTED quantity	- refueling stops automatically - FUEL QTY indicator CTR/TT reading stabilizes - the outer, inner and center tanks are now fully refueled
**ON A/C 101-200,	
Post SB 28-2105 For A/C 101-200,	
Continue refueling	
	On panel 110VU:
- put the FQI DISPLAY switch in the CTR position	- FUEL QTY indicator CTR/TT reading increases

ACTION	RESULT
- put the **FQI DISPLAY** switch in the **ACT 1** position	- **FUEL QTY** indicator **CTR/TT** reading increases then stabilizes as center tank level approaches full - **CTR TK HIGH LEVEL** indicator light comes on
- put the **FQI DISPLAY** switch in **CTR** position	- **FUEL QTY** indicator **CTR/TT** reading stabilizes
- put the **FQI DISPLAY** switch in **TT** position	- **FUEL QTY** indicator **CTR/TT** reading increases
- put the **FQI DISPLAY** switch in the **CTR-TT & ACT** position	- **FUEL QTY** indicator displays **CTR/TT** contents - **FUEL QTY** indicator **CTR/TT** reading increases
13.On the preselector, make sure that the **ACTUAL** quantity agrees with the **PRESELECTED** quantity	- refueling stops automatically - **FUEL QTY** indicator **CTR/TT** reading stabilizes - the outer, inner and center tanks are now fully refueled
**ON A/C ALL	
14.On panel 110VU: - set the **PRESELECTED** quantity to 51000 kg (112,400 lb) to fill the trim tank	
**ON A/C 001-100,	
Continue refueling - put the **FQI DISPLAY** switch in the **TT** position	On panel 110VU: - the **FUEL QTY** indicator **CTR/TT** reading increases - the **TRIM TK HIGH LEVEL** indicator light comes on
- release the **FUEL QTY** switch	- the **FUEL QTY** indicator **CTR/TT** reading stabilizes - the outer and inner tanks, the center tank and the trim tank are now fully refueled
15.On panel 110VU:	

ACTION	RESULT
- put the **MODE SELECTOR** switch in the **OFF** and guarded position	
****ON A/C 101-200,**	
Post **SB 28-2105** For **A/C 101-200,**	
R Post **SB 28-2126** For **A/C 104-104,**	
Continue refueling	
- put the **FQI DISPLAY** switch switch in the **TT** position	- the **FUEL QTY** indicator **CTR/TT** reading increases - the **TRIM TK HIGH LEVEL** indicator light comes on
- put the **FQI DISPLAY** switch in the **CTR-TT & ACT** position	- the **FUEL QTY** indicator displays **CTR/TT** contents - refueling stops automatically - the **FUEL QTY** indicator **CTR/TT** reading stabilizes - the outer and inner tanks, the center tank and the trim tank are now fully refueled.
15. On panel 110VU: - put the **MODE SELECT** switch in the **OFF** and guarded position.	
16. Proceed with the Close-Up procedure (Ref. Para 1.B.(3)).	
17. With **ACT 1** fitted, on panel 110VU: - set the **PRESELECTED** quantity to 35000 kg (77,200 lb) to fill the inner tanks and partially fill the center tank	
Continue refueling	On panel 110VU: - the **FUEL QTY** indicator **INR** and **CTR/TT** readings increase - the **CTR/TT** reading stabilizes as the **INR** tank levels approach full - the L and **R INNER TK HIGH LEVEL** indicator lights come on - the **FUEL QTY** indicator **INR** tank

ACTION	RESULT
	readings stabilize
- put the **FQI DISPLAY** switch in the **ACT 1** position	- make sure that the **FUEL QTY** indicator **CTR/TT** reading remains unchanged
- put the **FQI DISPLAY** switch in the **TT** position	- make sure that the **FUEL QTY** indicator **CTR/TT** reading remains unchanged
- put the **FQI DISPLAY** switch in the **CTR-TT & ACT** position	- the **FUEL QTY** indicator displays the **CTR/TT** contents - the **FUEL QTY** indicator **CTR/TT** reading increases
18. On the preselector, make sure that the **ACTUAL** quantity agrees with the **PRESELECTED** quantity	- refueling stops automatically - the **FUEL QTY** indicator **CTR/TT** reading stabilizes - the outer and inner tanks are now fully refueled.
19. On panel 110VU: - set the **PRESELECTED** quantity to 46000 kg (101,400 lb) to fill the center tank and partially fill **ACT 1**	
Continue refueling	
	On panel 110VU:
- put the **FQI DISPLAY** switch in the **CTR** position	- the **FUEL QTY** indicator **CTR/TT** reading increases
- put the **FQI DISPLAY** switch in the **TT** position	- the **FUEL QTY** indicator **CTR/TT** reading increases and then stabilizes as the center tank level approaches full
	- the **CTR TK HIGH LEVEL** indicator light comes on
- put the **FQI DISPLAY** switch in the **CTR** position	- the **FUEL QTY** indicator **CTR/TT** reading stabilizes
- put the **FQI DISPLAY** switch in the **ACT 1** position	- the **FUEL QTY** indicator **CTR/TT** reading increases
- put the **FQI DISPLAY** switch in the **TT** position	- the **FUEL QTY** indicator **CTR/TT** reading remains unchanged

ACTION	RESULT
- put the **FQI DISPLAY** switch in the **CTR-TT & ACT** position	- the **FUEL QTY** indicator **CTR/TT** reading increases
20. On the preselector, make sure that the **ACTUAL** quantity agrees with the **PRESELECTED** quantity	- refueling stops automatically - the **FUEL QTY** indicator **CTR/TT** reading stabilizes - the outer and inner tanks and the center tank are now fully refueled.
21. On panel 110VU: - set the **PRESELECTED** quantity to 52000 kg (114,600 lb) to fill **ACT 1** and partially fill the trim tank	
Continue refueling	
- put the **FQI DISPLAY SWITCH** in the **ACT 1** position	- the **FUEL QTY** indicator **CTR/TT** reading increases
- put the **FQI DISPLAY** switch in the **TT** position	- the **FUEL QTY** indicator **CTR/TT** reading increases and then stabilizes as the **ACT 1** level approaches full - the **ACT 1 HIGH LEVEL** indicator light comes on
- put the **FQI DISPLAY** switch in the **ACT 1** position	- the **FUEL QTY** indicator **CTR/TT** reading stabilizes
- put the **FQI DISPLAY** switch in the **TT** position	- the **FUEL QTY** indicator **CTR/TT** reading increases
- put the **FQI DISPLAY** switch in the **CTR-TT & ACT** position	- the **FUEL QTY** indicator **CTR/TT** reading increases
22. On the preselector, make sure that the **ACTUAL** quantity agrees with the **PRESELECTED** quantity	- refueling stops automatically - the **FUEL QTY** indicator **CTR/TT** reading stabilizes - the outer and inner tanks and the center tank and **ACT 1** are now fully refueled.
23. On panel 110VU: - set the **PRESELECTED** quantity to 56000 kg (123,500 lb) to fill the trim tank and partially fill **ACT 2** (if installed)	

ACTION	RESULT
Continue refueling	
- put the **FQI DISPLAY** switch in the **TT** position	- the **FUEL QTY** indicator **CTR/TT** reading increases - the **TRIM TK HIGH LEVEL** indicator light comes on - the outer, inner and center tanks and **ACT 1** and the trim tank are now fully refueled.
24. If **ACT 2** is not installed proceed with step 28 If **ACT 2** is installed proceed with steps 25 thru 28.	
25. On panel 110VU: - put the **FQI DISPLAY** switch in the **ACT 2** position	- the **FUEL QTY** indicator **CTR/TT** reading increases
26. On the preselector, make sure that the **ACTUAL** quantity agrees with the **PRESELECTED** quantity	- refueling stops automatically - the **FUEL QTY** indicator **CTR/TT** reading stabilizes - the outer, inner and center tanks and **ACT 1** and the trim tank are now fully refueled.
27. On panel 110VU: - set the **PRESELECTED** quantity to 62000 kg (136,700 lb) to fill **ACT 2**	
Continue refueling	
	- the **FUEL QTY** indicator **CTR/TT** reading increases - the **ACT 2 HIGH LEVEL** indicator light comes on
28. On panel 110VU: - put the **FQI DISPLAY** switch in the **CTR-TT & ACT** position	- the **FUEL QTY** indicator displays the **CTR/TT** contents - refuelling stops automatically - the **FUEL QTY** indicator **CTR/TT** reading stabilizes - the outer, inner and center tanks, the trim tank, **ACT 1** and **ACT 2** (if installed) are now fully refueled

ACTION	RESULT
- put the **MODE SELECT** switch in the **OFF** and guarded position	
**ON A/C 101-200,	
Continue refueling	
- put the **FQI DISPLAY** switch in the **TT** position	- **FUEL QTY** indicator **CTR/TT** reading increases - **TRIM TK HIGH LEVEL** indicator light comes on
- put the **FQI DISPLAY** switch in **CTR & AUX & TT** position	- **FUEL QTY** indicator displays **CTR/TT** contents - refueling stops automatically - **FUEL QTY** indicator **CTR/TT** reading stabilizes - the outer, inner and center tanks and the trim tank are now fully refueled.
15. On panel 110VU: - put the **MODE SELECTOR** switch in **OFF** position and guarded	
16. Proceed with Close-Up (Ref. Para 1.B.(3))	
17. With **ACT** fitted, on panel 110VU: - set the **PRESELECTED** quantity to 77,200 lb (35000 kg) to fill the inner tanks and partially fill the center tank	
Continue refueling	On panel 110VU: - **FUEL QTY** indicator **INR** and **CTR/TT** readings increase - **CTR/TT** reading stabilizes as **INR** tank levels approach full - **L** and **R INNER TK HIGH LEVEL** indicator lights come on **FUEL QTY** indicator **INR** tank readings stabilize
- put the **FQI DISPLAY** switch in the **AUX** position	- make sure the **FUEL QTY** indicator **CTR/TT** reading remains unchanged

ACTION	RESULT
- put the **FQI DISPLAY** switch in the **TT** position	- make sure the **FUEL QTY** indicator **CTR/TT** reading remains unchanged
- put the **FQI DISPLAY** switch in **CTR & AUX & TT** position	- **FUEL QTY** indicator displays **CTR/TT** contents - **FUEL QTY** indicator **CTR/TT** reading increases
18. On preselector, make certain that **ACTUAL** quantity agrees with **PRESELECTED** quantity	- refueling stops automatically - **FUEL QTY** indicator **CTR/TT** reading stabilizes - the outer and inner tanks are now fully refueled.
19. On panel 110VU: - set the **PRESELECTED** quantity to 101,400 lb (46000 kg) to fill the center tank and partially fill the **ACT**	
Continue refueling	On panel 110VU: - **FUEL QTY** indicator **CTR/TT** reading increases - **CTR TK HIGH LEVEL** indicator light comes on
- put the **FQI DISPLAY** switch in the **CTR** position	- **FUEL QTY** indicator **CTR/TT** reading stabilizes
- put the **FQI DISPLAY** switch in the **AUX** position	- **FUEL QTY** indicator **CTR/TT** reading increases
- put the **FQI** display switch in the **TT** position	- **FUEL QTY** indicator **CTR/TT** reading remains unchanged
- put the **FQI DISPLAY** switch in **CTR & AUX & TT** position	- **FUEL QTY** indicator **CTR/TT** reading increases
20. On the preselector, make sure that the **ACTUAL** quantity agrees with the **PRESELECTED** quantity	- refueling stops automatically - **FUEL QTY** indicator **CTR/TT** reading stabilizes - the outer, inner and center tanks are now fully refueled.
21. On panel 110VU: - set the **PRESELECTED** quantity to 114,600 lb (52000 kg) to fill the **ACT** and partially	

ACTION	RESULT
fill the trim tank	
Continue refueling	
- put the **FQI DISPLAY SWITCH** in the **AUX** position	- **FUEL QTY** indicator **CTR/TT** reading increases
- put the **FQI DISPLAY** switch in the **TT** position	- **FUEL QTY** indicator **CTR/TT** reading increases then stabilizes as **ACT** approaches full - **AUX TK HIGH LEVEL** indicator light comes on
- put the **FQI DISPLAY** switch in the **AUX** position	- **FUEL QTY** indicator **CTR/TT** reading stabilizes
- put the **FQI DISPLAY** switch in the **TT** position	- **FUEL QTY** indicator **CTR/TT** reading increases
22. On the preselector, make sure that the **ACTUAL** quantity agrees with the **PRESELECTED** quantity	- refueling stops automatically - **FUEL QTY** indicator **CTR/TT** reading stabilizes - the outer, inner and center tanks and the **ACT** are now fully refueled.
23. On panel 110VU: - set the **PRESELECTED** quantity to 123,500 lb (56000 kg) to fill the trim tank	
Continue refueling	
- put the **FQI DISPLAY** switch in the **TT** position	- **FUEL QTY** indicator **CTR/TT** reading increases - **TRIM TK HIGH LEVEL** indicator light comes on
- put the **FQI DISPLAY** switch in **CTR & AUX & TT** position	- **FUEL QTY** indicator displays **CTR/TT** contents - refueling stops automatically - **FUEL QTY** indicator **CTR/TT** reading stabilizes - the outer, inner and center tanks and **ACT** and trim tank are now fully refueled.
24. On panel 110VU: - put the **MODE SELECTOR** switch in	

ACTION	RESULT
the OFF position and guarded	
**ON A/C ALL	

(3)Close-Up
(a)Defuel aircraft to required fuel load (Ref. 28-25-00, P. Block 301).
(b)Close access door 144DR
(c)De-energize the aircraft electrical network (Ref 24-41-00, P. Block 301).
(d)Disconnect refuel tanker (Ref 12-11-28, P. Block 301).
(e)Make certain that working area is clean and clear of tools and miscellaneous items of equipment.

2. Not Applicable
3. Functional Test - Suction Defueling

A. Equipment and Materials

ITEM	DESIGNATION
A.	Defuel Tanker(s)
Referenced Procedures	
- 05-57-11, P. Block 1	Aircraft Stability with Fuel in Trim Tank
- 12-11-28, P. Block 301	Replenishing of Fuel Tanks
- 24-41-00, P. Block 301	AC External Power Control
- 28-00-00, P. Block 301	Fuel - General
- 28-25-00, P. Block 301	Refuel/Defuel System
- 28-42-38, P. Block 501	Fuel Quantity Computer

B. Procedure
(1)Job Set-Up
(a)Make certain that the following circuit breakers are closed:

PANEL	SERVICE	IDENT.	LOCATION
132VU	FUEL/FUELLING/XFR VALVE	2QU	321/P55
132VU	FUEL/FUELLING/CTL & REFUEL VALVE	1QU	321/P56
132VU	FUEL/FUELLING/HI LVL	6QJ	321/P57
132VU	FUEL/FUELLING/OVERFLOW AND CAL	5QJ	321/P58
132VU	FUEL/FQI/SUPPLY & IND	1QT	321/P59
132VU	FUEL/FQI/CHAN SUPPLY/1	3QT	321/P60
132VU	FUEL/FQI/CHAN SUPPLY/2	4QT	321/P61

(b)Open access door 144DR.
(c)On panel 110VU, make certain that:
1 PWR SUPPLY switch is in NORM position and guarded.
2 TRANSF. VALVE switch is in CLOSED position and guarded.

(d)Energize the aircraft electrical network (Ref. 24-41-00, P. Block 301).

**ON A/C 001-100,

(e)Make certain aircraft contains the required fuel load.
1 For outer, inner and center tanks, refuel, defuel or transfer fuel (Ref. 12-11-28 or 28-25-00, P. Block 301) to achieve the following fuel state:

WARNING : FOLLOW THE AIRCRAFT STABILITY PRECAUTIONS (REF. 05-57-11, P. BLOCK 1) WHILE REARWARDS TRANSFER TO TRIM TANK IS TAKING PLACE.

2 For trim tank, transfer fuel from inner or center tank(s) (Ref. 28-25-00, P. Block 301) to achieve the following fuel state:

**ON A/C 101-200,

(e)Make certain aircraft contains the required fuel load.
1 For outer, inner and center tanks and ACT, refuel, defuel or transfer fuel (Ref. 12-11-28 or 28-25-00, P. Block 301) to achieve the following minimum fuel state:

WARNING : FOLLOW THE AIRCRAFT STABILITY PRECAUTIONS (REF. 05-57-11, P. BLOCK 1) WHILE REARWARD TRANSFER TO TRIM TANK IS TAKING PLACE.

2 For trim tank, transfer fuel from inner tanks or center tank (Ref. 28-25-00, P. Block 301) to achieve the following fuel state:

**ON A/C 101-200,

Post SB 28-2105 For A/C 101-200,

R Post SB 28-2126 For A/C 104-104,

(e)Make certain aircraft contains the required fuel load.
1 For outer, inner, center tanks, ACT 1 (if fitted) and ACT 2 (if fitted), refuel, defuel or transfer fuel (Ref. 12-11-28 or 28-25-00, P. Block 301) to achieve the following minimum fuel state:

WARNING : FOLLOW THE AIRCRAFT STABILITY PRECAUTIONS (REF. 05-57-11, P. BLOCK 1) WHILE REARWARD TRANSFER TO TRIM TANK IS TAKING PLACE.

2 For trim tank, transfer fuel from inner tanks or center tanks (Ref. 28-25-00, P. Block 301) to achieve the following fuel state:

**ON A/C 001-100,

L OUTR TK	L INR TK	CTR TK	R INR TK	R OUTR TK	TRIM TK
450 Kg (min)	450 Kg (min)	450 Kg (min)	450 Kg (min)	450 Kg (min)	600 Kg (min)

**ON A/C 101-200,

L OUTR TK	L INR TK	CTR TK	ACT (IF FITTED)	R INR TK	R OUTR TK	TRIM TK
1000 lb	1000 lb	1000 lb	1000 lb	1000 lb	1000 lb	1320 lb
450 kg	450 kg	450 kg	450 kg	450 kg	450 kg	600 kg

**ON A/C 101-200,

Post SB 28-2105 For A/C 101-200,

R Post SB 28-2126 For A/C 104-104,

L OUTR TK	L INR TK	CTR TK	ACT 1 / ACT 2 (IF FITTED)	R INR TK	R OUTR TK	TRIM TK
450 kg	450 kg	450 kg	FULL / 450 kg	450 kg	450 kg	600 kg
992 lb	992 lb	992 lb	FULL / 992 lb	992 lb	992 lb	1322 lb

**ON A/C ALL

(f)Connect defuel tanker to refuel/defuel couplings (Ref. 12-11-28, P. Block 301).
(g)Do the functional test of the Fuel Quantity Computer (15QT) (Ref. 28-42-38, P. Block 501).
(2)Test

ACTION	RESULT
1. On panel 110VU: - raise guard and place MODE SELECTOR	On panel 110VU:

ACTION	RESULT
switch in DEFUEL position	
- raise guards and place all REFUEL-DEFUEL-VALVES switches in OPEN position	
Start defueling (Ref. 28-25-00, P. Block 301).	On panel 110VU: - FUEL QTY indicator readings decrease for all tanks
**ON A/C 001-100,	
2. On panel 110VU:	
- monitor individual tank contents by placing FUEL QTY switch in CTR, then TT position	- FUEL QTY indicator will show descrease on individual center and trim tank contents on CTR/TT display
- before trim tank is completely defueled, place TRIM TK REFUEL/DEFUEL VALVES switch in SHUT position	
- place FUEL QTY switch in TT then CTR position	- FUEL QTY indicator CTR/TT reading stabilizes
- place TRIM TK REFUEL/DEFUEL VALVES switch in OPEN position	- FUEL QTY indicator readings continue to decrease for all tanks
As readings stabilize, place appropriate tank REFUEL/DEFUEL VALVES switch in SHUT position	
- place MODE SELECTOR switch in OFF position and guarded	
- place all REFUEL/DEFUEL VALVES switches in NORM position and guarded	
**ON A/C 101-200,	
2. On panel 110VU:	
- monitor individual tank contents by placing FQI DISPLAY switch in CTR position, then AUX position (if ACT fitted) and then TT	- Fuel QTY indicator will show decrease on individual center, ACT (if fitted) and trim tank contents on CTR/TT display

ACTION	RESULT
position	
- before trim tank is completely defueled place **TRIM TK REFUEL-DEFUEL-VALVES** switch in **SHUT** position	
- place **FQI DISPLAY** switch in **TT** position	- **FUEL QTY** indicator **CTR/TT** reading stabilizes
- place **FQI DISPLAY** switch in **AUX** position (if **ACT** fitted)	- **FUEL QTY** indicator **CTR/TT** reading decreases
- place **FQI DISPLAY** switch in **CTR** position	- **FUEL QTY** indicator **CTR/TT** reading stabilizes
- place **TRIM TK REFUEL-DEFUEL-VALVES** switch in **OPEN** position	- **FUEL QTY** indicator readings decrease for all tanks
As readings stabilize, place appropriate tank **REFUEL-DEFUEL-VALVES** switch in **SHUT** position	
- place **MODE SELECTOR** switch in **OFF** position and guarded	
- place all **REFUEL-DEFUEL-VALVES** switches in **NORM** position and guarded	

**ON A/C 101-200,

Post SB 28-2105 For A/C 101-200,

R Post SB 28-2126 For A/C 104-104,

2. On panel 110VU:	
- monitor individual tank contents by placing **FQI DISPLAY** switch in **CTR** position, then **TT** position then **ACT 1** position (if **ACT 1** fitted) and then **ACT 2** position (if **ACT 2** fitted)	- **FUEL QTY** indicator will show decrease on individual center tank, trim tank, **ACT 1** (if **ACT 1** fitted) and **ACT 2** (if **ACT 2** fitted) on **CTR/TT** display

ACTION	RESULT
- before trim tank is completely defueled place **TRIM TK REFUEL-DEFUEL-VALVES** switch in **SHUT** position	
- place **FQI DISPLAY** switch in **TT** position	- **FUEL QTY** indicator **CTR/TT** reading stabilizes
- place **FQI DISPLAY** switch in **ACT 1** position (if **ACT 1** fitted) and then **ACT 2** position (if **ACT 2** fitted)	- **FUEL QTY** indicator **CTR/TT** reading decreases
- place **FQI DISPLAY** switch in **CTR** position	- **FUEL QTY** indicator **CTR/TT** reading stabilizes
- place **TRIM TK REFUEL-DEFUEL-VALVES** switch in **OPEN** position	- **FUEL QTY** indicator readings decrease for all tanks
As readings stabilize, place appropriate tank **REFUEL-DEFUEL-VALVES** switch in **SHUT** position	
- place **MODE SELECT** switch in **OFF** position and guarded	
- place all **REFUEL-DEFUEL-VALVES** switches in **NORM** position and guarded	

**ON A/C ALL

(3)Close-Up
(a)Refuel aircraft to required fuel load (Ref. 12-11-28, P. Block 301).
(b)Close access door 144DR.
(c)De-energize the aircraft electrical network (Ref. 24-41-00, P. Block 301).
(d)Disconnect defuel tanker (Ref. 12-11-28, P.Block 301).

4. System Leak Test

A. Reason for the Job
(1)To check integrity of system between refuel couplings and diffusers.

B. Equipment and Materials

ITEM	DESIGNATION
A.	Fuel System Pressurization Unit with Pressure Gage 0-5 bar (0-75 psi) and adjustable pressure-relief system.
B.	Circuit Breaker Safety Clips and Tags
C.	Access Platforms 4.5 m (15 ft) for each wing
D.	Access platform 2m (6.5 ft).
E.	Not applicable
F.	Blanks, complete with Bleed Valve - Diffusers
G. Material No. 01-001	Fuels (Ref. 20-31-00)
References Procedures	
- 12-11-28, P. Block 301	Replenishing of Fuel Tanks
- 24-41-00, P. Block 301	AC External Power Control
- 28-00-00, P. Block 301	Fuel - General
- 28-11-22, P. Block 401	Manhole Covers Wings
- 28-11-24, P. Block 401	Manhole, Cover, Booster Pump
- 28-11-29, P. Block 401	Manhole Cover, Center Tank
- 28-11-33, P. Block 401	Manhole Covers, Trim Tank
- 28-25-00, P. Block 301	Refuel/Defuel System
- 28-25-15, P. Block 401	Diffusers
- 28-25-22, P. Block 401	Diffusers - Trim Tank
- 28-42-44, P. Block 401	Cadensicon Sensor (10QT)
- 32-12-11, P. Block 301	Main Gear Main Door

C. Procedure
(Ref. Fig. 501)

(1)Job Set-Up
(a)Defuel all the tanks (Ref. 28-25-00, P. Block 301).
(b)Open the access door 144DR.
(c)On the panel 110VU, make sure that the TRANSF. VALVE switch is in the CLOSED position and guarded, and make sure that the OPEN indicator light is off.
(d)Open the LH main landing gear bay door (Ref. 32-12-11, P. Block 301) and put the 2 m (6.5 ft) access platform in position.
(e)Open, safety and tag the circuit breakers that follow:

**ON A/C 001-100,

PANEL	SERVICE	IDENT.	LOCATION
22VU	FUEL/OUTR TK PUMP 2/L TK/CTL	61QA	201/J15
22VU	FUEL/OUTR TK PUMP 2/R TK/CTL	68QA	201/J18
22VU	FUEL/TRIM TANK FWD XFR/PUMP 1/CTL	3QN	201/J22
132VU	FUEL/TRIM TANK/XFR PUMP 2/CTL	4QN	325/K55
132VU	FUEL/L OUTR TK/PUMP 1/CTL	67QA	322/N56

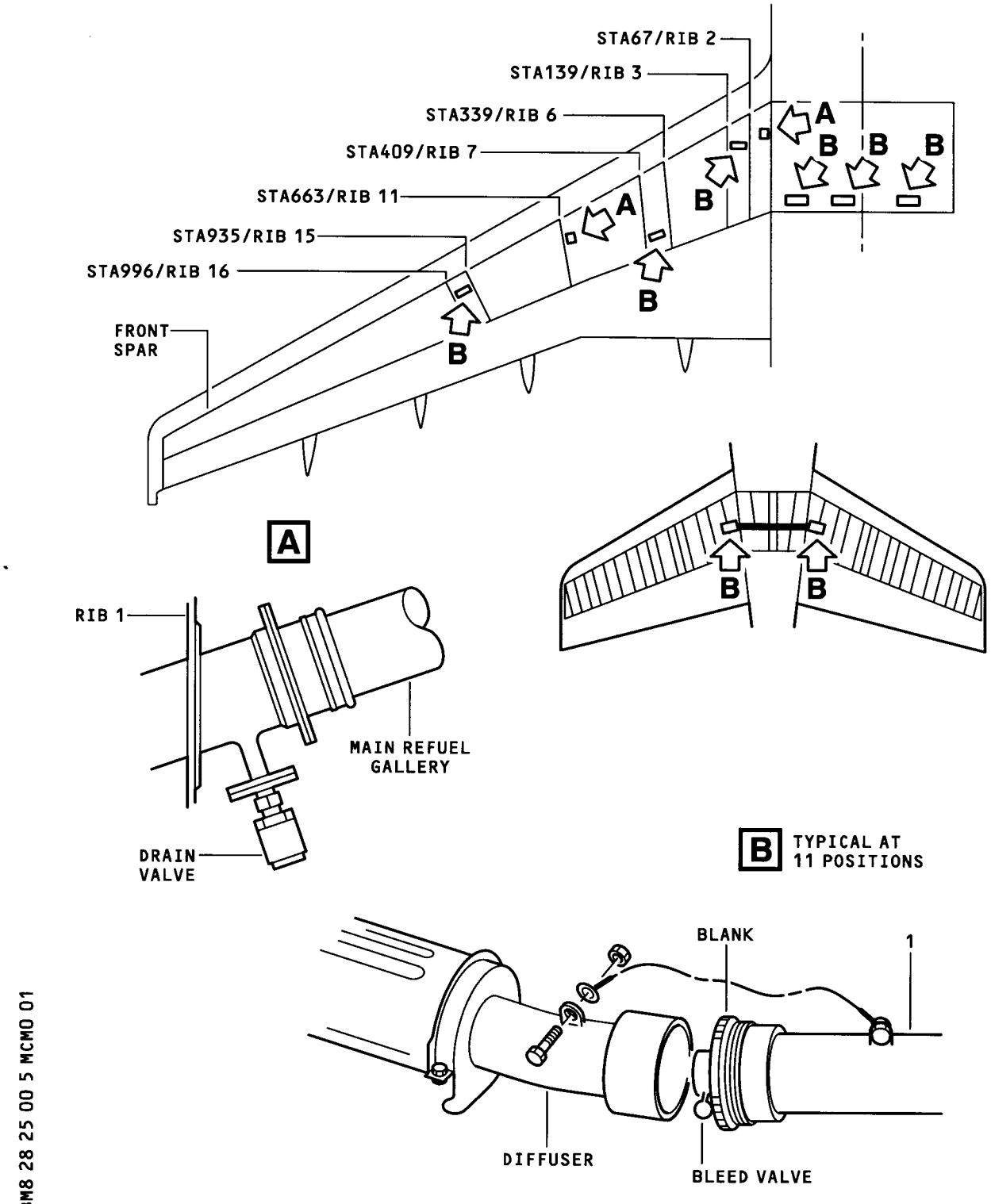
PANEL	SERVICE	IDENT.	LOCATION
132VU	FUEL/R OUTR TK/PUMP 1/CTL	62QA	323/M57
132VU	FUEL/CTR TK/L PUMP/CTL	63QA	322/N58
132VU	FUEL/CTR TK/R PUMP/CTL	64QA	323/M59
132VU	FUEL/L INR TK/PUMP 1/CTL	69QA	322/N60
132VU	FUEL/L INR TK/PUMP 2/CTL	59QA	323/M61
132VU	FUEL/R INR TK/PUMP 1/CTL	60QA	322/N62
132VU	FUEL/R INR TK/PUMP 2/CTL	70QA	323/M63
132VU	FUEL/X FEED VALVE/POS ANN	3QE	324/L59
132VU	FUEL/X FEED VALVE/MOTOR 1	2QE	324/L60
132VU	FUEL/X FEED VALVE/MOTOR 2	1QE	324/L61

**ON A/C 101-200,

PANEL	SERVICE	IDENT.	LOCATION
22VU	FUEL/OUTR TK PUMP 2/L TK/CTL	61QA	201/J15
22VU	FUEL/OUTR TK PUMP 2/R TK/CTL	68QA	201/J18
22VU	FUEL/TRIM TANK FWD XFR/PUMP 1/CTL	3QN	201/J22
101VU	FUEL/CARGO TK/PUMP SUPPLY	1QH	GEN1/A02
132VU	FUEL/TRIM TANK/XFR PUMP 2/CTL	4QN	325/K55
132VU	FUEL/L OUTR TK/PUMP 1/CTL	67QA	322/N56
132VU	FUEL/R OUTR TK/PUMP 1/CTL	62QA	323/M57
132VU	FUEL/CTR TK/L PUMP/CTL	63QA	322/N58
132VU	FUEL/CTR TK/R PUMP/CTL	64QA	323/M59
132VU	FUEL/L INR TK/PUMP 1/CTL	69QA	322/N60
132VU	FUEL/L INR TK/PUMP 2/CTL	59QA	323/M61
132VU	FUEL/R INR TK/PUMP 1/CTL	60QA	322/N62
132VU	FUEL/R INR TK/PUMP 2/CTL	70QA	323/M63
132VU	FUEL/X FEED VALVE/POS ANN	3QE	324/L59
132VU	FUEL/X FEED VALVE/MOTOR 1	2QE	324/L60
132VU	FUEL/X FEED VALVE/MOTOR 2	1QE	324/L61

**ON A/C ALL

(f)Put the 4.5 m (15 ft) access platforms in position at each wing.
(g)Remove the wing manhole covers 540(640)AB, 540(640)EB (Ref. 28-11-22, P. Block 401) and the trim tank manhole covers 333(343)BB (Ref. 28-11-33, P. Block 401).
(h)Remove the center tank manhole cover 147AZ (Ref. 28-11-29, P. Block 401).
(j)Remove the cadensicon (Ref. 28-42-44, P. Block 401).
(k)Not applicable.
(l)Remove the diffusers (Ref. 28-25-15, and 28-25-22 P. Block 401).
(m)Install a blank, complete with a bleed valve, on each diffuser line end (1).



Refuel/Defuel System - Leak Test
Figure 501

(n)Remove the relevant manhole covers (Ref. 28-11-22, 28-11-24 and 28-11-33, P. Block 401) to let you examine the refuel/defuel lines.

ACTION	RESULT
1. On panel 110VU: - make certain that **PWR SUPPLY** switch is in **NORM** position and guarded	
**ON A/C 001-100,	
- raise guard and place **MODE SELECTOR** switch in **REFUEL** position	
**ON A/C 101-200,	
- raise guard and place **MODE SELECTOR** switch in **REFUEL** position	
CAUTION : IF ACT FITTED, MAKE CERTAIN AUX TK REFUEL-DEFUEL-VALVES SWITCH REMAINS SHUT FOR THE DURATION OF THE TEST.	
- if ACT fitted, raise guard and place **AUX TK REFUEL-DEFUEL-VALVES** switch in **SHUT** position	
**ON A/C 101-200,	
Post SB 28-2105 For A/C 101-200,	
Post SB 28-2126 For A/C 104-104,	
- raise guard and place **MODE SELECTOR** switch in **REFUEL** position	
CAUTION : IF ACT(S) FITTED, MAKE CERTAIN ACT REFUEL-DEFUEL-VALVES SWITCH REMAINS SHUT FOR THE DURATION OF THE TEST.	
- if ACT(s) fitted, raise guard and place **ACT REFUEL-DEFUEL-VALVES** switch in **SHUT** position	

ACTION	RESULT
**ON A/C ALL	
- raise guard and place R OUTER TK REFUEL-DEFUEL-VALVES switch in OPEN position	
2. Using fuel system pressurization unit fill right outer tank refuel line with fuel. Bleed at diffuser line end until line is full, then tighten bleed valve.	
CAUTION : WHEN PERFORMING STEP 3. CTR TK AND TRIM TK REFUEL-DEFUEL-VALVES MUST BE OPENED SIMULTANEOUSLY.	
3. On panel 110VU:	
- raise guards and place each tank REFUEL-DEFUEL-VALVES switch in OPEN position and fill each tank refueling line in sequence including the trim tank.	
- bleed at diffuser blank bleed valves	
- pressurize system to 3.5 bar (51 psi) and maintain pressure for 15 min	No leaks permitted
- make certain there is no leakage from drain valves at wing STA 0 (RIB 1) and STA 663 (RIB 11)	
- release pressure by opening diffuser blank bleed valves	
4. On panel 110VU:	
- place all REFUEL-DEFUEL-VALVES switches in NORM position and guarded	
- place MODE SELECTOR switch in OFF position and guarded	
- close access door 144DR	

(e)Not applicable.

(f)Install cadensicon (Ref. 28-42-44, P. Block 401).
(g)Make certain that working area is clean and clear of tools and miscellaneous items of equipment.
(h)Install manhole covers (Ref. 28-11-22, 28-11-24, 28-11-29 and 28-11-33, P. Block 401).
(j)Remove access platforms from each wing.
(k)Remove safety clips and tags and close the following circuit breakers:

**ON A/C 001-100,

PANEL	SERVICE	IDENT.	LOCATION
22VU	FUEL/OUTR TK PUMP 2/L TK/CTL	61QA	201/J15
22VU	FUEL/OUTR TK PUMP 2/R TK/CTL	68QA	201/J18
22VU	FUEL/TRIM TANK FWD XFR/PUMP 1/CTL	3QN	201/J22
132VU	FUEL/TRIM TANK/XFR PUMP 2/CTL	4QN	325/K55
132VU	FUEL/L OUTR TK/PUMP 1/CTL	67QA	322/N56
132VU	FUEL/R OUTR TK/PUMP 1/CTL	62QA	323/M57
132VU	FUEL/CTR TK/L PUMP/CTL	63QA	322/N58
132VU	FUEL/CTR TK/R PUMP/CTL	64QA	323/M59
132VU	FUEL/L INR TK/PUMP 1/CTL	69QA	322/N60
132VU	FUEL/L INR TK/PUMP 2/CTL	59QA	323/M61
132VU	FUEL/R INR TK/PUMP 1/CTL	60QA	322/N62
132VU	FUEL/R INR TK/PUMP 2/CTL	70QA	323/M63
132VU	FUEL/X FEED VALVE/POS ANN	3QE	324/L59
132VU	FUEL/X FEED VALVE/MOTOR 1	2QE	324/L60
132VU	FUEL/X FEED VALVE/MOTOR 2	1QE	324/L61

**ON A/C 101-200,

PANEL	SERVICE	IDENT.	LOCATION
22VU	FUEL/OUTR TK PUMP 2/L TK/CTL	61QA	201/J15
22VU	FUEL/OUTR TK PUMP 2/R TK/CTL	68QA	201/J18
22VU	FUEL/TRIM TANK FWD XFR/PUMP 1/CTL	3QN	201/J22
101VU	FUEL/CARGO TK/PUMP SUPPLY	1QH	GEN1/A02
132VU	FUEL/TRIM TANK/XFR PUMP 2/CTL	4QN	325/K55
132VU	FUEL/L OUTR TK/PUMP 1/CTL	67QA	322/N56
132VU	FUEL/R OUTR TK/PUMP 1/CTL	62QA	323/M57
132VU	FUEL/CTR TK/L PUMP/CTL	63QA	322/N58
132VU	FUEL/CTR TK/R PUMP/CTL	64QA	323/M59
132VU	FUEL/L INR TK/PUMP 1/CTL	69QA	322/N60
132VU	FUEL/L INR TK/PUMP 2/CTL	59QA	323/M61
132VU	FUEL/R INR TK/PUMP 1/CTL	60QA	322/N62
132VU	FUEL/R INR TK/PUMP 2/CTL	70QA	323/M63

PANEL	SERVICE	IDENT.	LOCATION
132VU	FUEL/X FEED VALVE/POS ANN	3QE	324/L59
132VU	FUEL/X FEED VALVE/MOTOR 1	2QE	324/L60
132VU	FUEL/X FEED VALVE/MOTOR 2	1QE	324/L61

**ON A/C ALL

(l)Remove access platform and close LH main landing gear bay door (Ref. 32-12-11, P. Block 301).
(m)Refuel aircraft to required fuel load (Ref. 12-11-28, P. Block 301).

**ON A/C 101-200,

R

5. ACT Refuel/Transfer Pipe Leak Test With ACT(s) Removed

A. Reason for the Job
(1)To leak test the ACT refuel/transfer pipe with the ACT(s) Removed.

**ON A/C 101-200,

B. Equipment and Materials

ITEM	DESIGNATION
A.	Access Platform 2.5 m (8 ft)
B.	Access Platform 4 m (13 ft)
C.	Fuel Pressure Rig (FPG) with pressure gage 0-5 bar (0-75 psi) and adjustable pressure-relief system.
E.	Blanking Plugs/Caps
F.	Lockwire - Corrosion Resistant Steel, dia 0.8 mm (0.032 in.)
Referenced Procedures	
-12-11-28, P. Block 301	Replenishing of Fuel Tanks
-24-41-00, P. Block 301	A/C External Power Control
-28-00-00, P. Block 301	Fuel - General
-28-10-00, P. Block 301	Fuel - Storage
-28-11-29, P. Block 401	Center Tank Manhole Cover
-28-13-00, P. Block 501	External Venting System
-28-25-00, P. Block 301	Refuel/Defuel System
-28-28-17, P. Block 401	ACT Transfer Valve Actuator
-32-12-11, P. Block 301	Main Gear Main Door
-52-30-00, P. Block 1	Cargo Compartment Doors

C. Procedure
(1)Job Set-Up
(a)Defuel the center tank and the trim tank (Ref. 28-25-00, P. Block 301).
(b)Open the LH main-landing-gear bay door (Ref. 32-12-11 P. Block 301) and position the 2.5 m (8 ft) access platform.
(c)Remove the center tank manhole cover 147AZ (Ref. 28-11-29, P. Block 401).

NOTE: It will be necessary to enter the center tank during the test to check for leaks.

(d)Remove the fairing covering the ACT transfer-valve actuator, the ACT

pump and the ACT refuel/defuel valve (Ref. 28-28-17, P. Block 401).
1 Make sure that the groove in the ACT transfer valve actuator is in the SHUT position.
(e)Open the AFT cargo compartment door (Ref. 52-30-00, P. Block 1).
1 Make sure that the blank is installed in the end of the ACT refuel/transfer pipe.
2 Remove and discard the lockwire from the bleed screw in the blank.

**ON A/C 101-200,

Post SB 28-2108 For A/C 101-200,

(e)Open the AFT cargo compartment door (Ref. 52-30-00, P. Block 1).
1 Make sure that the blank is installed in the end of the refuel/transfer pipe at ACT 1 and ACT 2 positions.
2 Remove and discard the lockwire from the bleed screw in each blank.

**ON A/C 101-200,

(f)Open the access door 144DR and on panel 110VU, make sure that:
1 All the REFUEL-DEFUEL-VALVES switches are in the NORM and guarded position.
2 The TRANSF. VALVE switch is in the closed and guarded position.
(g)Close the access door 144DR.
(h)Make sure that the aircraft electrical network is de-energized (Ref. 24-41-00, P. Block 301).

NOTE: When the aircraft electrical network is de-energized the refuel/defuel valves are closed.

(j)Position the 4 m (13 ft) access platform in zone 623.
(k)Remove the cap from a refuel coupling and connect the fuel pressure rig to the coupling.

WARNING: BEFORE PRESSURIZING THE AIRCRAFT SYSTEM, THE FPG SAFETY SYSTEM MUST BE TESTED TO 0.68 BAR (10 PSI) and 3.93 BAR (57 PSI) AND ALL BLANKS SAFELY INSTALLED AND TIGHTENED.

WARNING: USE A PROTECTIVE EYE SHIELD/GOGGLES WHEN YOU DO THE TEST. UNWANTED MATERIAL AND/OR HIGH PRESSURE AIR CAN DAMAGE YOUR EYES.

(2)Test.

ACTION	RESULT
1. Set the FPG to a pressure of 0.68 bar (10 psi)	
2. Push and hold the manual plunger on the ACT refuel/defuel valve.	- the ACT refuel/defuel valve will now open when fuel pressure is applied.

ACTION	RESULT
NOTE: The manual plunger must be pushed in until the test is completed.	
3. Start the FPG.	- the ACT refuel gallery fills with fuel.
WARNING: ALL THE TRAPPED AIR CANNOT BE REMOVED FROM THE SYSTEM. THE AIR THAT REMAINS TRAPPED WILL BE PRESSURIZED WITH THE FUEL. ONLY THE PERSON DOING THE TEST SHOULD GO NEAR THE PIPES.	
4. In the aft cargo compartment carefully open the bleed screw in the blank on the ACT refuel/transfer pipe.	- trapped air and fuel will drain from the ACT refuel gallery
- when a steady stream of fuel is seen to drain from the pipe, close the bleed screw	- fuel will stop draining from the ACT refuel gallery.
5. Tighten the bleed screw in the blank on the ACT refuel/transfer pipe.	
**ON A/C 101-200,	
Post SB 28-2108 For A/C 101-200,	
4. In the aft cargo compartment at ACT 1 position:	AT ACT 1 position:
- carefully open the bleed screw in the blank on the refuel/transfer pipe.	- trapped air and fuel will drain from the ACT refuel gallery
- when a steady stream of fuel is seen to drain from the pipe, tighten the bleed screw	- fuel will stop draining from the refuel gallery
5. In the aft cargo compartment at ACT 2 position:	At ACT 2 position:
- carefully open the bleed screw in the blank on the refuel/transfer pipe.	- trapped air and fuel will drain from the ACT refuel gallery
- when a steady stream of fuel is seen to drain from the pipe, tighten the bleed screw	- fuel will stop draining from the refuel gallery

ACTION	RESULT
**ON A/C 101-200,	
WARNING: DO NOT GO NEAR THE PIPES WHILE THE PRESSURE IS BEING INCREASED OR UNTIL AFTER THE PRESSURE HAS STABILISED AT 3.93 BAR (57 PSI) FOR AT LEAST 15 MINUTES.	
6. Slowly increase the pressure at the FPG to 3.93 bar (57 psi).	The pressure of the fuel and the trapped air in the ACT refuel gallery increases to 3.93 bar (57 psi).
7. Maintain this pressure at the FPG for 15 minutes.	The ACT refuel gallery is pressurized.
8. Look for any leakage of fuel from: - the ACT refuel gallery pipes in the center tank - the ACT(s) leak monitor at FR 54 (push (in) the plunger) - the drain mast at FR 52/53 - the blank/bleed screw in the AFT cargo compartment.	No leaks allowed.
**ON A/C 101-200,	
Post SB 28-2108 For A/C 101-200,	
8. Look for any leakage of fuel from: - the ACT refuel gallery pipes in the center tank - the ACT(s) leak monitor at FR 54 (push (in) the plunger) - the drain mast at FR 52/53 - the blank/bleed screws in the AFT cargo compartment at ACT 1 and ACT 2 position.	- No leaks allowed.
**ON A/C 101-200,	
9. If a leak is found then: - stop the FPG and release the pressure	- The fuel pressure is released in the ACT refuel gallery

ACTION	RESULT
	- The ACT refuel/defuel valve closes.
- repair the leak as necessary - repeat the test until there are no leaks.	
10.If no leaks are found then: - stop the FPG and release the pressure.	- The fuel pressure is released in the ACT refuel gallery. - The ACT refuel/defuel valve closes.
11.In the main undercarriage bay: - release the manual plunger on the ACT refuel/defuel valve.	

(3)Close-Up.
(a)Disconnect the FPG from the refuel coupling and install the coupling cap.
(b)Remove the access platform.
(c)In the main-landing-gear bay:
1 Make sure that the center tank is clean and clear of tools and miscellaneous items of equipment.
2 Install the center tank manhole cover 147AZ (Ref. 28-11-29, P. Block 401)
3 Install the fairing on the ACT transfer-valve actuator (Ref. 28-28-17, P. Block 401).
4 Make sure that the work area is clean and clear of tools and miscellaneous items of equipment.
(d)Close the LH main-landing-gear bay door (Ref. 32-12-11, P. Block 301).
(e)In the AFT cargo-compartment:
1 Safety the bleed screw with corrosion-resistant steel lockwire 0.8 mm (0.032 in.).
2 Make sure that the work area is clean and clear of tools and miscellaneous items of equipment.

**ON A/C 101-200,

Post SB 28-2108 For A/C 101-200,

1 Safety the bleed screws with corrosion-resistant steel lockwire 0.8 mm (0.032 in.).
2 Make sure that the work area is clean and clear of tools and miscellaneous items of equipment.

**ON A/C 101-200,

(f)Close the AFT cargo-compartment door (Ref. 52-30-00, P. Block 1).
(g)If necessary, refuel the tanks (Ref. 12-11-28, P. Block 301).

WARNING : LANDING GEAR - MAKE CERTAIN GROUND SAFETIES AND CHOCKS ARE IN POSITION.

FLIGHT CONTROLS - MAKE CERTAIN GROUND SAFETIES AND NOTICES ARE IN POSITION.

OBSERVE THE SAFETY PRECAUTIONS IN 28-00-00, P. BLOCK 301 AND 28-10-00, P.BLOCK 301.

MAKE CERTAIN THAT FIRE FIGHTING EQUIPMENT IS AVAILABLE AND ADEQUATE.

BEFORE POWER IS SUPPLIED TO THE AIRCRAFT MAKE CERTAIN THAT ELECTRICAL CIRCUITS UPON WHICH WORK IS IN PROGRESS ARE ISOLATED

1. Reason for the Job
   A. Inspection of pipeline joints for leakage in inner, outer and trim tanks.
2. Equipment and Materials

ITEM	DESIGNATION
A.	Access Platform 2.50 to 5 m (8 to 16 ft) 5.50 to 8 m (18 to 26 ft 3 in)
B.	Tanker, Refueling
C. Material No. 01-001	Fuels (Ref. 20-31-00)
Referenced Procedures	
- 12-11-28, P. Block 1	Replenishing of Fuel Tanks
- 24-41-00, P. Block 301	AC External Power Control
- 28-00-00, P. Block 301	Fuel - General
- 28-10-00, P. Block 301	Storage
- 28-11-22, P. Block 401	Cover - Manhole, Wings
- 28-11-29, P. Block 401	Cover - Manhole, Center Tank
- 28-11-33, P. Block 401	Cover - Manhole, Trim Tank
- 28-25-00, P. Block 301	Refuel/Defuel System
- 32-12-11, P. Block 301	Main Gear Main Door

3. Procedure

   A. Job Set-Up
      (1)Energize the aircraft electrical network (Ref. 24-41-00, P. Block 301).
      (2)Open access door 144DR
         (a)On refueling panel 110VU, make certain that:
            - TRANSF VALVE switch is in the CLOSED position and guarded
            - REFUEL DEFUEL VALVES switches are in NORM position and guarded.
            - MODE SELECTOR switch is in OFF position and guarded
      (3)Make certain from FQI, that all tanks are defueled. If necessary defuel all tanks (Ref. 28-25-00, P. Block 301).

(4)Outer tank:
(a)Position access platform.
(b)Remove manhole cover 550(650)BB (Ref. 28-11-22, P. Block 401).
Inner tank
(c)Position access platform
(d)Remove manhole covers (Ref. 28-11-22, P. Block 401).
Center tank

R **ON A/C 001-100,

(e)Gain access to center tank rear wall through landing gear bay (Ref. 32-12-11, P. Block 301) and remove manhole cover 147AZ (148)AZ (Ref. 28-11-29, P. Block 401).

R **ON A/C 101-200,

(e)Gain access to center tank rear wall through landing gear bay (Ref. 32-12-11, P. Block 301) and remove manhole cover 147AZ (Ref. 28-11-29, P. Block 401).

R **ON A/C ALL

Trim Tank
(f)Position access platform.
(g)Remove manhole covers (Ref. 28-11-33, P. Block 401).
(5)Connect tanker to wing refueling coupling (Ref. 12-11-28, P. Block 301).

B. Inspection
(1)Inspect pipes and joints for damage and distortion.
(2)Operate tanker to fill refuel/defuel lines with fuel (Ref. 12-11-28, P. Block 301).
(3)With pressure maintained in pipeline, momentarily open each of the refueling valves, by operating switches on the refueling panel, to bleed the line of air.
(4)Visually inspect each section of pipeline and pipe joints for leaks. Ensure no fuel flows from refueling diffusers (leaking refuel/defuel valves).

NOTE : This test is effective up to the refuel/defuel valves. With no flow, tanker pressure can be slowly increased and at 65 psi (4.48 bar) will open the relief poppets in the refuel/defuel valves and leak fuel into the refuel line.
Fuel drain valves at each end of the inner tanks have a permissible leak rate of 5 cc to 150 cc per minute. Engine feed pump must not be running.

C. Job Close-Up
(1)Release fuel pressure from tanker and disconnect refueling hoses

(Ref. 12-11-28, P. Block 301).
(2)On panel 110VU:
(a)Make certain all REFUEL/DEFUEL VALVES switches are in NORM position and guarded.
(3)Close access door 144DR.
(4)De-energize the aircraft electrical network (Ref. 24-41-00, P. Block 301).
(5)Make certain that working area is clean and clear of tools and miscellaneous items of equipment.
(6)Install manhole covers:
- outer tank (Ref. 28-11-22, P. Block 401)
- inner tank (Ref. 28-11-23, P. Block 401)
- center tank (Ref. 28-11-29, P. Block 401)
- trim tank (Ref. 28-11-33, P. Block 401).
(7)Remove access platform.

4. Trim Tank Fuel Pipe - Pressure Test

A. Reason for the Job
(1)To pressure test the trim-tank fuel-transfer-pipe for leaks.

B. Equipment and Materials

ITEM	DESIGNATION
A.	Refuel Tanker, fitted with gage capable of reading fuel pressures of 1.2 to 2.6 bar (15 to 37 psi)
B.	Warning Notices

Referenced Procedures

- 12-11-28, P. Block 301	Replenishing of Fuel Tanks
- 24-41-00, P. Block 301	AC External Power Control
- 28-13-00, P. Block 501	External Ventilating System
- 28-13-31, P. Block 601	Drain Shroud
- 28-25-00, P. Block 301	Refuel/Defuel System
- 28-26-15, P. Block 401	Trim Tank Fuel Transfer Line
- 28-26-15, P. Block 801	Trim Tank and ACT Fuel Transfer Lines

C. Procedure

(1)Job set-up
(a)Do a free flow test of the trim tank vent/drain system and vapor seal (Ref. 28-13-00, P. Block 501).
(b)Display a warning notice in the flight compartment on the overhead panel, prohibiting any operation of the Auxiliary Power Unit (APU).
(c)Connect the fuel tanker to the aircraft (Ref. 12-11-28, P. Block 301).
(d)Energize the aircraft electrical network (Ref. 24-41-00, P. Block 301).
(e)Refuel, defuel or transfer fuel (Ref. 12-11-28 or 28-25-00, P. Block 301) so that the:
- trim tank is empty
- center tank or the two inner tanks are full (to the high level position.
(f)Open the access door 144DR to the refuel/defuel panel 110VU.

NOTE : If the electrical network is energized and the TRIM TK ISOL VALVE P/BSW is pushed (in), the trim-tank isolation valve will

open automatically when the refuel/defuel panel is energized.

1 Make sure that the **PWR SUPPLY** switch is in the **NORM** and guarded position.
2 Lift the guards and put all the **REFUEL-DEFUEL-VALVES** switches in the **SHUT** position.
3 Make sure that the **TRANSF. VALVE** switch is in the **CLOSED** and guarded position and that the **OPEN** indicator light is off (valve is shut).

R **ON A/C 001-100,

4 Lift the guard and put the **MODE SELECTOR** switch in the **REFUEL** position.
5 Put the **FUEL QTY** switch in the **TT** position.

R **ON A/C 101-200,

4 Lift the guard and put the **MODE SELECTOR** switch in the **REFUEL** position.
5 Put the **FQI DISPLAY** switch in the **TT** position.

R **ON A/C 101-200,

R Post SB 28-2108 For A/C 101-200,

4 Lift the guard and put the **MODE SELECT** switch in the **REFUEL** position.
5 Put the **FQI DISPLAY** switch in the **TT** position.

R **ON A/C ALL

NOTE : The **CTR/TT** contents display on the **FQI** will only display the trim-tank fuel quantity.

(g) On panel **430VU**, in the flight compartment, make sure that the **TRIM TK ISOL VALVE P/BSW** is pushed (in) and that the flowbar is on (isolation valve open).
(h) Operate the **APU/TTS** leak monitor to make sure there is no fuel in the drain system (Ref. 28-13-31, P. Block 601).

(2) Test.

ACTION	RESULT
1. On the fuel tanker, set the delivery pressure to 1.0 to 1.2 bar (15 to 17 psi) and open the delivery valve.	

ACTION	RESULT
CAUTION : DO NOT ADJUST THE DELIVERY PRESSURE ON THE FUEL TANKER IF IT DECREASES WHEN THE REFUEL/DEFUEL VALVE OPENS. IF YOU ADJUST THE DELIVERY PRESSURE IT COULD DAMAGE THE FUEL LINE(S) WHEN THE TRIM TANK ISOLATION VALVE IS CLOSED.	
2. On panel 110VU, put the TRIM TK REFUEL-DEFUEL-VALVES switch to OPEN. If the center tank is full, also put the CTR TK REFUEL-DEFUEL-VALVES switch to OPEN.	The trim-tank refuel/defuel valve opens and fuel flows into the trim tank.
3. When the CTR/TT contents display on the FQI shows an increase in the fuel reading, release (out) the TRIM TK ISOL VALVE P/BSW on panel 430VU.	The trim-tank isolation valve closes and the fuel flow stops. On the P/BSW, the flowbar goes off and the OFF legend comes on. The trim-tank fuel-transfer-pipe is pressurized with fuel.
4. On the fuel tanker, make sure the delivery pressure is at 1.0 to 1.2 bar (15 to 17 psi) and the fuel flow is zero.	
5. After a minimum of 5 minutes, examine the APU/TTS leak monitor for fuel leakage (Ref. 28-13-31, P. Block 601).	There should be no fuel leakage.
6. On the fuel tanker, slowly increase the delivery pressure to 2.4 to 2.6 bar (35 to 37 psi). Make sure that the fuel flow remains at zero.	
7. After a minimum of 30 minutes, examine the APU/TTS leak monitor for fuel leakage (Ref. 28-13-31, P. Block 601).	There should be no fuel leakage.
8. On the fuel tanker, close the delivery valve and set the delivery pressure to zero.	
9. On panel 430VU, push (in) the TRIM TK ISOL VALVE P/BSW.	The trim-tank isolation valve opens. On the P/BSW, the OFF legend goes off and the flowbar comes on. The fuel pressure in the trim-tank fuel-transfer-pipe is released.
10. If the trim-tank fuel-transfer	

ACTION	RESULT

pipe does not leak, continue with the Close-Up procedure.

11. If the trim-tank fuel transfer pipe leaks:
- Remove the pipe (Ref. 28-26-15, P. Block 401).
- Repair the pipe (Ref. 28-26-15, P. Block 801).
- Install the pipe (Ref. 28-26-15, P. Block 401) and do the trim-tank fuel-pipe pressure test again.

R **ON A/C 001-100,

(3) Close-Up
(a) On panel 110VU:
1 Put the **FUEL QTY** switch in the **CTR & TT** position.
2 Put the **MODE SELECTOR** switch in the **OFF** and guarded position.
3 Put all the **REFUEL-DEFUEL-VALVES** switches in the **NORM** and guarded position.
(b) Close the access door **144DR**.

NOTE 1 : The refuel/defuel panel 110VU, is now de-energized.

NOTE 2 : The trim-tank isolation-valve actuator will now move the isolation valve to the shut position.

R **ON A/C 101-200,

(3) Close-Up
(a) On panel 110VU:
1 Put the **FQI DISPLAY** switch in the **CTR & AUX & TT** position.
2 Put the **MODE SELECTOR** switch in the **OFF** and guarded position.
3 Put all the **REFUEL-DEFUEL-VALVES** switches in the **NORM** and guarded position.
(b) Close the access door **144DR**.

NOTE 1 : The refuel/defuel panel 110VU, is now de-energized.

NOTE 2 : The trim-tank isolation-valve actuator will now move the isolation valve to the shut position.

R **ON A/C 101-200,

R Post SB 28-2108 For A/C 101-200,

(3)Close-Up
(a)On panel 110VU:
1 Put the **FQI DISPLAY** switch in the **CTR-TT & ACT** position.
2 Put the **MODE SELECT** switch in the **OFF** and guarded position.
3 Put all the **REFUEL-DEFUEL-VALVES** switches in the **NORM** and guarded position.
(b)Close the access door **144DR**.

NOTE 1 : The refuel/defuel panel 110VU, is now de-energized.

NOTE 2 : The trim-tank isolation-valve actuator will now move the isolation valve to the shut position.

R **ON A/C ALL

(c)Refuel, defuel or transfer the fuel as necessary (Ref. 12-11-28 or 28-25-00, P. Block 301).
(d)De-energize the aircraft electrical network (Ref. 24-41-00, P. Block 301).
(e)Disconnect the fuel tanker from the aircraft (Ref. 12-11-28, P. Block 301).
(f)Remove the warning notices.
(g)Remove all the ground support equipment, the maintenance equipment, the standard and special tools and all other items.

WARNING : LANDING GEAR - MAKE CERTAIN GROUND SAFETIES AND CHOCKS ARE IN POSITION.

FLIGHT CONTROLS - MAKE CERTAIN GROUND SAFETIES AND NOTICES ARE IN POSITION.

OBSERVE THE SAFETY PRECAUTIONS IN 28-00-00, P. BLOCK 301.

MAKE CERTAIN THAT FIRE FIGHTING EQUIPMENT IS AVAILABLE AND ADEQUATE.

1. Equipment and Materials

ITEM	DESIGNATION
A.	Access Platform (4.5 m) (15 ft)
B.	Container
C.	O-ring Seal
D. Material No. 01-001	Fuels (Ref. 20-31-00)
E.	Protective Caps
Referenced Procedures	
- 12-11-28, P. Block 1	Fuel
- 28-00-00, P. Block 301	Fuel - General

2. Procedure

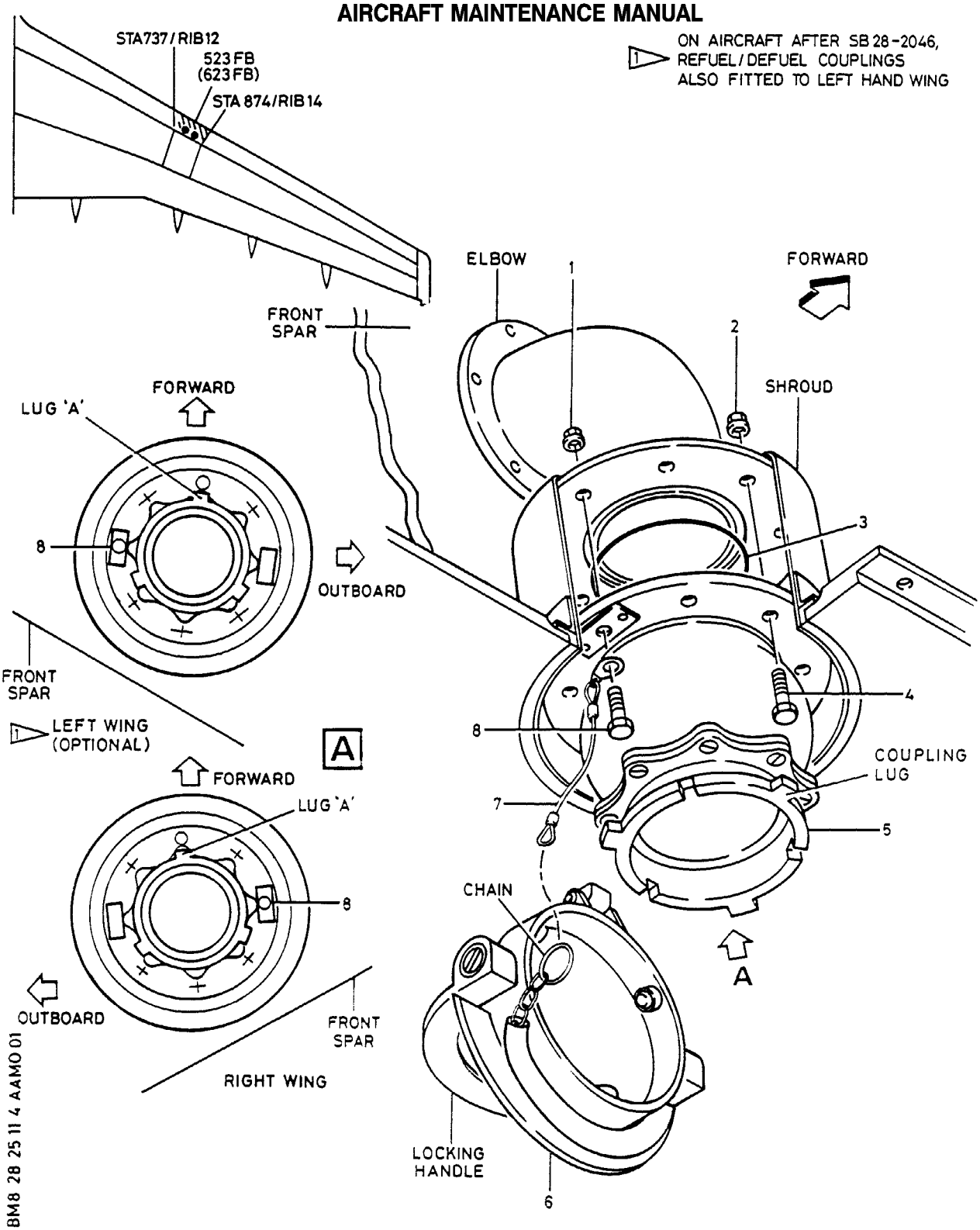
(Ref. Fig. 401)

A. Job Set-Up
(1)Position the access platform.
(2)Remove the access door 623FB for the RH wing coupling.

B. Removal
(1)Remove adapter cap (6) and disconnect chain from cable (7).
(2)Position container below coupling (5). Operate coupling check valve manually to drain off residual fuel.
(3)Remove nut (1) and bolt (8) and withdraw cable (7).
(4)Remove seven nuts (2) and bolts (4) and withdraw coupling (5). Discard O-ring seal (3).
(5)Clean and inspect component interface and adjacent area. Cap open line-end and coupling orifices.

C. Preparation of Replacement Component
(1)Immerse coupling in Material No.01-001 for approximately 30 minutes.
(2)After immersion, thoroughly dry coupling using clean, lint-free cloth. Manually operate coupling check valve to check satisfactory operation.

D. Installation
(1)Lubricate new O-ring seal (3) with Material No.01-001 and position in groove on elbow flange.



Refuel/Defuel Coupling - Installation
Figure 401

R

(2)Position coupling (5) against elbow so that lug 'A' lines up with the forward inboard bolt hole. When fitted, the adaptor cap locking handle should be trailing. Install seven bolts (4) and nuts (2) finger tight only.
(3)Secure tag of cable (7) with bolt (8), and nut (1).
(4)Tighten nuts (1) and (2) evenly and progressively in a diametrical sequence.
(5)Check that bonding strip between shroud and elbow is intact and secure.
(6)Attach adapter cap chain to cable (7).

E. Test
(1)Connect refuel hose to coupling (Ref. 12-11-28, P. Block 1) and pump sufficient fuel to fill coupling and elbow. Check disturbed joint for leakage.
(2)Disconnect refuel hose and make certain that coupling check valve closes satisfactorily.

F. Close-Up
(1)Install adapter cap (6).
(2)Make certain that working area is clean and clear of tools and miscellaneous items of equipment.
(3)Close the access door 523FB (623FB Optional).
(4)Remove the access platform.

REFUEL/DEFUEL COUPLING - INSPECTION/CHECK

R Ref. CDL Sect. 28, Item 1

WARNING: LANDING GEAR - MAKE SURE THAT THE GROUND SAFETIES AND THE CHOCKS ARE IN POSITION.

FLIGHT CONTROLS - MAKE SURE THAT THE GROUND SAFETIES AND THE NOTICES ARE IN POSITION.

OBSERVE THE SAFETY PRECAUTIONS IN 28-00-00, P. BLOCK 301.

MAKE SURE THAT THE FIRE FIGHTING EQUIPMENT IS AVAILABLE AND ADEQUATE.

BEFORE POWER IS SUPPLIED TO THE AIRCRAFT MAKE SURE THAT THE ELECTRICAL CIRCUITS UPON WHICH WORK IS IN PROGRESS ARE ISOLATED.

1. Reason for the Job

A. To carry out a detailed visual inspection of the refuel/defuel couplings.

2. Equipment and Materials

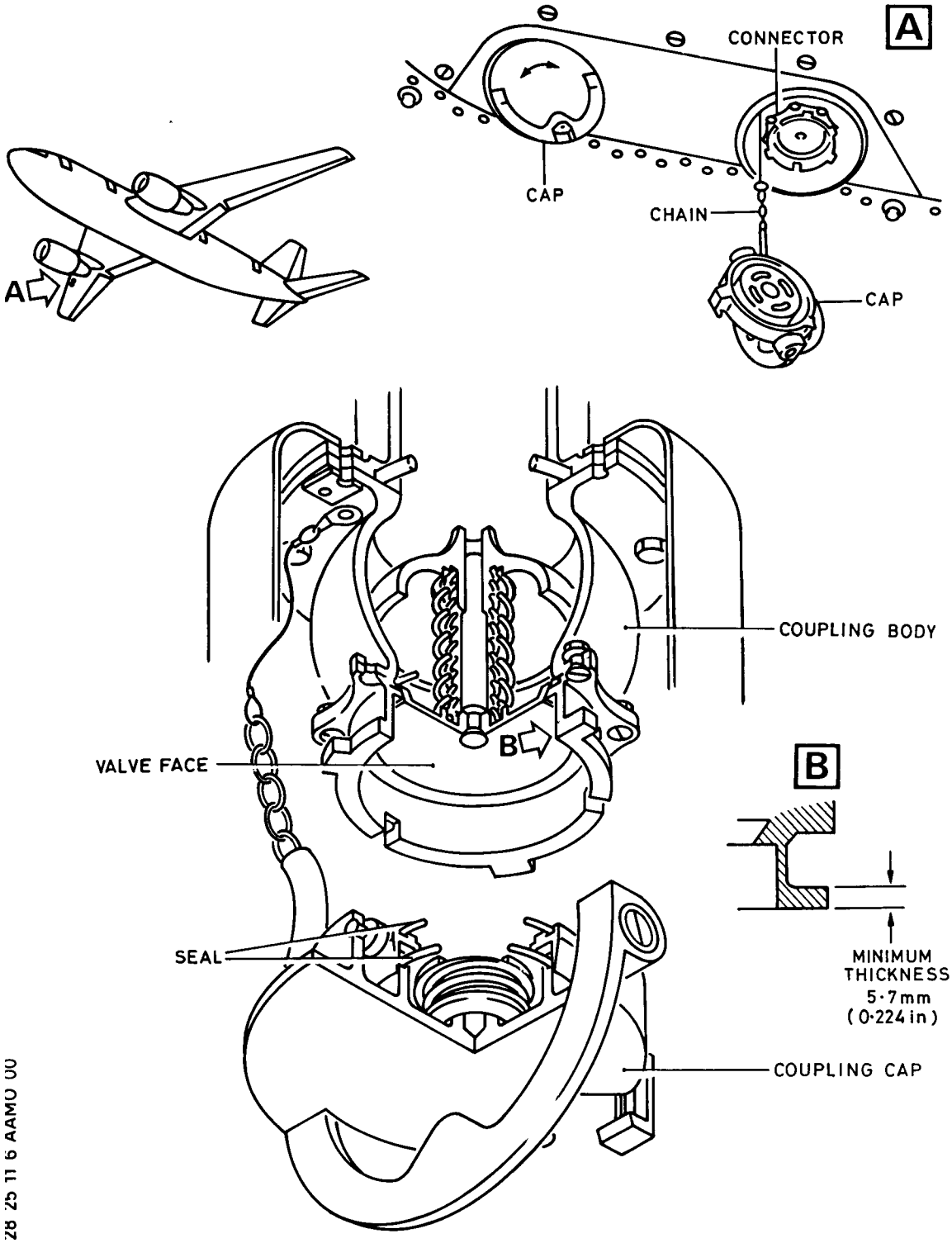
ITEM	DESIGNATION
A.	Access Platform 4 m (13 ft)
B.	Lint-Free Cloth
C.	Seal - Refuel/Defuel Coupling Cap
R D. Material No. 08-061	Adhesive Tape, Aluminium Foil (Ref. 20-31-00)
Referenced Procedures	
- 28-00-00, P. Block 301	Fuel General

3. Procedure
(Ref. Fig. 601)

A. Job Set-Up
(1)Put the access platform in position below the refuel/defuel couplings.
(2)Remove the caps from the refuel/defuel couplings.

B. Inspection
(1)Examine the general appearance and protective coatings of the valve face, the coupling cap and the coupling body.
(2)Make sure that the cap seal(s) are not cut, scratched or deformed.
- Install a new seal(s) if necessary.

C. Close-Up
R (1)Install the refuel/defuel coupling caps. If a cap cannot be installed
R due to either:
R - a damaged refuel/defuel coupling body
R - a damaged or missing coupling cap
R then the seal integrity of the coupling must be confirmed as follows:
R (a)Make sure that there is no evidence or reports of fuel leakage from



Refuel/Defuel Coupling
Figure 601

R the aircraft in the region of the coupling.
R (b)Make sure that any damage is confined to the outer part of the coupling
R to which the cap is installed, or to the cap.
R (c)Confirm that the visual inspection showed good sealing and no damage at
R the valve face of the coupling.
R (d)If the seal integrity of the coupling has been confirmed:
R - remove the refuel/defuel coupling cap from the aircraft
R - put a layer of aluminium foil tape (Material No. 08-061) over the
R hole of the refuel/defuel coupling
R - allow dispatch of the aircraft in accordance with the Configuration
R Deviation List (CDL).
(2)Remove the access platform.
(3)Make sure that the work area is clean and clear of all tools and
miscellaneous items of equipment.

R WARNING : LANDING GEAR - MAKE SURE THAT THE GROUND SAFETIES AND CHOCKS ARE IN POSITION.

R FLIGHT CONTROLS - MAKE SURE THAT THE GROUND SAFETIES AND NOTICES ARE
R IN POSITION.

R OBEY THE SAFETY PRECAUTIONS IN 28-00-00, P. BLOCK 301.

R MAKE SURE THAT THE FIRE FIGHTING EQUIPMENT IS AVAILABLE AND ADEQUATE.

R MAKE SURE THAT YOU ISOLATE THE ELECTRICAL CIRCUITS UPON WHICH WORK IS
R IN PROGRESS.

1. Equipment and Materials

ITEM	DESIGNATION
A.	Access Platform 4.5 m (15 ft)
B.	Container
C.	O-ring
D.	Circuit Breaker Safety Clips and Tags
E. Material No. 01-001	Fuels (Ref. 20-31-00)
F.	Blanking Plugs/Caps
Referenced Procedures	
- 12-11-28, P. Block 301	Replenishing of Fuel Tanks
- 20-28-11, P. Block 1	Electrical Bonding
- 24-41-00, P. Block 301	AC External Power Control
- 28-00-00, P. Block 301	Fuel - General
- 28-42-38, P. Block 501	Fuel Quantity Computer (15QT)
- 32-12-11, P. Block 301	Main Gear Main Door

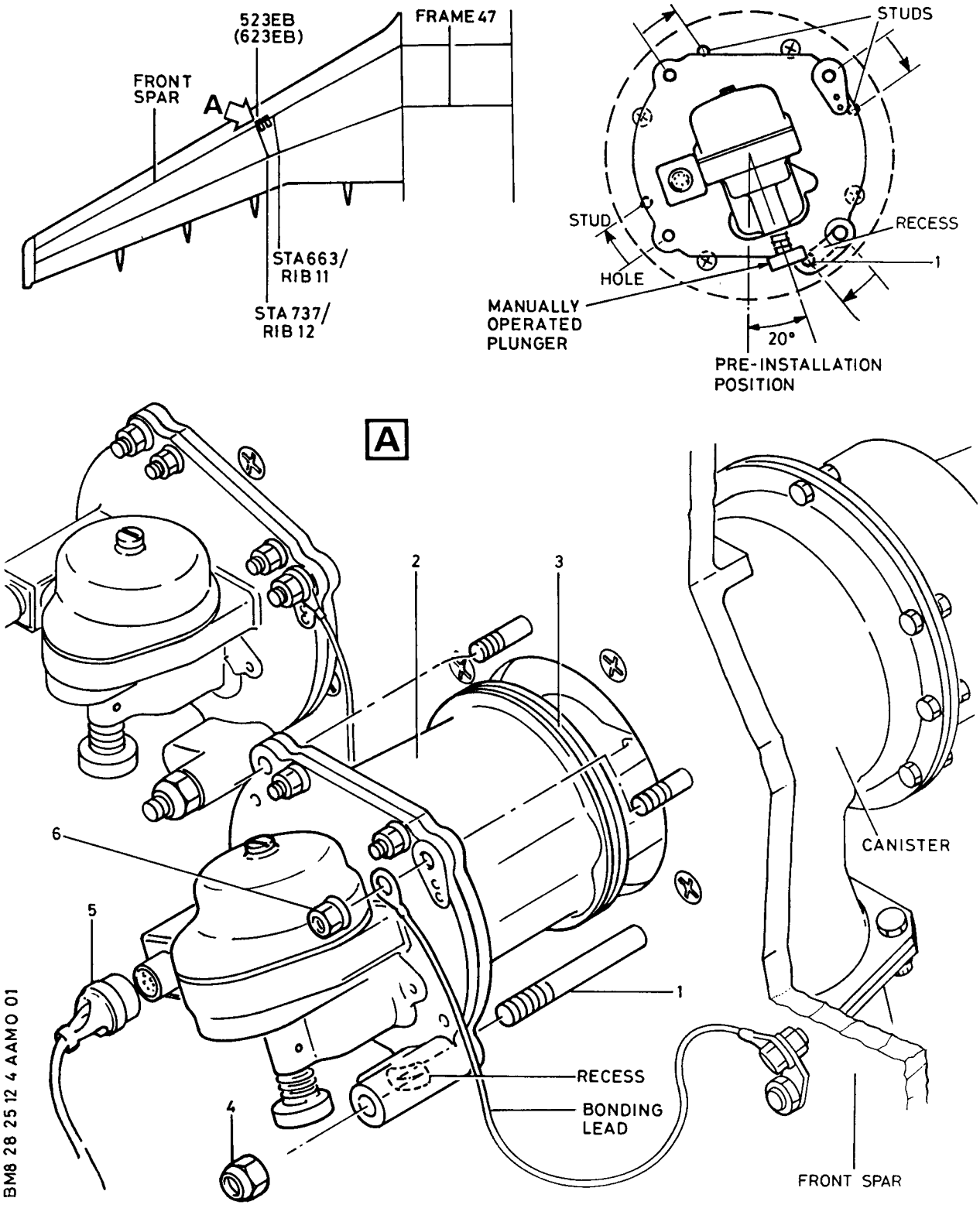
2. Procedure

(Ref. Fig. 401)
(Ref. Fig. 402)
(Ref. Fig. 403)

A. Job Set-up
(1)Open, safety and tag the following circuit breakers:

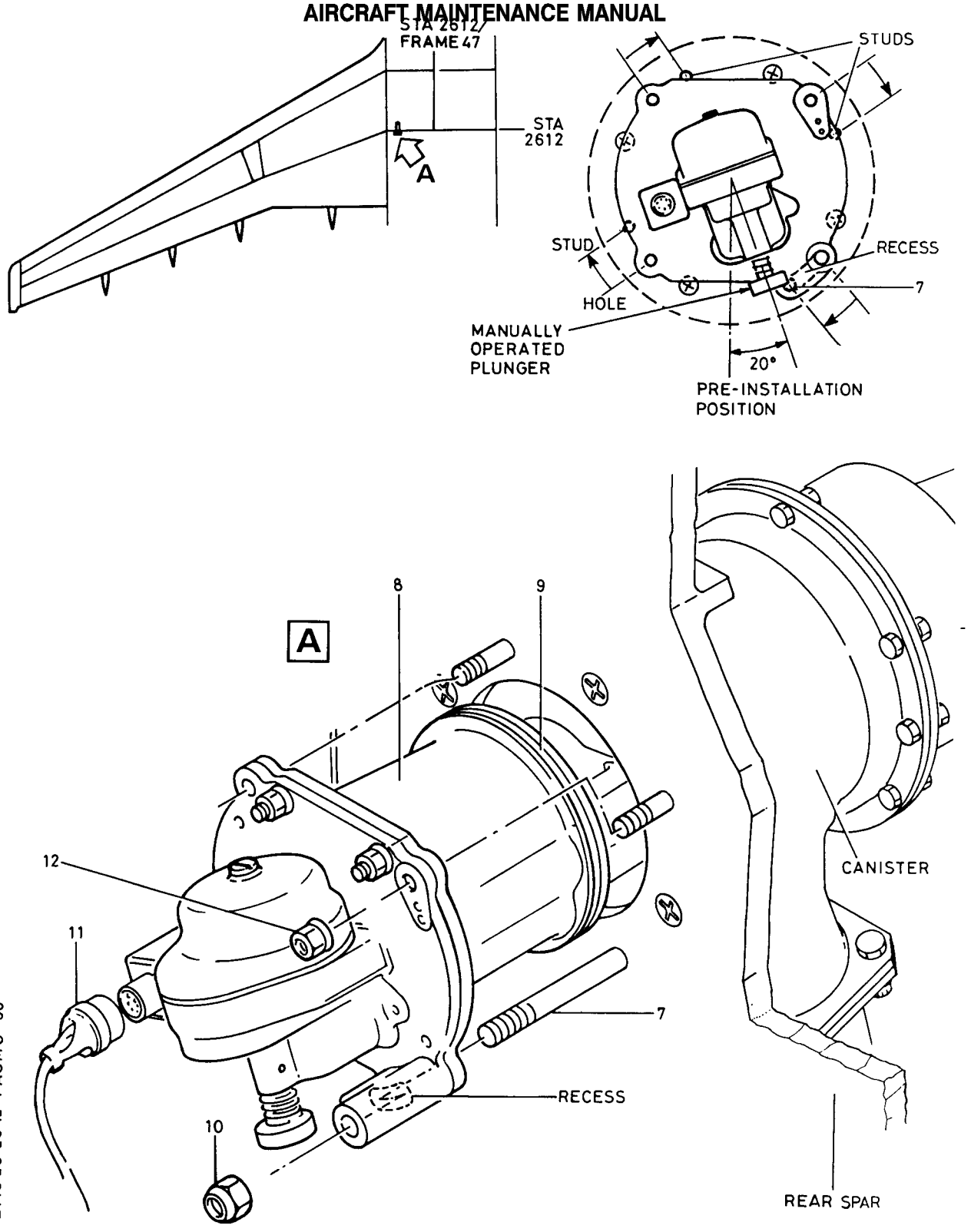
PANEL	SERVICE	IDENT.	LOCATION
132VU	FUEL/FUELLING/CTL & REFUEL VALVE	1QU	321/P56
132VU	FUEL/FUELLING/XFR VALVE	2QU	321/P55

(2)For wing tank refuel/defuel valves:
(a)Position access platform.
(b)Remove access door 523(623)EB.



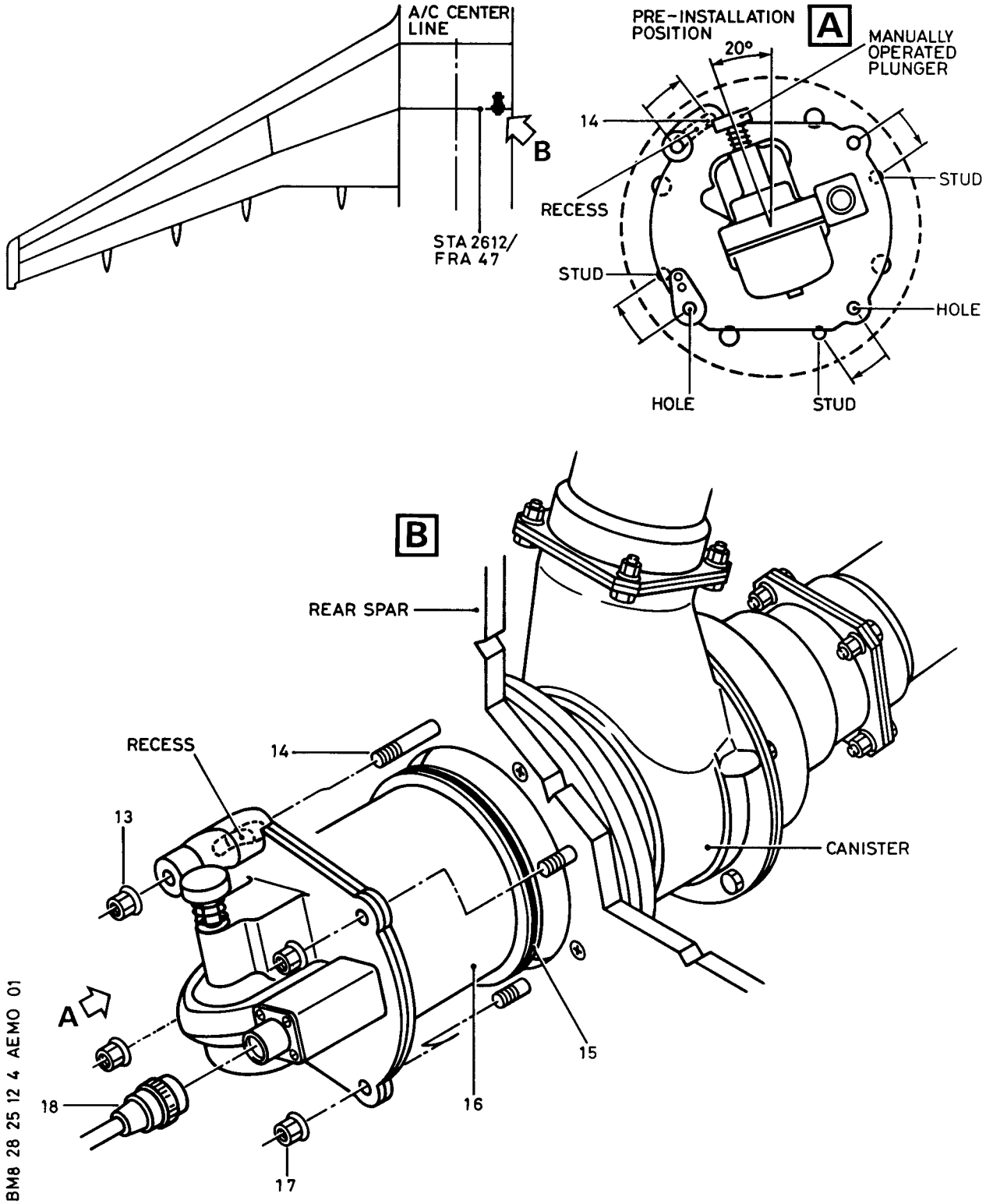
Wing Tank Refuel/Defuel Valves
Removal/Installation
Figure 401

R



Center tank Refuel/Defuel Valve
Removal/Installation
Figure 402

R



Trim Tank Refuel/Defuel Valve
Removal/Installation
Figure 403

R

(3)For center tank refuel/defuel valve:
(a)Gain access through left main landing gear bay (Ref. 32-12-11, P. Block 301).

(4)For trim tank refuel valve, gain access to the center tank through right main landing gear bay (Ref. 32-12-11, P. Block 301).

B. Removal
(1)For wing tank refuel/defuel valves:
(a)Disconnect and cap electrical connector (5).
(b)Remove nut (4) and three nuts (6). Disconnect bonding lead.
(c)Position container below valve element (2). Withdraw the valve element (2) 1.4 in. (35.56 mm) onto the internal stop, then rotate it counter-clockwise through 20 deg. and complete the withdrawal.
(d)Remove and discard O-ring (3).
(e)Clean and inspect component interface. Cap canister and valve element (2) orifices.

(2)For center tank refuel/defuel valve:
(a)Disconnect and cap electrical connector (11).
(b)Remove nut (10) and three nuts (12).
(c)Position container below valve element (8). Withdraw the valve element (8) 1.4 in. (35.56 mm) onto the internal stop, then rotate it counter-clockwise through 20 deg. and complete the withdrawal.
(d)Remove and discard O-ring (9).
(e)Clean and inspect component interface. Cap canister and valve element (8) orifices.

(3)For trim tank refuel/defuel valve:
(a)Disconnect and cap electrical connector (18).
(b)Remove nut (13) and three nuts (17).
(c)Position container below valve element (16). Withdraw the valve element (16) 1.4 in. (35.56 mm) onto the internal stop, then rotate it counter-clockwise through 20 deg. and complete the withdrawal.
(d)Remove and discard O-ring (15).
(e)Clean and inspect component interfaces. Cap canister and valve element (16) orifices.

C. Preparation of Replacement Component
(1)Wing tank refuel/defuel valves:
(a)Lubricate new O-ring (3) with fuel (Material No. 01-001) and position in groove on valve element (2) body.

(2)Center tank refuel/defuel valve:
(a)Lubricate new O-ring (9) with fuel (Material No. 01-001) and position in groove on valve element (8) body.

(3)Trim tank refuel/defuel valve:
(a)Lubricate new O-ring (15) with fuel (Material No. 01-001) and position

in groove on valve element (16) body.

D. Installation
(1)Wing tank refuel/defuel valves:

CAUTION : MAKE SURE THAT THE CANISTER SLEEVE IS FULLY OUTWARD ON THE SEAT.

(a)Remove the caps from the valve element (2) and the canister.
(b)Put the valve element (2) in position at the orifice of the canister with the manually-operated plunger pointing downwards, approximately 20 deg. to the right of vertical.

R CAUTION : TAKE CARE WHEN YOU INSERT THE VALVE ELEMENT INTO THE CANISTER
R NOT TO DAMAGE THE INSIDE OF THE CANISTER.

(c)Insert the valve element (2) into the canister until the stud (1) engages the recess in the housing of the valve element (2).
(d)Make sure that the end face of the stud (1) is held against the bottom of the recess and rotate the valve element (2) clockwise approximately 20 deg. to connect with the canister sleeve and align the studs with the holes. Use hand pressure only, to push the valve element (2) fully into the canister.
(e)Check that there is no gap between the housing of the valve element (2) and the mounting face of the spar-flange. A gap of approx. 0.1 in. (2.5 mm) indicates that the valve element (2) is not correctly engaged with the sleeve. If a gap exists do not proceed with the installation, instead repeat steps (1) (b) thru (e) until there is no gap between the valve element (2) and the mounting face of the spar flange.
R (f)Connect the bonding lead and install the nut (4) and the nuts (6)
R (Ref. 20-28-11, P. Block 1). Measure the rundown torque of the nuts
R (4) and (6).
R (g)TORQUE the nuts (4) and (6) to between 0.62 and 0.68 m.daN
R (55 to 60 lbf.in) plus the rundown torque.
R (h)Remove the caps and connect the electrical connector (5).

(2)Center tank refuel/defuel valve:

R CAUTION : MAKE SURE THAT THE CANISTER SLEEVE IS FULLY OUTWARD ON THE SEAT.

(a)Remove the blanking caps from the canister and the valve element (8).
(b)Put the valve element (8) in position at the orifice of the canister with the manually-operated plunger pointing downwards, approximately 20 deg. to the right of vertical.

R CAUTION : TAKE CARE WHEN YOU INSERT THE VALVE ELEMENT INTO THE CANISTER
R NOT TO DAMAGE THE INSIDE OF THE CANISTER.

(c)Insert the valve element (8) into the canister until the stud (7) engages the recess in the housing of the valve element (8).
(d)Make sure that the end face of the stud (7) is held against the bottom of the recess and rotate the valve element (8) clockwise approximately

20 deg. to connect with the canister sleeve and align the studs with the holes. Use hand pressure only, to push the valve element (8) fully into the canister.

(e) Check that there is no gap between the housing of the valve element (8) and the mounting face of the spar-flange. A gap of approximately 0.1 in. (2.5 mm) indicates that the valve element (8) is not correctly engaged with the sleeve. If a gap exists, do not proceed with the installation, instead repeat steps (2) (b) thru (e) until there is no gap between the housing of the valve element (8) and the mounting face of the spar-flange.

R (f) Install the nut (10) and the nuts (12). Measure the rundown torque of
R the nuts (10) and (12).

R (g) TORQUE the nuts (10) and (12) to between 0.62 and 0.68 m.daN
R (55 to 60 lbf.in) plus the rundown torque.

R (h) Remove the blanking cap from the electrical connector (11) and the plug from the orifice on the valve and connect the electrical connector (11).

R (j) On panel 132VU, remove the safety clips and tags and close the circuit breakers 1QU (321/P56) and 2QU (321/P55).

(3) Trim tank refuel/defuel valve:

CAUTION : MAKE CERTAIN CANISTER SLEEVE IS FULLY OUTWARD ON SEAT.

(a) Remove caps from valve element (16) and canister.

(b) Position valve element (16) at canister orifice with manually-operated plunger pointing upwards approximately 20 deg. to the left of vertical.

R CAUTION : TAKE CARE WHEN YOU INSERT THE VALVE ELEMENT INTO THE CANISTER
R NOT TO DAMAGE THE INSIDE OF THE CANISTER.

(c) Insert valve element (16) into canister until stud (14) engages the recess in the valve element (16) flange.

(d) Make certain that end face of stud (14) is held against bottom of recess and rotate valve element (16) clockwise approximately 20 deg. to connect with canister sleeve and align studs with holes. Using hand pressure only, push valve element (16) fully into canister.

(e) Check that there is no gap between valve element (16) mounting and spar flange. A gap of approx. 0.1 in (2.5 mm) indicates that valve element (16) is not correctly engaged with sleeve. If a gap exists do not proceed with installation, instead repeat steps (3) (b) thru (e).

R (f) Install the nut (13) and the nuts (17). Measure the rundown torque of
R the nuts (13) and (17).

R (g) TORQUE the nuts (13) and (17) to between 0.62 and 0.68 m.daN
R (55 to 60 lbf.in) plus the rundown torque.

R (h) Remove caps and connect electrical connector (18).

R (j) Remove safety clips and tags and close circuit breakers 1QU (321/P56),
R 2QU (321/P55).

E. Preparation for Test

(1)Make certain that the following circuit breakers are closed:

PANEL	SERVICE	IDENT.	LOCATION
132VU	FUEL/FQI/SUPP & IND	1QT	321/P59
132VU	FUEL/FQI/CHAN SUPP 1	3QT	321/P60
132VU	FUEL/FQI/CHAN SUPP 2	4QT	321/P61
132VU	FUEL/FUELLING/OVERFLOW AND CAL	5QJ	321/P58
132VU	FUEL/FUELLING/HI-LVL	6QJ	321/P57

(2)Connect the refueling tanker to the aircraft (Ref. 12-11-28, P. Block 301).

(3)Energize the aircraft electrical network (Ref. 24-41-00, P. Block 301).

(4)Open the access door 144DR.

(5)On panel 110VU, use the TEST/HI LVL TEST P/BSW to make sure that the following indicators/legends are functioning correctly (Ref. 28-42-38, P. Block 501):
- all the HIGH LEVEL legends
- all the OVERFLOW legends
- the FUEL QTY, PRESELECTED and ACTUAL indicators.

F. Test

ACTION	RESULT
1. On panel 110VU: - note contents of relevant tank	
2. If tank is less than full	- HIGH LEVEL light is off
3. On panel 110VU: - Raise guard and set MODE SELECTOR switch to REFUEL - Raise guard and set relevant REFUEL/DEFUEL VALVE to OPEN NOTE: When testing trim tank refuel/defuel valve, place CTR TK and TRIM TK REFUEL-DEFUEL-VALVES switches in OPEN position. - Raise guards and set all other REFUEL/DEFUEL VALVES to SHUT.	
4. Commence refueling	- on FUEL QTY indicator, relevant tank contents increase
5. Set relevant REFUEL/DEFUEL VALVE to SHUT	- relevant tank FQI stabilizes
6. Stop refueling	

ACTION	RESULT
7. If tank is full	- HIGH LEVEL light is on
8. On panel 11OVU: - Raise guard and set **MODE SELECTOR** switch to **DEFUEL** - Raise guard and set relevant **REFUEL/DEFUEL VALVE** to **OPEN** **NOTE**: When testing trim tank refuel/defuel valve, place **CTR TK** and **TRIM TANK REFUEL-DEFUEL-VALVES** switches in **OPEN** position.	
9. On panel 11OVU: - Raise the guards and put all the other **REFUEL-DEFUEL-VALVES** switches in the **SHUT** position.	
10. Start defueling.	- on the **FUEL QTY** indicator, the relevant tank contents decrease.
11. Put the relevant **REFUEL-DEFUEL-VALVE** switch in the **SHUT** position.	- the relevant tank **FQI**, stabilizes.
12. Stop defueling - restore the tank contents to the original level - put the **MODE SELECTOR** switch in the **OFF** position and guarded.	
13. Put the **REFUEL-DEFUEL-VALVES** switches in the **NORM** and guarded position - check the refuel/defuel valve for external leaks.	

G. Close-Up

(1) Close the access door **144DR**.

(2) De-energize the aircraft electrical network (Ref. 24-41-00, P. Block 301).

(3) Disconnect the tanker (Ref. 12-11-28, P. Block 301).

(4) Make sure that the work area is clean and clear of tools and miscellaneous items of equipment.

(5) For the wing tank refuel/defuel valves:

- close the access door(s) 523(623)EB.

(6)For the trim tank refuel/defuel valves:
- close the RH main-landing-gear bay door (Ref. 32-12-11, P. Block 301).

(7)For the center tank refuel/defuel valve:
- close the LH main-landing-gear bay door (Ref. 32-12-11, P. Block 301).

(8)Remove the access platform(s).

REFUEL/DEFUEL VALVE - DEACTIVATION REACTIVATION

Ref: MMEL Sect. 1-28, Item 22

CAUTION : THIS PROCEDURE IS TO BE USED IN ACCORDANCE WITH THE REQUIREMENTS OF THE MMEL.

WARNING : LANDING GEAR - MAKE SURE THAT THE GROUND SAFETIES AND CHOCKS ARE IN POSITION.

FLIGHT CONTROLS - MAKE SURE THAT THE GROUND SAFETIES AND NOTICES ARE IN POSITION.

1. Deactivation

A. Reason for the Job
(1)To make sure that an electrically inoperative refuel/defuel valve is in the closed position before the related tank is refueled and/or the aircraft is dispatched.

B. Equipment and Materials

ITEM	DESIGNATION
A.	Access Platform 2 m (6.5 ft)
B.	Warning Placard(s)
Referenced Procedures	
- 12-11-28, P. Block 301	Replenishing of Fuel Tanks
- 24-41-00, P. Block 301	A/C External Power Control
- 28-00-00, P. Block 301	Fuel-General
- 28-11-35, P. Block 401	Vapor Seal
- 28-25-12, P. Block 401	Refuel/Defuel Valve
- 32-12-11, P. Block 301	Main Gear Main Door
- 28-25-00, P. Block 1	TSM - Fault Symptoms

R **ON A/C 001-100,

C. Procedure to deactivate a refuel/defuel valve
(1)Wing tank and center tank refuel/defuel valves.

NOTE : Do the procedure that follows to make sure that an inoperative refuel/defuel valve for a wing tank or center tank is deactivated in the closed position.

R **ON A/C 101-200,

C. Procedure to deactivate a refuel/defuel valve
(1)Wing tank, center tank and ACT refuel/defuel valves.

NOTE : Do the procedure that follows to make sure that an inoperative refuel/defuel valve for a wing tank, center tank or ACT is deactivated in the closed position.

R **ON A/C ALL

(a)Connect the fuel tanker to the refuel/defuel coupling(s) (Ref. 12-11-28, P. Block 301).
(b)Energize the aircraft electrical network (Ref. 24-41-00, P. Block 301).
(c)Do the functional test of the Fuel Qty Computer (15QT) (Ref. 28-42-38, P. Block 501).
(d)Open the access door 144DR.

NOTE : The refuel/defuel panel 110VU, is now energized.

(e)On panel 110VU:
1 Lift the guards and put each REFUEL-DEFUEL-VALVES switch in the SHUT position.
2 Put the FUEL QTY/FQI DISPLAY switch in the related tank position.
3 Make sure that the MODE SELECTOR/SELECT switch is in the OFF position and the guard is lowered.
(f)Use the fuel tanker to pressurize the refuel system with fuel to 50 psi (3.45 bar) for five minutes.
(g)On panel 110VU, monitor the FUEL QTY indicator to observe any change in the contents of the related fuel tank:
- If there is a change in the fuel tank contents, the related refuel/defuel valve is open and you must trouble shoot to identify the cause (Ref. TSM 28-25-00, P. Block 1), and if necessary, replace the refuel/defuel valve (Ref. 28-25-12, P. Block 401).
- If there is no change in the fuel tank contents, the related refuel/defuel valve is closed correctly.
(h)Stop refueling at the tanker.

NOTE : When it has been confirmed that the related refuel/defuel valve is in the closed position, it may be necessary to replenish the related fuel tank before the close-up.

(j)If it is necessary to replenish the related fuel tank:
- Refuel in accordance with Para. 1.D.
- Close-Up in accordance with Para. 1.E.
(k)If it is not necessary to replenish the related fuel tank:
- close-Up in accordance with Para. 1.E.

R (2)Trim-tank refuel/defuel valve.

R NOTE : Do the procedure that follows to make sure that the trim-tank
R refuel/defuel valve is deactivated in the closed position.

R (a)Get access to the trim-tank refuel/transfer valve as follows:
R 1 Remove the vapor seal panel 319 BB (Ref. 28-11-35, P. Block 401).
R 2 Remove the LH vapor seal cover (Ref. 28-11-35, P. Block 401).
R (b)Connect the fuel tanker to the refuel/defuel coupling(s)
R (Ref. 12-11-28, P. Block 301).
R (c)Energize the aircraft electrical network (Ref. 24-41-00, P. Block 301).
R (d)Do the functional test of the Fuel Qty Computer (15QT) (Ref. 28-42-38,
R P. Block 501).
R (e)On panel 430VU, make sure that the TRIM TK ISOL VALVE p/bsw is pushed
R in.
R (f)Open the access door 144DR.

R NOTE 1 : The refuel/defuel panel 110VU, is now energized.

R NOTE 2 : The trim-tank isolation valve will open automatically when the
R access door 144DR is opened.

R (g)On panel 110VU:
R 1 Lift the guards and put each REFUEL-DEFUEL-VALVES switch in the SHUT
R position.
R 2 Put the FUEL QTY/FQI DISPLAY switch in the TT position.
R 3 Make sure that the MODE SELECTOR/SELECT switch is in the OFF position
R and the guard is lowered.
R (h)Use the fuel tanker to pressurize the refuel system with fuel to 50 psi
R (3.45 bar) for five minutes.
R (j)On the trim-tank refuel/transfer valve, push (in) and hold the plunger
R for five minutes.
R (k)On panel 110VU, monitor the FUEL QTY indicator to observe any change in
R the contents of the trim tank:
R - If there is a change in the trim tank contents, the trim-tank
R refuel/defuel valve is open and you must trouble shoot to identify
R the cause (Ref. TSM 28-25-00, P. Block 1), and if necessary, replace
R the trim-tank refuel/defuel valve (Ref. 28-25-12, P. Block 401).
R - If there is no change in the trim tank contents, the trim-tank
R refuel/defuel valve is closed correctly.
R (l)Stop refueling at the tanker.

R NOTE : When it has been confirmed that the trim-tank refuel/defuel
R valve is in the closed position, it may be necessary to
R replenish the trim tank before the close-up.

R (m)If it is necessary to replenish the trim tank:
R - Refuel in accordance with Para. 1.D.
R - Close-Up in accordance with Para. 1.E.
R (n)If it is not necessary to replenish the trim tank:
R - close-Up in accordance with Para. 1.E.

R (3)Procedure for an inoperative refuel/defuel valve in the open position.

R CAUTION : IF A REFUEL/DEFUEL VALVE IS INOPERATIVE IN THE OPEN POSITION
R YOU MUST NOT REFUEL THE AIRCRAFT.

R (a)Trouble shoot to identify the cause of the refuel/defuel valve
R malfunction (Ref. TSM 28-25-00, P. Block 1).
R (b)If necessary replace the refuel/defuel valve (Ref. 28-25-12,
R P. Block 401).

D. Procedure to refuel a tank when the related refuel/defuel valve is inoperative in the closed position

R **ON A/C 001-100,

CAUTION : TANKS MUST BE REFUELED IN THE ORDER: OUTERS, INNERS, CENTER AND TRIM.

R **ON A/C 101-200,

CAUTION : TANKS MUST BE REFUELED IN THE ORDER: OUTERS, INNERS, CENTER, ACT (IF INSTALLED) AND TRIM.

R **ON A/C 101-200,

R Post SB 28-2105 For A/C 101-200,

CAUTION : TANKS MUST BE REFUELED IN THE ORDER: OUTERS, INNERS, CENTER, ACT1 (IF INSTALLED), TRIM TANK AND ACT2 (IF INSTALLED).

R **ON A/C ALL

CAUTION : IF THE MANUAL PLUNGER OF A REFUEL/DEFUEL VALVE IS INOPERATIVE YOU MUST NOT MANUALLY REFUEL THE RELATED FUEL TANK.

(1)Replenish the wing tank by either of the following procedures:
(a)Overwing (gravity) refueling (Ref. 12-11-28, P. Block 301), or
(b)Manual refueling:
1 Open the applicable valve(s) by operating the manual plunger(s), and refuel (Ref. 12-11-28, P. Block 301).
2 On completion of the refuel, release the manual plunger(s).

R **ON A/C 001-100,

(2)Replenish the center tank.
(a)Open the valve by operating the manual plunger, and refuel (Ref. 12-11-28, P. Block 301).
(b)On completion of the refuel, release the manual plunger.

R **ON A/C 101-200,

(2)Replenish the center tank and ACT(s).
(a)Open the applicable valve(s) by operating the manual plunger(s) and refuel (Ref. 12-11-28, P. Block 301).

(b)On completion of the refuel, release the manual plunger(s).

R **ON A/C ALL

(3)Replenish the trim tank.

NOTE : To refuel the trim tank it is necessary to operate at the same time, the plungers on the trim-tank refuel/defuel valve and the trim-tank refuel/transfer valve.

(a)Open the refuel/transfer valve and the trim-tank refuel/defuel valve, by operating the manual plungers at the same time, and refuel (Ref. 12-11-28, P. Block 301).
(b)On completion of the refuel, release the manual plunger(s).

E. Close-Up Procedure

(1)Close-Up the wing-tank refuel/defuel valve.
(a)On panel 110VU:
1 Put the warning placard(s) on the applicable REFUEL-DEFUEL-VALVES switch(es) to prevent the operation of the NORM and OPEN positions.
2 Lift the guard(s) and put the switch(es) in the SHUT position.
(b)Close the access door 144DR.
(c)De-energize the aircraft electrical network (Ref. 24-41-00, P. Block 301).
(d)Disconnect the fuel tanker from the refuel/defuel coupling(s) (Ref. 12-11-28, P. Block 301).
(e)Make sure that the work area is clean and clear of all tools and other items of equipment.
(f)Close the access door(s) 523(623)JB and remove the access platform.
(g)Make an applicable entry in the aircraft technical log.

R **ON A/C 001-100,

(2)Close-Up the center-tank refuel/defuel valve.

R **ON A/C 101-200,

(2)Close-Up the center tank and ACT(s) refuel/defuel valve.

R **ON A/C ALL

(a)On panel 110VU:
1 Put the warning placard(s) on the applicable REFUEL-DEFUEL-VALVES switch(es) to prevent the operation of the NORM and OPEN positions.
2 Lift the guard(s) and put the switch(es) in the SHUT position.
(b)Close the access door 144DR.
(c)Make sure that the work area is clean and clear of all tools and other items of equipment.
(d)Remove the access platform and close the main-landing-gear bay door (Ref. 32-12-11, P. Block 301).
(e)De-energize the aircraft electrical network (Ref. 24-41-00, P. Block 301).
(f)Disconnect the fuel tanker from the refuel/defuel coupling(s) (Ref. 12-11-28, P. Block 301).
(g)Make an applicable entry in the aircraft technical log.

(3)Close-Up the trim-tank refuel/defuel valve.
(a)On panel 110VU:
1 Put the warning placard on the TRIM TK REFUEL-DEFUEL-VALVES switch to prevent the operation of the NORM and OPEN positions.
2 Lift the guard and put the switch in the SHUT position.
(b)Close the access door 144DR.
(c)Make sure that the work area is clean and clear of all tools and other

items of equipment.
(d)Remove the access platform and close the main-landing-gear bay door (Ref. 32-12-11, P. Block 301).
(e)De-energize the aircraft electrical network (Ref. 24-41-00, P. Block 301).
(f)Disconnect the fuel tanker from the refuel/defuel coupling(s) (Ref. 12-11-28, P. Block 301).
(g)Install the LH vapor seal cover on the trim-tank refuel/transfer valve (Ref. 28-11-35, P. Block 401).
(h)Install the vapor seal panel 319 BB (Ref. 28-11-35, P. Block 401).
(j)Make sure that the work area is clean and clear of all tools and other items of equipment.
(k)Make an applicable entry in the aircraft technical log.

2. Reactivation

A. Do the following procedure to make the refuel/defuel valve fully operational:
(1) Trouble shoot to identify the cause of the refuel/defuel valve malfunction (Ref. TSM. 28-25-00, P. Block 1).
(2) If necessary, replace the refuel/defuel valve(s) (Ref. 28-25-12, P. Block 401).
(3) Open the access door 144DR.
(4) On panel 110VU, remove the warning placard(s) from the applicable REFUEL/DEFUEL VALVES switch(es), and put the switch(es) in the NORM and guarded position.
(5) Close the access door 144DR.
(6) Make an applicable entry in the aircraft technical log.

R WARNING : LANDING GEAR - MAKE SURE THAT THE GROUND SAFETIES AND CHOCKS ARE IN
R POSITION.

R FLIGHT CONTROLS - MAKE SURE THAT THE GROUND SAFETIES AND NOTICES ARE
R IN POSITION.

OBSERVE THE SAFETY PRECAUTIONS IN 28-00-00, P. BLOCK 301 AND 28-10-00, P. Block 301.

MAKE SURE THAT THE FIRE FIGHTING EQUIPMENT IS AVAILABLE AND ADEQUATE.

R MAKE SURE THAT YOU ISOLATE THE ELECTRICAL CIRCUITS UPON WHICH WORK IS
R IN PROGRESS.

R BEFORE YOU PRESSURIZE THE FUEL SYSTEMS, MAKE SURE THAT THE FUEL SYSTEM UNDER MAINTENANCE HAS BEEN ISOLATED.

1. Equipment and Materials

ITEM	DESIGNATION
A.	Access Platform 2.5 m to 4 m (8 ft to 13 ft)
B.	Blanks/Caps
C.	Lockwire, Corrosion-Resistant Steel 0.8 mm (0.032 in) dia.
D.	O-Rings
E. Material No. 01-001	Fuels (Ref. 20-31-00)
F. Material No. 09-005	Sealants (Ref. 20-31-00)
G. Material No. 16-006	Structure Paints (Ref. 20-31-00)

Referenced Procedures

- 12-11-28, P. Block 301	Replenishing of Fuel Tanks
- 20-28-11, P. Block 1	Electrical Bonding
- 28-00-00, P. Block 301	Fuel - General
- 28-10-00, P. Block 301	Storage
- 28-11-22, P. Block 401	Manhole Cover Wings
- 28-11-29, P. Block 401	Manhole Cover Center Tank
- 28-25-00, P. Block 301	Refuel/Defuel System
- 28-25-12, P. Block 401	Refuel/Defuel Valve

2. Procedure

A. Job Set-Up
(1)Put the access platform in position.
(2)Remove the applicable refuel/defuel valve (Ref. 28-25-12, P. Block 401).

(3)Remove the applicable manhole cover or access panel:
- for the wing tank canister, remove the access panel 523(623)EB and

the manhole cover 540(640)FB (Ref. 28-11-22, P. Block 401)
- for the center tank canister, remove the center-tank manhole cover 147AZ (Ref. 28-11-29, P. Block 401).

**ON A/C 001-100,

(4)For the trim tank canister, remove the center-tank manhole cover 147AZ/148AZ (Ref. 28-11-29, P. Block 401).

**ON A/C 101-200,

(4)For the trim tank canister, remove the center-tank manhole cover 147AZ (Ref. 28-11-29, P. Block 401).

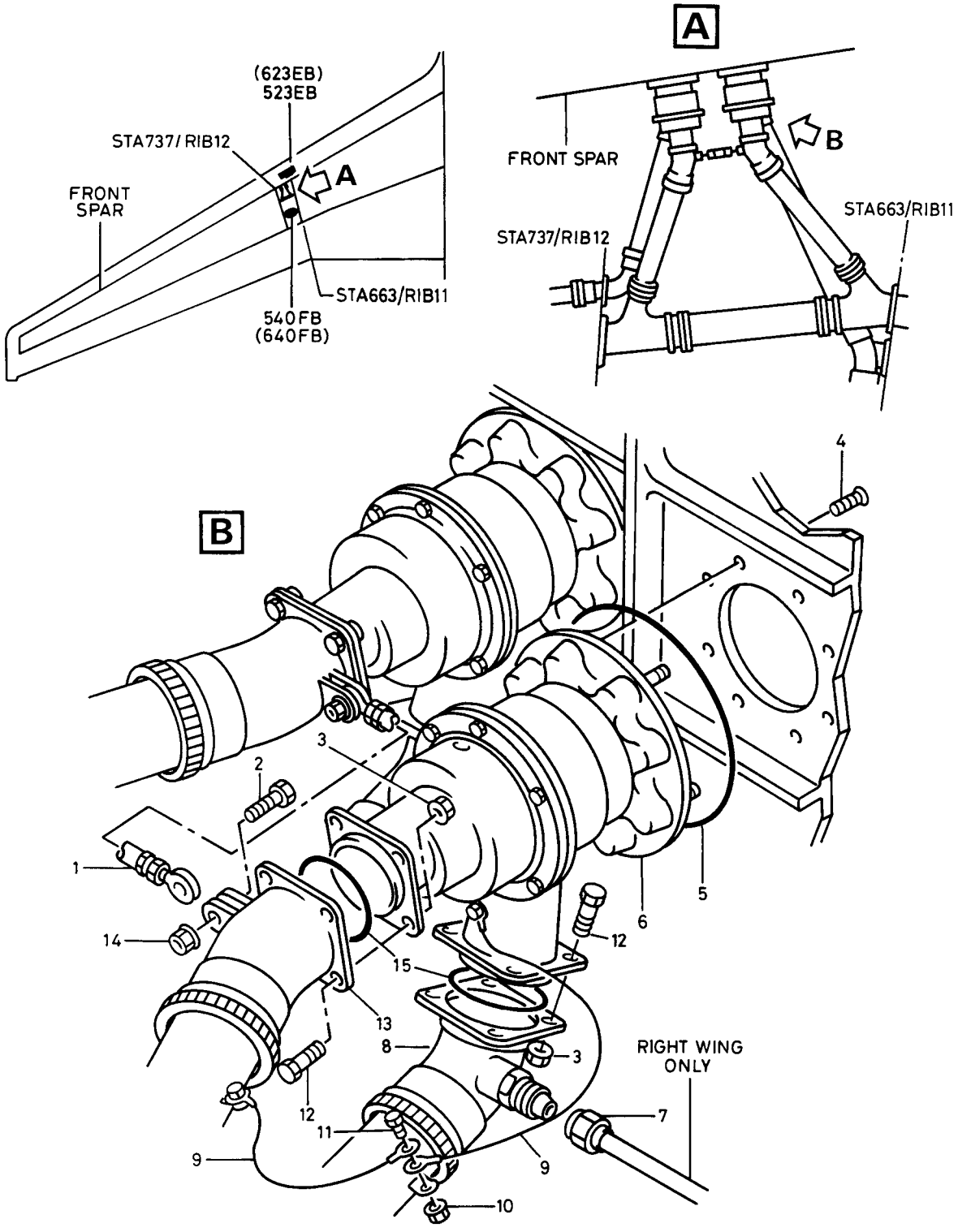
**ON A/C ALL

B. Removal
(Ref. Fig. 401)
(Ref. Fig. 402)
(Ref. Fig. 403)
(Ref. Fig. 404)

(1)Wing tank canisters.
(a)Remove nuts (22), screws (19) and disconnect bonding leads (21).
(b)Remove nuts (16), bolts (18) and line (20) from fittings at STA663/RIB11 and STA737/RIB12. Remove and discard O-rings (17).
(c)Remove nut (10) and screw (11) securing bonding leads (9) to canister and inlet and outlet lines. Disconnect bonding leads.
(d)Remove appropriate nut (14) and bolt (2) securing connecting rod (1) to inlet elbow (13). Swing connecting rod clear of lugs on inlet elbow.
(e)Right wing inboard canister only: disconnect nut (7) securing line to outlet elbow (8).
(f)Remove nuts (3) and bolts (12) and slide inlet and outlet elbows (8 and 13) clear of canister (6).

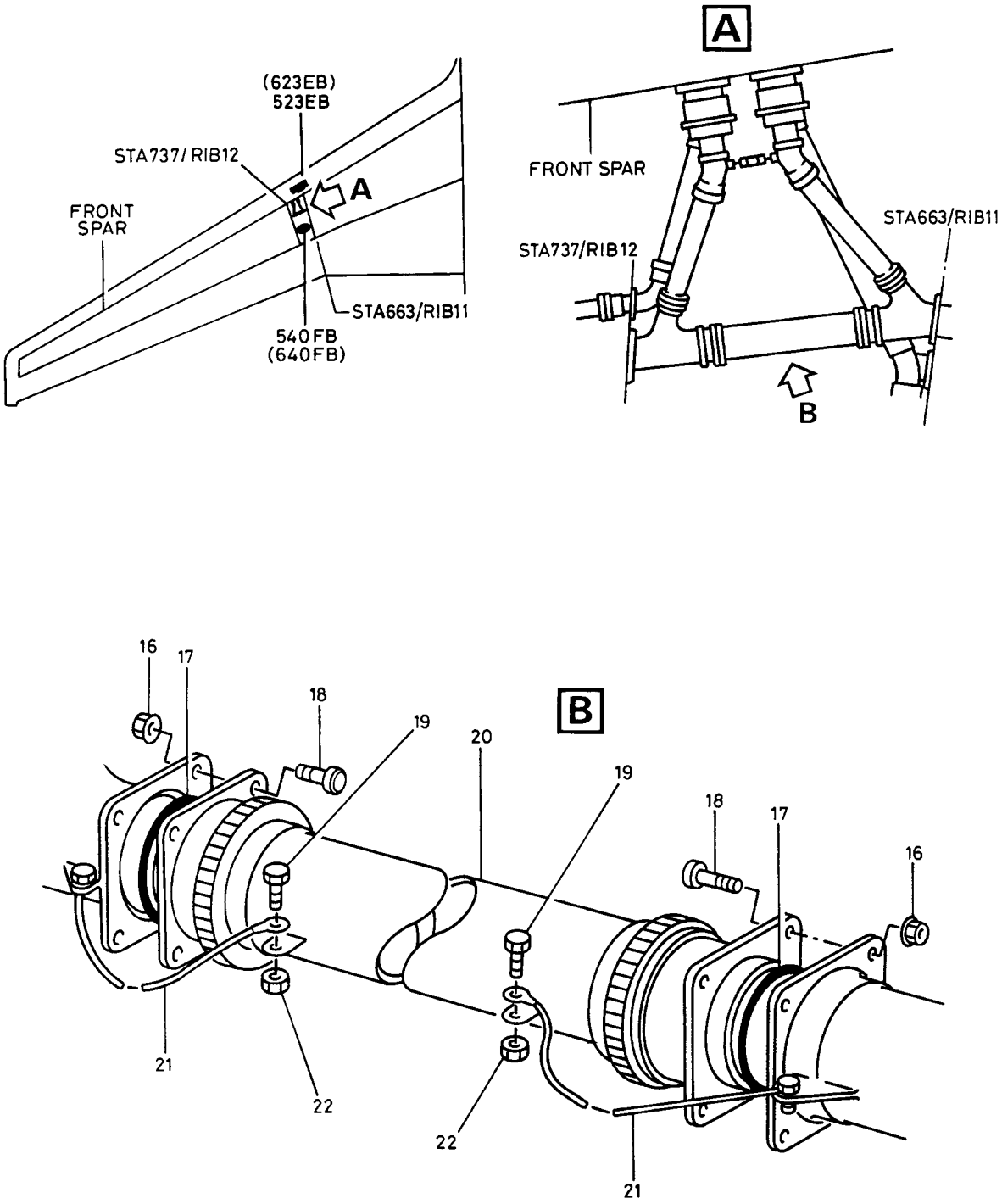
NOTE: Removal of coupling nuts adjacent to STA663/RIB11 or STA737/RIB12 will assist elbows to clear canister.

(g)Gain access to the front spar and remove screws (4) securing canister (6) to spar. Remove canister from spar. Remove and discard O-ring seals (5 and 15).
(h)Blank off canister, spar and inlet and outlet line apertures.
(2)Center tank canister.
(a)Remove nuts (37) and screws (36) securing bonding leads (35) to canister and inlet and outlet lines. Disconnect bonding leads.
(b)Remove nuts (33) and bolts (31) securing inlet and outlet elbows (30 and 40) to canister (34).
(c)Slide inlet and outlet pipes and elbows clear of canister (34).
(d)Remove screws (38) securing canister to rear spar and remove



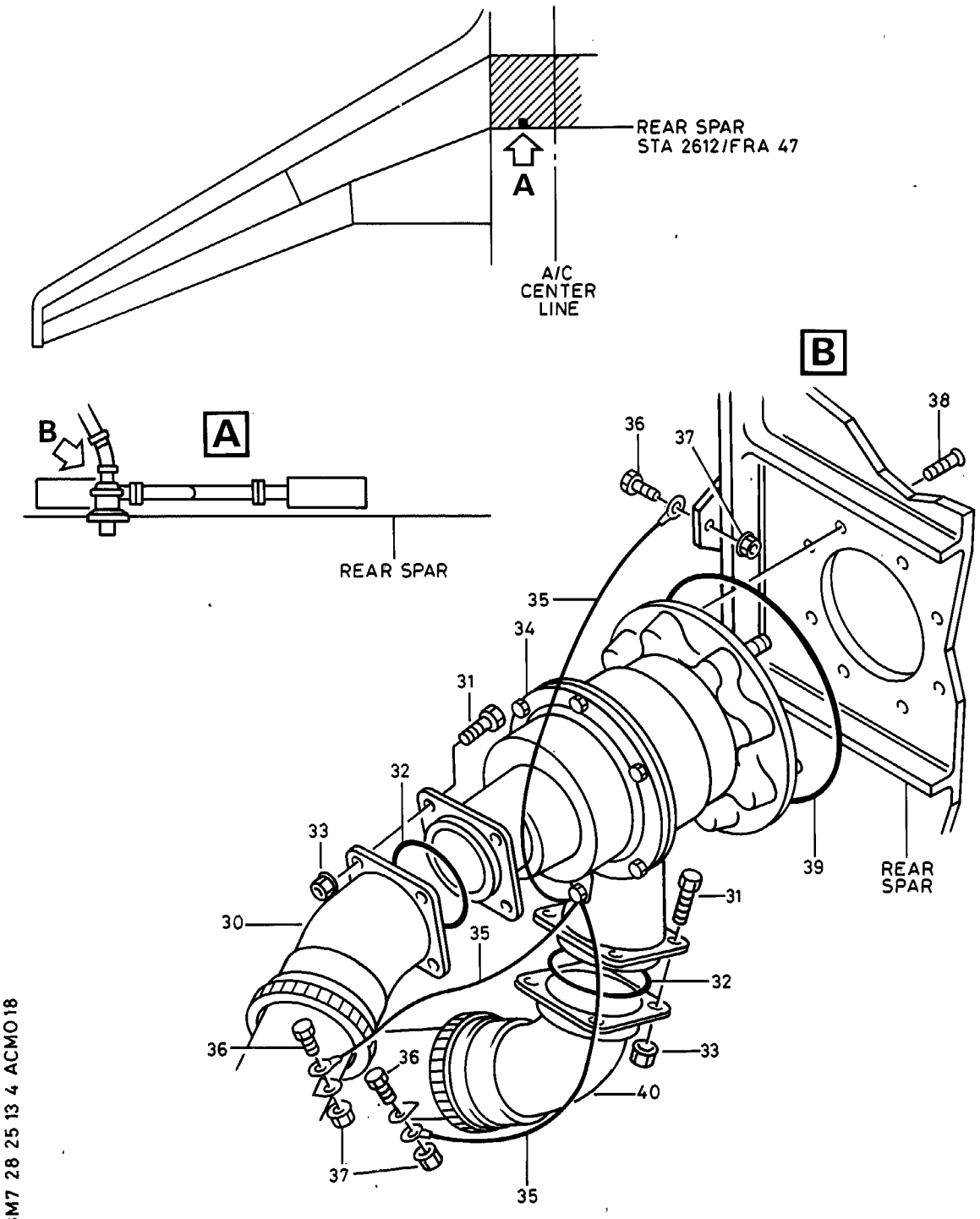
Refuel/Defuel Valve Canister Installation Wing Tank
Figure 401

R

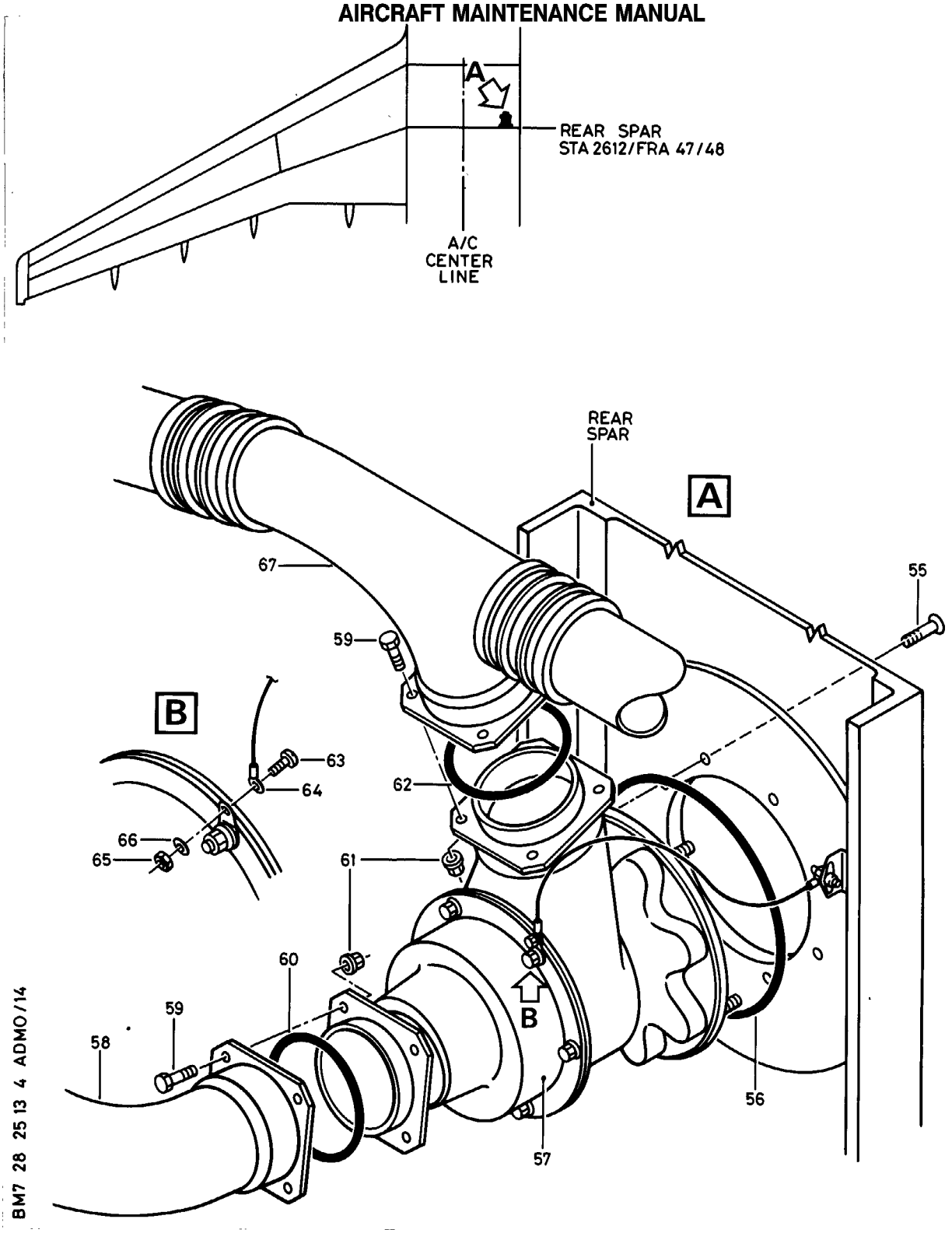


Refuel/Defuel Valve Canister Installation Wing Tank
Figure 402

R



Refuel/Defuel Valve Canister Installation Center Tank
Figure 403



Trim Tank Refuel Valve Canister - Installation Center Tank
Figure 404

canister from spar.
(e)Remove and discard O-ring seals (32 and 39).
(f)Blank canister ports and spar aperture. Cap open line ends.
(3)Trim Tank Canister
(a)Remove screw (78) washer (81) and nut (80) securing bonding lead (79) to valve canister (72). Disconnect the bonding lead.
(b)Remove bolts (74) and nuts (76) securing inlet elbow (73) and outlet T pipe (82) to canister (72).
(c)Slide elbow (73) and T pipe (82) clear of canister.
(d)Remove screws (70) securing canister (72) to rear spar and remove from spar. If necessary rotate elbow pipe (73) to clear the inlet flange of canister (72).
(e)Remove and discard O-ring seals (71), (75) and (77).
(f)Blank canister parts and spar aperture. Cap open line ends.

C. Preparation of Replacement Component
Not applicable

D. Installation
(1)Wing-tank valve canisters (Ref. Fig. 401, 402).

(a)Remove blanks/caps from canister (6) and spar.
(b)Make certain interfaces of canister (6) and front spar are clean and in correct condition.
(c)Lubricate new O-ring seals (5 and 15) with Fuel (Material No. 01-001) and install on canister inlet, outlet and mounting flange.
(d)Locate canister studs into holes in front spar and secure canister to front spar with screws (4).
(e)Remove blanks and connect inlet and outlet line elbows (8 and 13) to canister (6). Secure with bolts (12) and nuts (3).
(f)Right wing inboard canister only: secure line to outlet elbow (8) with nut (7).
(g)Install connecting rod (1) on inlet elbow (13) and secure with bolt (2) and nut (14). If necessary adjust length of connecting rod (1), as follows:

CAUTION: LOCKWIRE MUST BE REMOVED AND INSTALLED OUTSIDE THE FUEL TANK.

1 Remove nut (14) and bolt (2) then remove connecting rod (1) from inner tank.
2 Cut and remove lockwire and adjust connecting rod (1) to required length.
3 Safety connecting rod (1) with lockwire. Apply a 2.0 mm (0.08 in) thick coating of sealant (Material No. 09-005) to lockwire tail then bend tails over to lie flat on component.
4 Install connecting rod (1) on inlet elbow (13) and secure with bolt (2) and nut (14).

(h)Connect bonding leads (9) and secure with bolts (11) and nuts (10) (Ref. 20-28-11, P. Block 1).
(j)Lubricate O-ring seals (17) with Fuel (Material No. 01-001) and install on line (20) end fittings.

(k)Install line (20) between STA663/RIB11 and STA737/RIB12 and secure with bolts (18) and nuts (16).
(l)Connect bonding leads (21) and secure with screws (19) and nuts (22) (Ref. 20-28-11, P. Block 1).
(m)Return all disturbed pipelines to their mid-travel positions.
(n)Coat bolt heads/tails with Primer (Material No. 16-006).
(p)Install the access panel 523(623)EB and the manhole cover 540(640)FB (Ref. 28-11-22, P. Block 401).

(2)Center-tank valve canister (Ref. Fig. 403).
(a)Remove blanks from canister and spar.
(b)Make certain interfaces of canister (34) and rear spar are clean and in correct condition.
(c)Lubricate new O-ring seals (32 and 39) with Fuel (Material No. 01-001) and install on canister inlet, outlet and mounting flange.
(d)Locate canister studs into holes in rear spar and secure canister to rear spar with screws (38).
(e)Remove blanks and connect inlet and outlet line elbows (30 and 40) to canister (34). Secure elbows to canister with bolts (31) and nuts (33).
(f)Connect bonding leads (35) and secure with screws (36) and nuts (37) (Ref. 20-28-11, P. Block 1).
(g)Return all disturbed pipelines to their mid-travel positions.
(h)Coat bolt head/tails and nuts with Primer (Material No. 16-006).
(3)Trim Tank Canister - Installation Center Tank

(a)Remove blanks from canister and spar.
(b)Make certain interfaces of canister (57) and rear spar are clean and in correct condition.
(c)Lubricate new O-ring seals (56)(60) and (62) with Fuel (Material No. 01-001) and install on canister inlet and outlet and valve orifice flanges.
(d)Locate canister studs into holes in rear spar and secure canister to rear spar with screws (55).
(e)Remove blanks and connect elbow (58) and T-pipe (67) to canister (57). Secure elbow (58) and T-pipe (67) to canister (57) with bolts (59) and nuts (61).
(f)Connect bonding lead (64) to canister with screw (63) washer (66) and nut (65) (Ref. 20-28-11, P. Block 1).
(g)Return all disturbed pipelines to their mid-travel positions and make certain couplings are secure.
(h)Coat bolt head/tails and nuts with Primer (Material No. 16-006).
(j)Make sure that the work area is clean and clear of tools and miscellaneous items of equipment.
(k)Install appropriate manhole cover (Ref. 28-11-29, P. Block 401).

E. Tests
(1)Refuel or transfer fuel to the applicable tank (Ref. 12-11-28 or 28-25-00, P. Block 301). Examine the applicable canister for evidence of leakage.

F. Close-Up
(1)Install the applicable refuel/defuel valve (Ref. 28-25-12, P. Block 401).
(2)Make sure that the working area is clean and clear of tools and miscellaneous items of equipment.
(3)Remove the access platform.
(4)Remove all ground handling and maintenance equipment, standard and special tools, all access equipment and miscellaneous items.

R CHECK VALVE 2 IN - REMOVAL/INSTALLATION

WARNING : LANDING GEAR - MAKE SURE THAT THE GROUND SAFETIES AND CHOCKS ARE IN POSITION.

FLIGHT CONTROLS - MAKE SURE THAT THE GROUND SAFETIES AND NOTICES ARE IN POSITION.

OBEY THE SAFETY PRECAUTIONS IN 28-00-00, P. BLOCK 301 AND 28-10-00, P. BLOCK 301.

MAKE SURE THAT FIRE FIGHTING EQUIPMENT IS AVAILABLE AND ADEQUATE.

R MAKE SURE THAT YOU ISOLATE THE ELECTRICAL CIRCUITS UPON WHICH WORK IS
R IN PROGRESS.

1. Reason for the Job

A. Removal of the center tank check valve (2 in), installed in the refuel/defuel gallery.
B. Removal of the inner tank check valve (2 in), installed at the elbow between ribs 2 and 3.
C. Removal of the inner tank check valve (2 in), installed at the diffuser between ribs 6 and 7.

2. Equipment and Materials

ITEM	DESIGNATION
A.	Access Platform 2.5 m (8 ft)
B.	Circuit Breaker Safety Clips and Tags
C.	Container
D.	Packings (O-ring seals)
E.	Spark Proof Lamp
F.	Warning Notice
G.	Blanking Caps
H. Material No. 01-001	Fuels (Ref. 20-31-00)
J. Material No. 16-006	Structure Paints (Ref. 20-31-00)
Referenced Procedures	
- 20-28-11, P. Block 1	Electrical Bonding
- 24-41-00, P. Block 301	AC External Power Control
- 28-00-00, P. Block 301	Fuel - General
- 28-10-00, P. Block 301	Storage
- 28-11-22, P. Block 401	Manhole Cover (Wing)
- 28-11-29, P. Block 401	Manhole Cover (Center Tank)
- 28-25-00, P. Block 301	Refuel/Defuel System
- 28-25-00, P. Block 501	Refuel/Defuel System
- 32-12-11, P. Block 301	Main Gear Main Door

3. Procedure

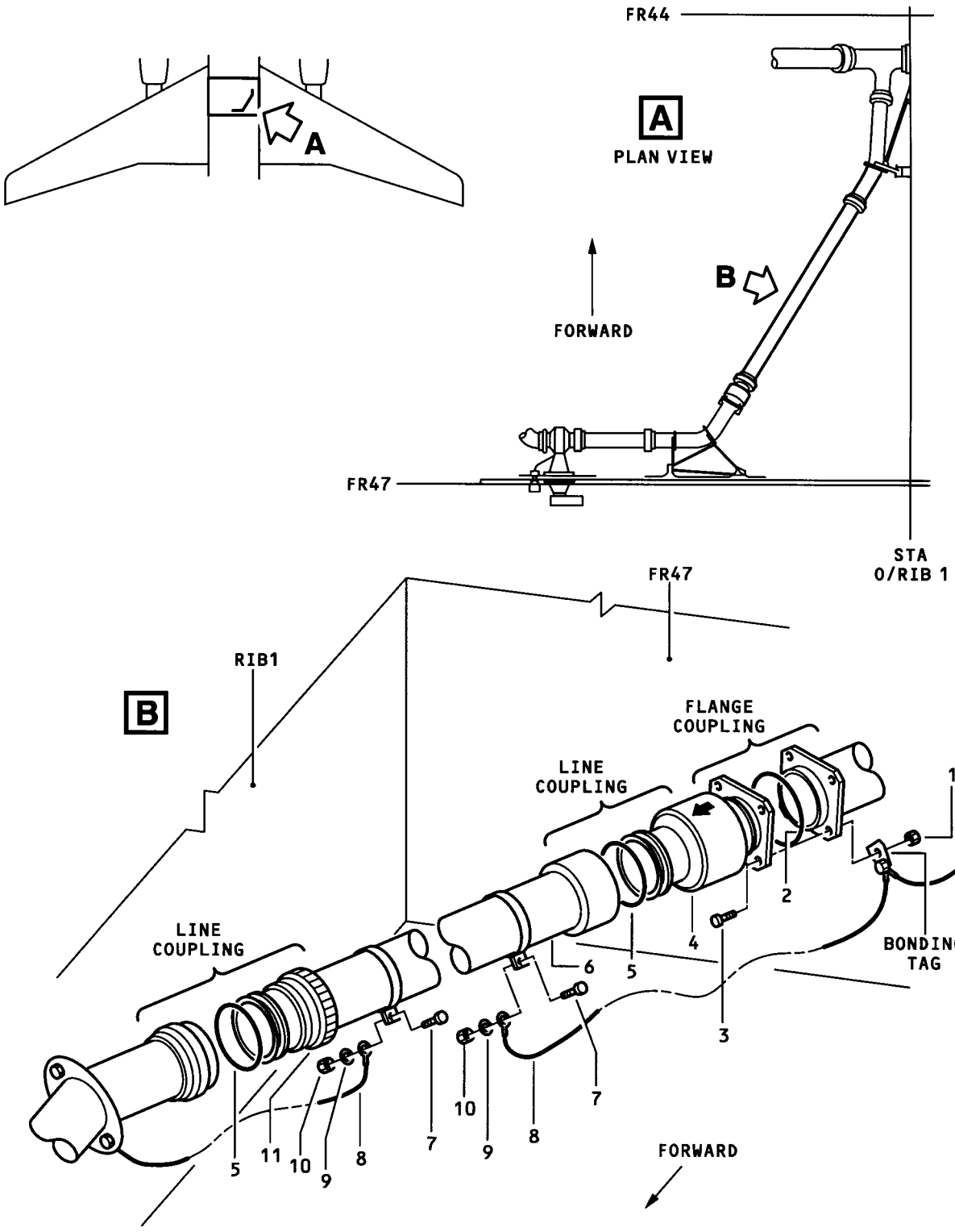
A. Job Set-Up
(1)Defuel all the tanks (Ref. 28-25-00, P. Block 301).
(2)Energize the aircraft electrical network (Ref. 24-41-00, P. Block 301).
(3)In the flight compartment, on panel 430VU:
- make sure that the X FEED P/BSW is released (out) and the crossline flowbar is on
- release (out) the outer and inner tank ISOL VALVES P/BSW's and make sure that the flowbars go off (valves shut).
(4)Display a warning notice on panel 430VU, to tell personnel not to change the settings of the X FEED P/BSW and the ISOL VALVES P/BSW's.
(5)De-energize the aircraft electrical network (Ref. 24-41-00, P. Block 301).
(6)Open the access door 144DR.
(7)Display a warning notice on panel 110VU, to tell personnel not to refuel the aircraft.
(8)Close the access door 144DR.

B. Removal
(1)Center tank check valve (2 in) - refuel/defuel gallery (Ref. Fig. 401)
(a)Open, safety and tag the circuit breakers that follow :

PANEL	SERVICE	IDENT.	LOCATION
132VU	FUEL/X FEED VALVE/MOTOR 1	2QE	324/L60
132VU	FUEL/X FEED VALVE/MOTOR 2	1QE	324/L61

(b)Open the LH main-landing-gear door (Ref. 32-12-11, P. Block 301).
(c)Put the access platform in position.
(d)Remove the center tank manhole cover 147AZ (Ref. 28-11-29, P. Block 401).
(e)Remove the nuts (10), the washers (9) and the bolts (7) and disconnect the bonding straps (8).
(f)Release the coupling nut (11) at the line coupling.
(g)Remove the nuts (1), the bolts (3) and the bonding tag from the flange coupling. Record the installed position of the bonding tag for subsequent installation.
(h)Put the container below the check valve (4). Disengage the two halves of the flange coupling and let the residual fuel drain into the container.
(j)Disconnect the check valve (4) from the fuel line (6) and let the residual fuel drain into the container.
(k)Remove the container and recover the residual fuel.
(l)Disconnect the fuel line (6) from the refuel/defuel gallery.
(m)Remove and discard the packings (O-ring seals) (5) and (2) from the disconnected line couplings and the flange coupling.
(n)Install the blanking caps on the open fuel lines and the removed components.

(2)Inner tank check valve (2 in) - elbow between ribs 2 and 3 (Ref. Fig. 402).
(a)Remove the wing tank manhole covers 540(640)AB and, 540(640)BB (Ref. 28-11-22, P. Block 401).



Center Tank Check Valve (2 in) - Refuel/Defuel Gallery
Figure 401

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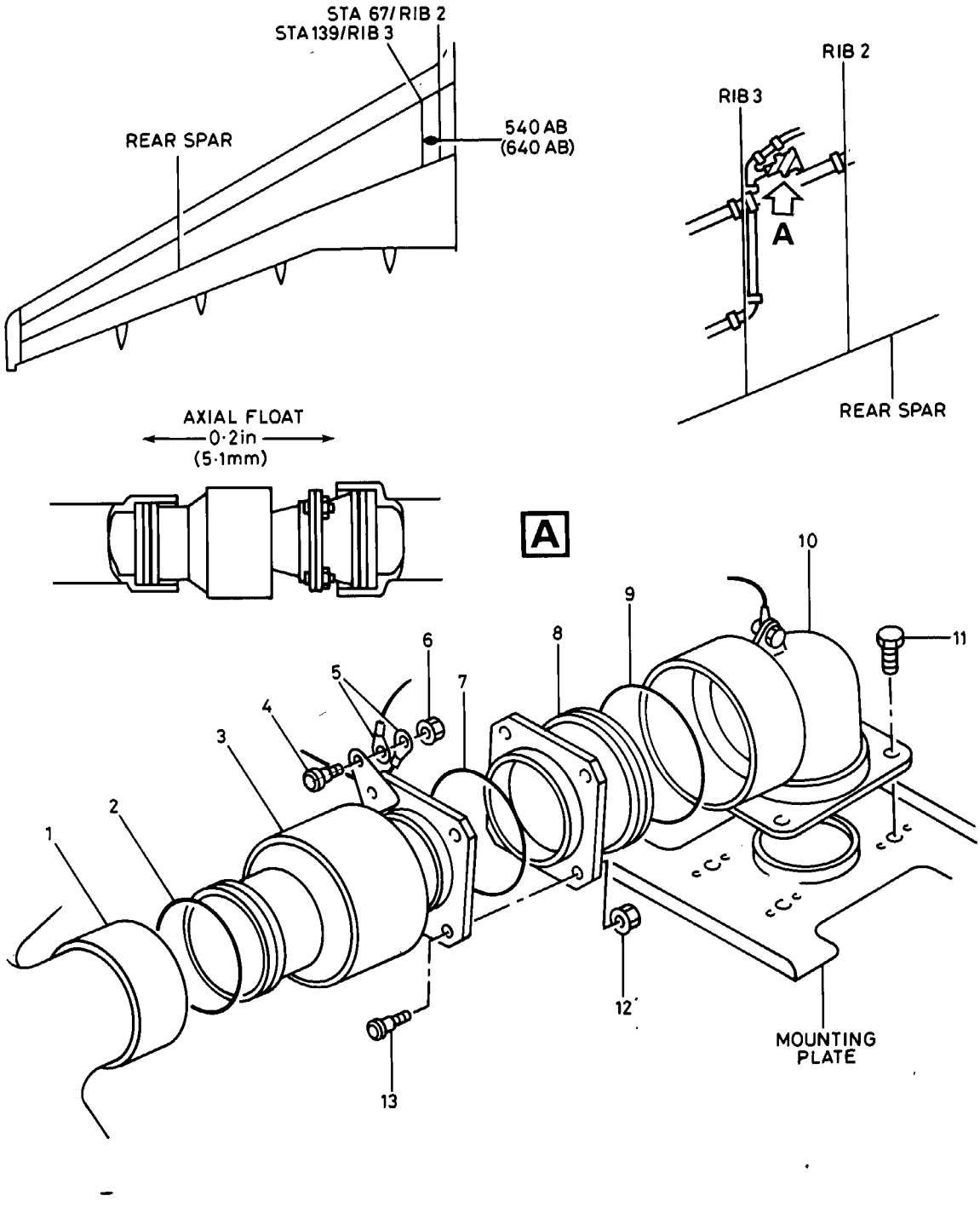

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Inner Tank Check Valve (2 in) - Elbow Installation
Figure 402

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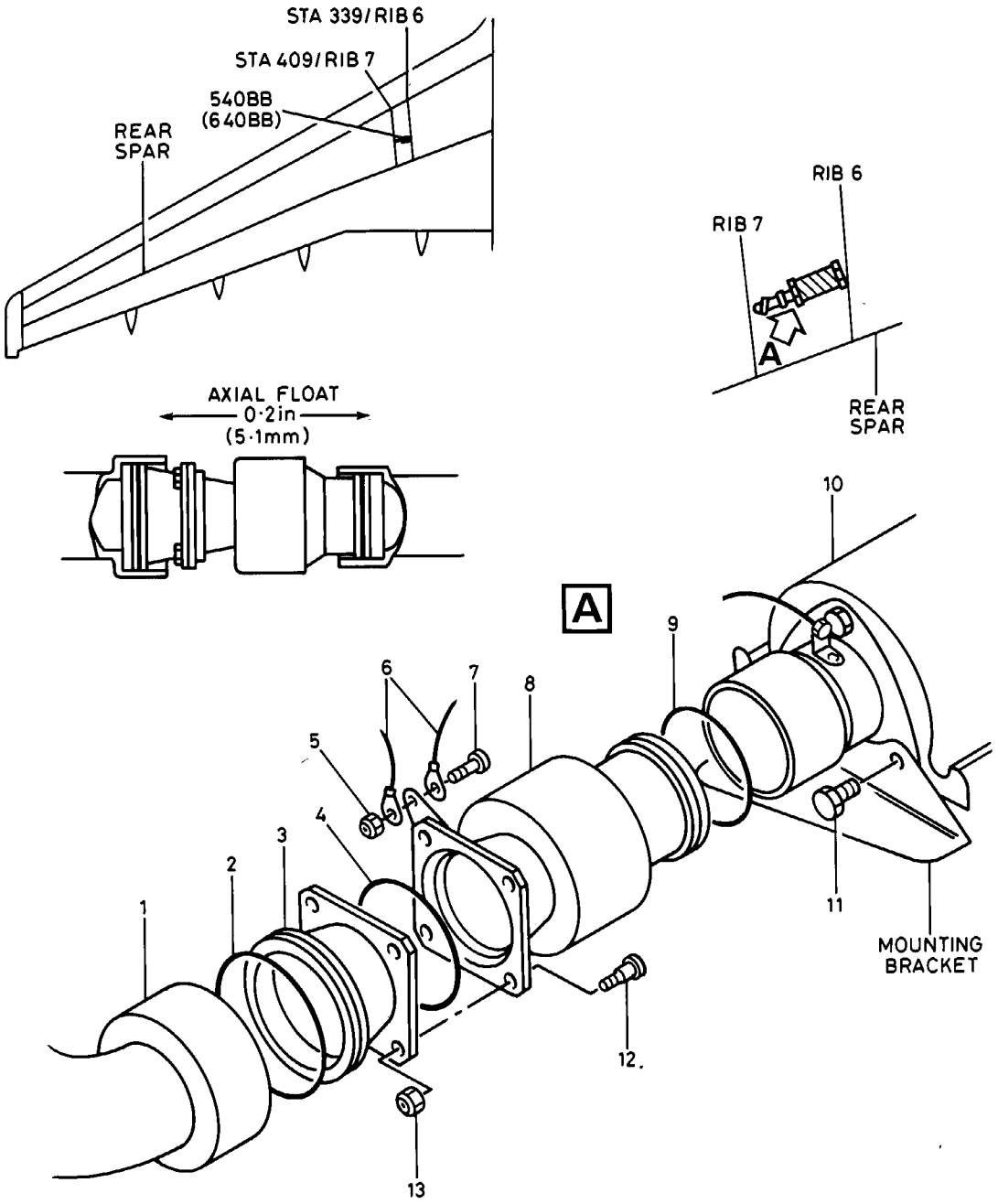

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Inner Tank Check Valve (2 in) - Diffuser Installation
Figure 403

R

(b)Remove the nut (6) and the bolt (4) and disconnect the bonding straps (5) from the tag on the check valve (3).
(c)Remove the four bolts (11) securing the elbow (10) to the mounting plate.
(d)Slide the elbow (10) clear of the mounting plate and the adapter (8).
(e)Remove the four nuts (12) and the bolts (13) which attach the adapter (8) to the check valve (3), then slide the adapter clear of the check valve. Discard the packings (O-rings) (7) and (9).
(f)Slide the check valve (3) clear of the tee piece (1). Discard the packing (O-ring) (2).
(g)Install the blanking caps on the tee piece (1), the mounting plate and the removed components.

(3)Inner tank check valve (2 in) - diffuser between ribs 6 and 7 (Ref. Fig. 403).
(a)Remove the nut (5) and the bolt (7) and disconnect the bonding straps (6) from the bonding tag on the check valve (8).
(b)Remove the five bolts (11) that attach the diffuser (10) to the mounting bracket. Slide the diffuser clear of the check valve (8) and the mounting bracket.
(c)Remove the four nuts (13) and the bolts (12) that attach the check valve (8) to the adapter (3), then slide the check valve clear of the adapter. Discard the packings (O-ring seals) (4) and (9).
(d)Slide the adapter (3) clear of the elbow (1) and discard the packing (O-ring seal) (2).
(e)Install blanking caps on the elbow (1), the diffuser (10) and the removed components.

C. Preparation for Installation.
(1)Center tank check valve - refuel/defuel gallery
(a)Make sure that the fuel lines are clean and not damaged
(2)Inner tank check valve - elbow between ribs 2 and 3.
(a)Make sure that the tee piece (1), the adapter (8) and the elbow (10) are clean and not damaged.

(3)Inner tank check valve - diffuser between ribs 6 and 7.
(a)Make sure that the adapter (3) and the diffuser (10) are clean and not damaged.

D. Installation
(1)Center tank check valve - refuel/defuel gallery (Ref. Fig. 401).
(a)Remove the blanking caps.
(b)Lubricate the new packings (O-ring seals) (5) with fuel (Material No. 01-001) and install them in the grooves on the check valve (4) and the fuel line coupling.
(c)Lubricate the new packing (O-ring seal) (2) with fuel (Material No. 01-001) and install it at the check valve flange coupling.
(d)Put the check valve (4) in the correct position in the fuel line (6).
(e)Install the fuel line (6) and the check valve (4) in the refuel/defuel gallery and align the check valve flange coupling.
(f)Install the nuts (1), the bolts (3) and the bonding tag (Ref. 20-28-11,

P. Block 1) at the flange coupling.

NOTE : The bonding tag must be installed in the position recorded during the removal.

(g)Tighten the coupling nut (11).
(h)Connect the bonding straps (8) with the bolts (7), the washers (9) and the nuts (10) (Ref. 20-28 11, P. Block 1).
(j)Make sure that the disturbed line couplings with axial float are set at approximately the middle travel position.
(k)Apply the Structure Paint (Material No. 16-006) to the nuts and the bolt heads and tails.

(2)Inner tank check valve (2 in) - elbow between ribs 2 and 3 (Ref. Fig. 402).
(a)Lubricate the new packing (O-ring seal) (2) with fuel (Material No. 01-001) and install it in the groove on the check valve (3), then slide the check valve into the tee piece (1).
(b)Lubricate the new packing (O-ring seal) (7) with fuel (Material No. 01-001) and install it on the adapter (8).
(c)Put the adapter in position on the check valve and attach it with the four bolts (13) and the nuts (12).
(d)Lubricate the new packing (O-ring seal) (9) with fuel (Material No. 01-001) and install it in the groove on the adapter (8).
(e)Slide the elbow (10) over the adapter (8) and attach it to the mounting plate with the bolts (11).
(f)Connect the bonding straps (5) to the bonding tag on the valve (3) with the bolt (4) and the nut (6) (Ref. 20-28-11, P. Block 1).
(g)Make sure that the check valve (3) has an axial float of not less than 0.20 in. (5.08 mm). Set the check valve at approximately the middle travel position.
(h)Apply the Structure Paint (Material No. 16-006) to the nuts and the bolt heads and tails.

(3)Inner tank check valve - diffuser between ribs 6 and 7 (Ref. Fig. 403).
(a)Lubricate the new packing (O-ring seal) (2) with fuel (Material No. 01-001) and install it in the groove on the adapter (3).
(b)Slide the adapter (3) into the elbow (1).
(c)Lubricate the new packing (O-ring seal) (4) with fuel (Material No. 01-001) and install it on the adapter (3).
(d)Put the check valve (8) in position on the adapter (3) and install the four bolts (12) and nuts (13).
(e)Lubricate the new packing (O-ring seal) (9) with fuel (Material No. 01-001) and install it on the check valve (8).
(f)Slide the diffuser (10) over the check valve (8) and attach it to the mounting bracket with the bolts (11).
(g)Connect the bonding straps (6) to the bonding tag on the check valve (8) with the bolt (7) and the nut (5) (Ref. 20-28-11, P. Block 1).
(h)Make sure that the check valve (8) has an axial float of not less than 0.20 in. (5.08 mm). Set the check valve at approximately the middle

travel position.

(j)Apply the Structure Paint(Material No. 16-006) to the nuts and the bolt heads and tails.

E. Test of the Refuel/Defuel Gallery Check Valve

(1)Remove the warning notice from the refuel/defuel panel.

(2)Do the System Leak Test (Ref. 28-25-00, P. Block 501) to check the downstream connections.

(3)Prepare the aircraft for a leak test of the upstream connections.

(a)Energize the aircraft electrical network (Ref. 24-41-00, P. Block 301).

(b)Refuel the right inner tank to the high level cut-off position (Ref. 12-11-28, P. Block 301).

(c)Make sure that the circuit breakers that follow are closed:

PANEL	SERVICE	IDENT.	LOCATION
101VU	FUEL/R INR TK/PUMP 1/SUPPLY	2QA	ESS/A01
133VU	ENGINES/ENG 2/FUEL HP VALVE/WARN	2KC	335/R73
133VU	ENGINES/ENG 2/FUEL HP VALVE CTL	4KC	333/T70
132VU	FUEL/R INR TK/PUMP 1/WARN	12QA	323/M62
132VU	FUEL/R INR TK/PUMP 1/CTL	60QA	322/N62

(d)Open safety and tag the circuit breakers that follow:

PANEL	SERVICE	IDENT.	LOCATION
132VU	FUEL/AUTO FEED/CTL	65QA	323/M55
132VU	FUEL/AUTO FEED/WARN	66QA	322/N55

(e)Open the access door 144DR.

(f)On panel 110VU, make sure that the MODE SELECTOR/SELECT switch is in the OFF and guarded position.

(4)Do the leak test that follows to check the upstream connections.

ACTION	RESULT
1. On panel 110VU: - Lift the guards and put all the REFUEL-DEFUEL-VALVES switches in the SHUT position. - Lift the guard and put the MODE SELECTOR/SELECT switch in the REFUEL position. - Put the L INNER TK REFUEL-DEFUEL-VALVES switch in the OPEN position. - Lift the guard and put the TRANSF. VALVE switch in the OPEN position.	- connects the fuel feed system to the refuel/defuel gallery.

ACTION	RESULT
2. On panel 430VU: - Push (in) the RH inner tank ISOL VALVES P/BSW - push (in) the RH INR TK PUMP 1 and 2 P/BSW's.	On panel 430VU: - the RH inner tank ISOL VALVES P/BSW flowbar comes on - the valve opens - the RH INR TK PUMP 1 and 2 P/BSW OFF legends go off - the pumps run On the FQI: - the RH inner tank fuel quantity decreases and the LH inner tank fuel quantity increases.

NOTE : This confirms that the transfer valve is open and the fuel feed system is connected to the refuel/defuel system.

NOTE : Only transfer enough fuel to confirm fuel transfer.

3. On panel 110VU, put the LH INNER TK REFUEL-DEFUEL-VALVES switch in the SHUT position.	- The refuel/defuel system is now pressurized with fuel.

WARNING : OBEY THE FUEL SAFETY PROCEDURES. THIS WILL PREVENT INJURY OR DAMAGE.

4. In the center tank, do a leak check of all the disturbed joints.	- No leaks are permitted.
5. On panel 110VU, put the MODE SELECTOR/SELECT switch in the OFF position and lower the guard.	
6. On panel 430VU, release (out) the RH INR TK PUMP 1 and 2 P/BSW's.	On panel 430VU: - the RH INR TK PUMP 1 and 2 P/BSW OFF legends come on - the pumps stop.

F. Close-Up
(1)Remove the safety clips and tags and close the circuit breakers 1QE (324/L61), 2QE (324/L60), 65QA (323/M55) and 66QA (322/N55).
(2)On panel 110VU:
- put all the REFUEL-DEFUEL-VALVES switches in the NORM position and lower the guards

(3)Close the access door 144DR.
(4)On panel 430VU:
- remove the warning notice.

- push (in) both the outer tank and the LH inner tank ISOL VALVES P/BSW's and make sure that the flowbars come on (valves open)

NOTE : The RH inner tank isolation valve was opened during the test procedure.

(5) De-energize the aircraft electrical network (Ref. 24-41-00, P. Block 301).
(6) Make sure that work area is clean and clear of tools and all other items of equipment.
(7) Install the center tank manhole cover 147AZ (Ref. 28-11-29, P. Block 301).
(8) Install the wing tank manhole covers 540(640)AB and 540(640)BB (Ref. 28-11-22, P. Block 301).
(9) Refuel or defuel as required (Ref. 12-11-28 or 28-25-00, P. Block 301).
(10) Make sure that the work area is clean and clear of tools and all other items of equipment.
(11) Remove the access platform.
(12) Close the LH main-landing-gear door (Ref. 32-12-11, P. Block 301).

DIFFUSER - REMOVAL/INSTALLATION

R **WARNING** : THIS PROCEDURE USES A FUEL SYSTEM ITEM THAT IS IN A CATEGORY KNOWN AS
R A CRITICAL DESIGN CONFIGURATION CONTROL LIMITATION (CDCCL).
R CDCCL IDENTIFIES AN ITEM THAT CAN BE THE SOURCE OF A POSSIBLE FUEL
R TANK IGNITION. YOU MUST KEEP ALL CDCCL ITEMS IN THE APPROVED
R CONFIGURATION. DAMAGE, WEAR OR CHANGES TO A CDCCL ITEM CAN CAUSE A
R POSSIBLE FUEL TANK EXPLOSION.

R LANDING GEAR - MAKE SURE THAT THE GROUND SAFETIES AND CHOCKS ARE IN POSITION.

FLIGHT CONTROLS - MAKE SURE THAT THE GROUND SAFETIES AND NOTICES ARE IN POSITION.

OBEY THE SAFETY PRECAUTIONS IN 28-00-00, P. BLOCK 301, AND 28-10-00, P. BLOCK 301.

MAKE SURE THAT THE FIRE FIGHTING EQUIPMENT IS AVAILABLE AND ADEQUATE.

MAKE SURE THAT YOU ISOLATE THE ELECTRICAL CIRCUITS UPON WHICH WORK IS IN PROGRESS.

1. Equipment and Materials

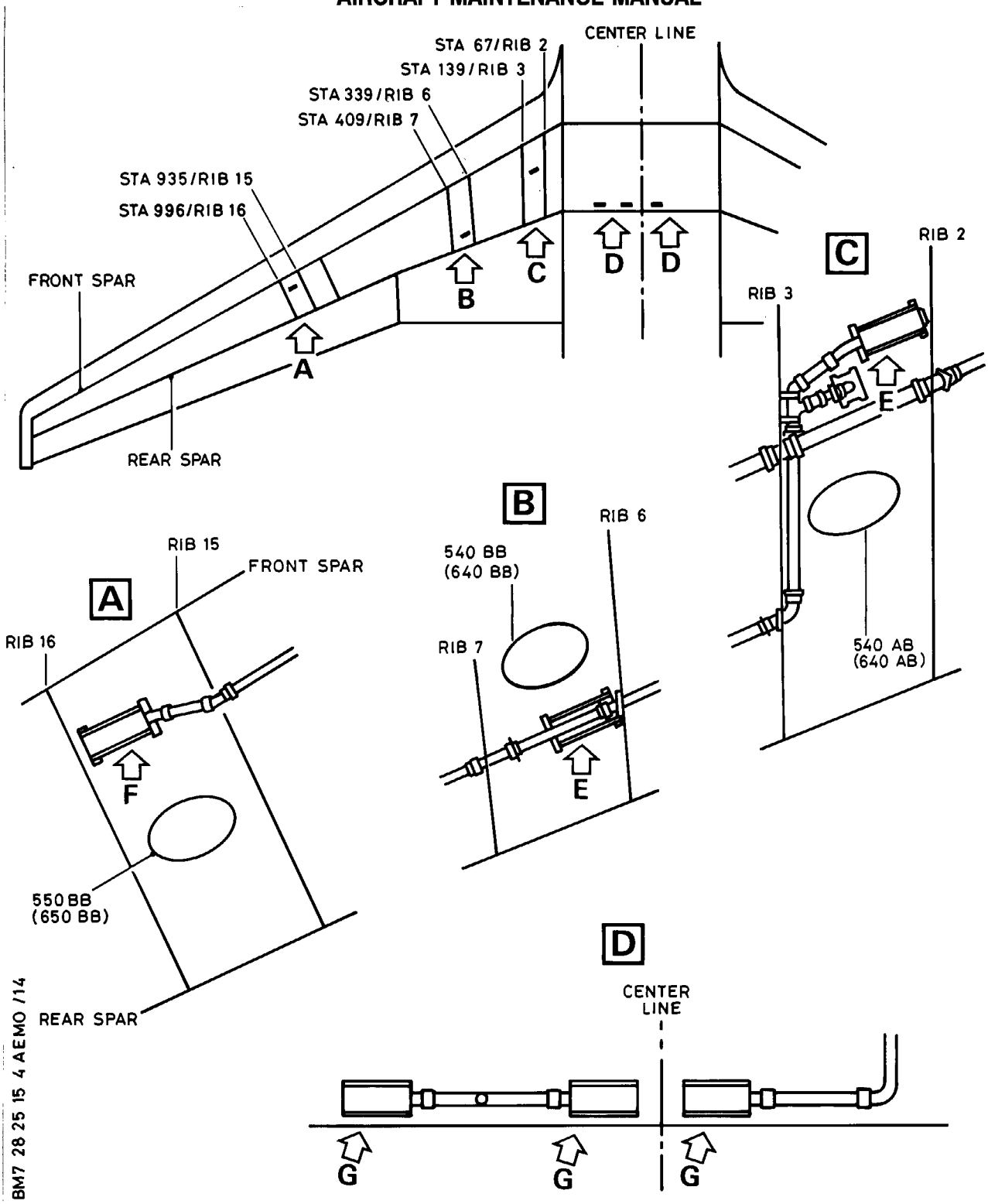
ITEM	DESIGNATION
A.	Access platform 4.5 m (15 ft)
B.	O-rings
C. Material No. 01-001	Fuels (Ref. 20-31-00)
D. Material No. 16-006	Structure Paints (Ref. 20-31-00)
Referenced Procedures	
- 20-28-11, P. Block 1	Electrical Bonding
- 28-00-00, P. Block 301	Fuel - General
- 28-11-22, P. Block 401	Manhole Cover Wings
- 28-11-29, P. Block 401	Cover - Manhole, Center Tank

2. Procedure

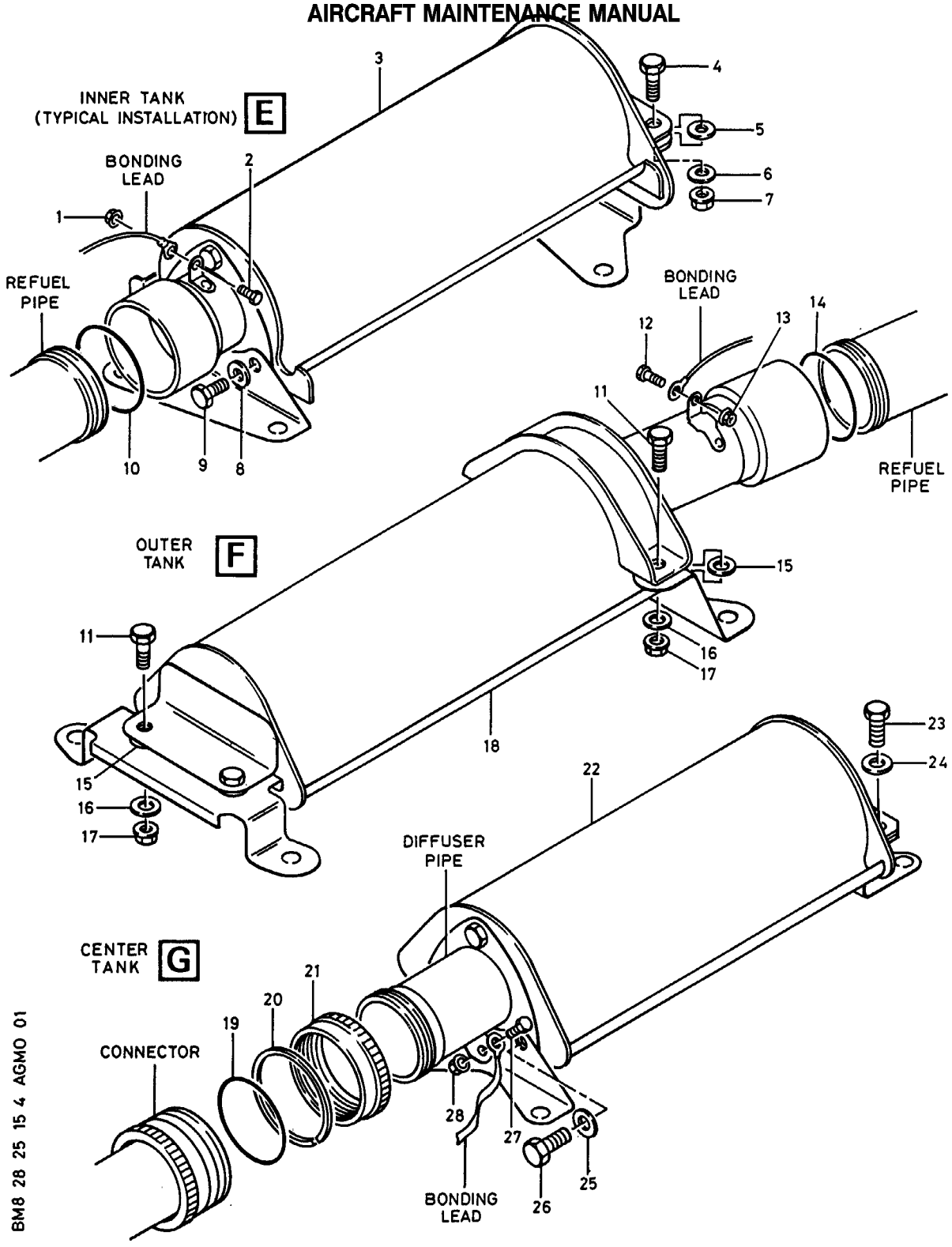
(Ref. Fig. 401)
(Ref. Fig. 402)

A. Job Set-Up
(1)Position access platform.
(2)Remove appropriate manhole cover:
(a)For outer tank diffuser - 550(650)BB (Ref. 28-11-22, P. Block 401).
(b)For inner tank outboard diffuser - 540(640)BB (Ref. 28-11-22, P. Block 401).
(c)For inner tank inboard diffuser - 540(640)AB (Ref. 28-11-22, P. Block 401).
(d)For center tank diffusers - remove manhole cover 147AZ (Ref. 28-11-29, P. Block 401).

B. Removal (Ref. Fig. 402)



Diffusers - Location
Figure 401



Diffusers - Installation Details
Figure 402

R

(1)Outer tanks
(a)Remove nut (13) and screw (12), and disconnect bonding lead.
(b)Remove four nuts (17), washers (16) and (15), and bolts (11).
(c)Withdraw diffuser (18). Discard O-ring (14).
(2)Inner tanks
(a)Remove nut (1) and screw (2), and disconnect bonding lead.
(b)Remove two nuts (7), washers (6) and (5), and bolts (4).
(c)Remove two bolts (9) and washers (8), and withdraw diffuser (3). Discard O-ring (10).
(3)Center tank
(a)Remove nut (28) and bolt (27), and disconnect bonding lead.
(b)Unscrew coupling nut (21) and slide connector clear of diffuser pipe.
(c)Remove three bolts (23) and washers (24), and three bolts (26) and washers (25).
(d)Withdraw diffuser (22) and discard O-ring (19). If a replacement component is to be fitted, extract ring (20) and remove coupling nut (21).
(4)Clean and inspect component interface and component adjacent area.
(5)Cap open line end and diffuser pipe fitting.
(6)At installation points for bolts (4) (11) (23) and (26), clean and prepare contact areas (Ref. 20-28-11, P. Block 1).

C. Preparation of Replacement Component

NOTE : As diffuser is not checked after installation, make certain that it is serviceable, has been correctly stored, and that all associated paperwork is in order.

(1)Center tank - install coupling nut (21) and ring (20) on diffuser pipe.

D. Installation (Ref. Fig. 402)
(1)Outer tanks
(a)Lubricate new O-ring (14) with Fuel (Material No.01-001) and install in groove on refuel pipe.

R WARNING : THIS INSTRUCTION IS APPLICABLE TO A CRITICAL DESIGN
R CONFIGURATION CONTROL LIMITATION (CDCCL) ITEM. CAREFULLY OBEY
R ALL GIVEN INSTRUCTIONS WHEN YOU DO THIS STEP. IF YOU DO NOT
R OBEY THESE INSTRUCTIONS, A DANGEROUS CONDITION CAN OCCUR THAT
R CAN CAUSE A POSSIBLE FUEL TANK EXPLOSION.

(b)Engage pipe fitting on diffuser (18) with refuel pipe and install four bolts (11), washers (15) and (16), and nuts (17). Bonding connections at all four attachment points to be in accordance with 20-28-11, P. Block 1.
(c)Connect bonding lead with screw (12) and nut (13) in accordance with 20-28-11, P. Block 1.
(d)Slide the mating section of refuel pipe fully in each direction against the internal stops, and make certain that the pipe seal flanges remain fully engaged. Leave pipe section at approximately

mid-position.

(2)Inner tanks

(a)Lubricate new O-ring (10) with Fuel (Material No.01-001) and install in groove on refuel pipe.

(b)Engage pipe fitting on diffuser (3) with refuel pipe and install washers (8) and bolts (9). Repaint bolt heads with Structure Paint (Material No.16-006).

R WARNING : THIS INSTRUCTION IS APPLICABLE TO A CRITICAL DESIGN
R CONFIGURATION CONTROL LIMITATION (CDCCL) ITEM. CAREFULLY OBEY
R ALL GIVEN INSTRUCTIONS WHEN YOU DO THIS STEP. IF YOU DO NOT
R OBEY THESE INSTRUCTIONS, A DANGEROUS CONDITION CAN OCCUR THAT
R CAN CAUSE A POSSIBLE FUEL TANK EXPLOSION.

(c)Install washers (5), bolts (4), washers (6) and nuts (7). Bonding connections at these attachment points to be in accordance with 20-28-11, P. Block 1.

(d)Connect bonding lead with screw (2) and nut (1) in accordance with 20-28-11, P. Block 1.

(e)Slide the mating section of refuel pipe fully in each direction against the internal stops, and make certain that the pipe seal flanges remain fully engaged. Leave pipe section at approximately mid-position.

(3)Center tank

(a)Lubricate new O-ring (19) with Fuel (Material No.01-001) and install in groove on diffuser pipe.

(b)Engage diffuser pipe with connector on refuel pipe. Slide connector to central position and tighten coupling nut (21).

R WARNING : THIS INSTRUCTION IS APPLICABLE TO A CRITICAL DESIGN
R CONFIGURATION CONTROL LIMITATION (CDCCL) ITEM. CAREFULLY OBEY
R ALL GIVEN INSTRUCTIONS WHEN YOU DO THIS STEP. IF YOU DO NOT
R OBEY THESE INSTRUCTIONS, A DANGEROUS CONDITION CAN OCCUR THAT
R CAN CAUSE A POSSIBLE FUEL TANK EXPLOSION.

(c)Install washers (24) and bolts (23), and washers (25) and bolts (26). Bonding connections, at all five attachment points, to be in accordance with 20-28-11, P. Block 1.

(d)Connect bonding lead with bolt (27) and nut (28), in accordance with 20-28-11, P. Block 1.

E. Test

None.

F. Close-Up

(1)Make certain that working area is clean and clear of tools and miscellaneous items of equipment.

(2)Close access doors:

(a)For wing tanks - install manhole cover(s) (Ref. 28-11-22, P. Block 401).

(b)For center tank - install manhole cover 147AZ (Ref. 28-11-29,

P. Block 401).
(3)Remove access platform.

TRANSFER VALVE - REMOVAL/INSTALLATION

WARNING : LANDING GEAR - MAKE SURE THAT THE GROUND SAFETIES AND CHOCKS ARE IN POSITION.

FLIGHT CONTROLS - MAKE SURE THAT THE GROUND SAFETIES AND NOTICES ARE IN POSITION.

OBSERVE THE SAFETY PRECAUTIONS IN 28-00-00, P. BLOCK 301 AND 28-10-00, P. Block 301.

MAKE SURE THAT THE FIRE FIGHTING EQUIPMENT IS AVAILABLE AND ADEQUATE.

BEFORE POWER IS SUPPLIED TO THE AIRCRAFT MAKE SURE THAT THE ELECTRICAL CIRCUITS UPON WHICH WORK IS IN PROGRESS ARE ISOLATED.

1. Equipment and Materials

ITEM	DESIGNATION
A.	Access Platform (2.5 m) (8 ft)
B.	Circuit Breaker Safety clips and tags.
C.	Container
D.	Packing (O-ring seals)
E. Material No. 01-001	Fuels (Ref. 20-31-00)
Referenced Procedures	
- 12-11-28, P. Block 301	Replenishing of Fuel Tanks
- 20-28-11, P. Block 1	Electrical Bonding
- 24-41-00, P. Block 301	AC External Power Control
- 28-00-00, P. Block 301	Fuel - General
- 28-10-00, P. Block 301	Storage
- 28-11-29, P. Block 401	Manhole Cover (Center Tank)
- 28-25-00, P. Block 301	Refuel/Defuel System
- 28-25-17, P. Block 401	Transfer Valve Actuator
- 32-12-11, P. Block 301	Main Gear Main Door

2. Procedure

(Ref. Fig. 401)

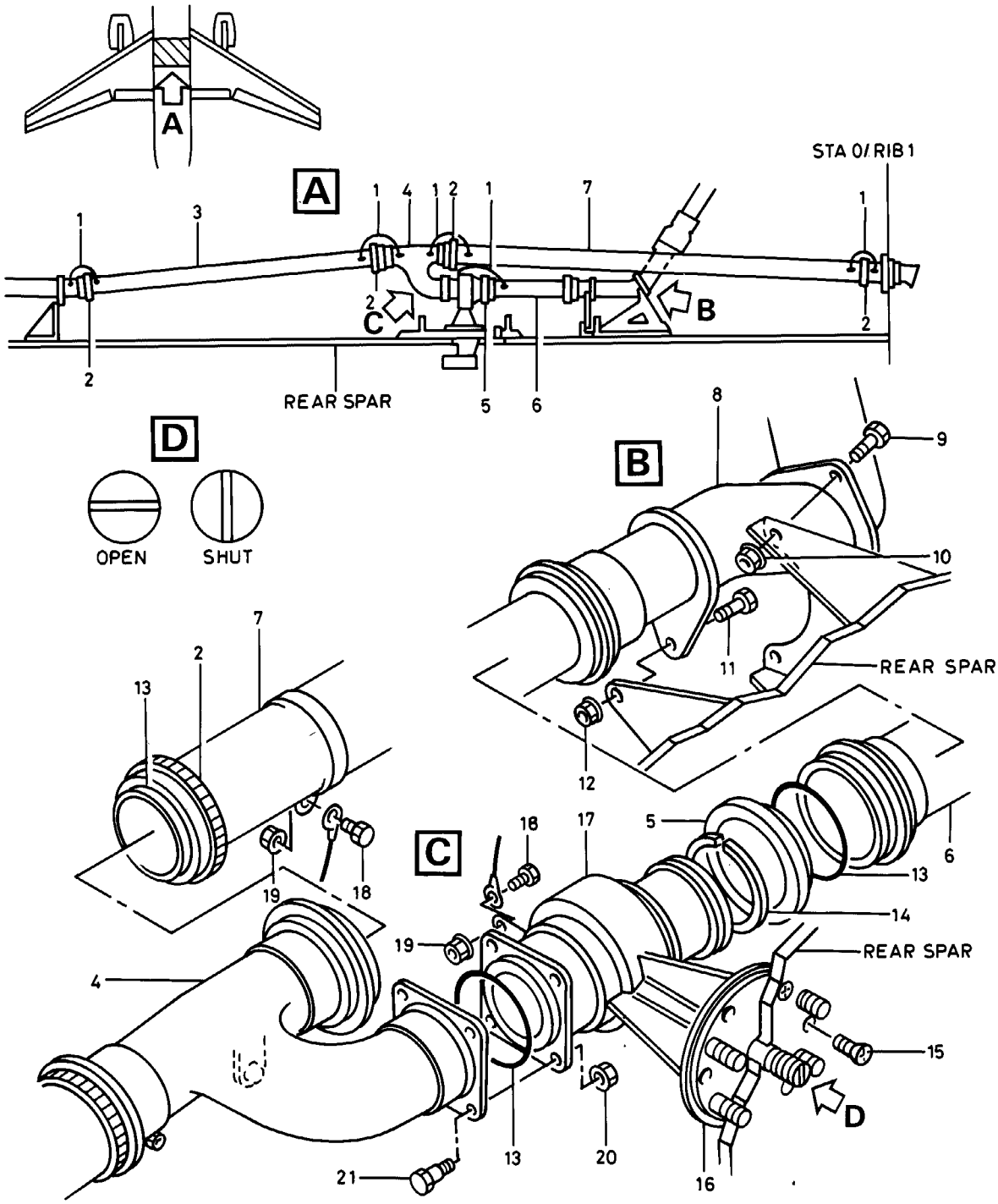
A. Job Set-Up

(1) Energize the aircraft electrical network (Ref. 24-41-00, P. Block 301).

R (2) Defuel the center tank and the two inner tanks (Ref. 28-25-00,
R P. Block 301).

R (3) On panel 430VU, release the right inner and outer tank ISOL VALVES
R P/BSW's:
- OFF legends come on
- flowbars flash whilst valves are in transit and go off when valves are fully closed.

R (4) On panel 430VU, make sure that the X FEED P/BSW switch is released (out)
R and that the crossline flowbar is on.



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Transfer Valve - Installation
Figure 401

(5)De-energize the aircraft electrical network (Ref. 24-41-00, P. Block 301).
(6)Open, safety and tag the following circuit breakers:

PANEL	SERVICE	IDENT.	LOCATION
132VU	FUEL/ISOL VALVE/R INR TK/SUPPLY	4QB	324/L56
132VU	FUEL/ISOL VALVE/R OUTR TK/SUPPLY	2QB	324/L58
132VU	FUEL/X FEED VALVE/MOTOR 1	2QE	324/L60
132VU	FUEL/X FEED VALVE/MOTOR 2	1QE	324/L61

R (7)Open the left main-landing-gear door (Ref. 32-12-11, P. Block 301).
R (8)Put the access platform in position.
R (9)Remove the manhole cover 147AZ (Ref. 28-11-29, P. Block 401).
R (10)Remove the transfer valve actuator (Ref. 28-25-17, P. Block 401).

B. Removal
R (1)Remove the nuts (19) and the bolts (18) and disconnect the five bonding strips (1).
R (2)Remove the four coupling nuts (2) and the one coupling nut (5).
R (3)Remove the nuts (20) and the bolts (21).
R (4)Put the container below the line couplings. Disconnect and remove the line (3), the Y-fitting (4) and the line (7). Recover and remove any residual fuel.
R (5)Remove the nuts (10) and (12) and the bolts (9) and (11).
R (6)Disengage the elbow line (8) from the support brackets and disconnect the line (6) from the valve (17). Temporarily support the line (6) and the elbow line (8).
R (7)Discard the packing (13) at all the disconnected line couplings.
R (8)Remove the six screws (15) and the valve (17). Discard the packing (16). If a replacement valve (17) is to be fitted, remove the ring (14) and the coupling nut (5).
R (9)Clean and inspect the component interface and the line end-fittings. Cap the open line ends and transfer valve orifices.

C. Preparation of Replacement Component
R (1)Install the coupling nut (5) and the ring (14) on the replacement valve (17).

D. Installation
R (1)Remove the caps from the line ends and transfer valve orifices.
R (2)Lubricate the new packing (16) with fuel (Material No. 01-001) and install it in the groove on the mounting flange of the valve (17).
R (3)Install the valve (17) in position with six screws (15).
R (4)Lubricate the six new packings (13) with fuel (Material No. 01-001) and install one at each of the disconnected line couplings.
R (5)Remove the temporary support and connect the line (6) to the valve (17). Tighten the coupling nut (5).
R (6)Remove the temporary support from the elbow line (8) and install the bolts (9) and (11) and the nuts (10) and (12).
R (7)Install the line (3), the Y-fitting (4) and the line (7). Attach the

R Y- fitting to the valve (17) with the bolts (21) and the nuts (20).
R (8)Tighten the four coupling nuts (2).
R (9)Connect the five bonding strips (1) with the bolts (18) and the nuts (19) (Ref. 20-28-11, P. Block 1).
R (10)Make sure that all the disturbed lines with axial float are left at the R approximately mid-travel position.

E. Preparation for Test

R
R (1)Fill the right inner tank with a minimum of 2,000 kg (4,400 lb) of fuel R (Ref. 12-11-28 or 28-25-00, P. Block 301).
R (2)Turn the valve splindle to put the valve (17) in the open position.

R NOTE : The groove on the end of the valve spindle indicates the position R of the valve spherical plug.

R (3)Energize the aircraft electrical network (Ref. 24-41-00, P. Block 301).
R (4)Open the access door 144DR and on the panel 110VU make sure that the MODE SELECT/SELECTOR switch is in the OFF position and guarded.
(5)Remove the safety clip and tag and close the circuit breaker 4QB (324/L56).

(6)Make certain that the following circuit breakers are closed:

PANEL	SERVICE	IDENT.	LOCATION
101VU	FUEL/R INR TK/PUMP 1/SUPPLY	2QA	GEN1/A17
133VU	ENGINES/ENG 2/FUEL HP VALVE/WARN	2KC	335/R73
133VU	ENGINES/ENG 2/FUEL HP VALVE CTL	4KC	333/T70
132VU	FUEL/R INR TK/PUMP 1/WARN	12QA	323/M62
132VU	FUEL/R INR TK/PUMP 1/CTL	60QA	322/N62

(7)Not applicable.

(8)Make certain that HP VALVE ENG 2 lever is in FUEL OFF position.

F. Test

ACTION	RESULT
1. On panel 430VU	
- press right inner tank ISOL VALVES pushbutton switch	- OFF legend goes off. Flowbar flashes whilst valve is in transit, then remains on
- Press right INR TK PUMP 1 pushbutton switch	- Pump runs. - OFF legend goes off. FAULT legend comes on momentarily
2. In center tank	

ACTION	RESULT
- Check all disturbed joints for leaks.	
3. On panel 110VU	
- make certain all **REFUEL DEFUEL VALVES** switches are in shut position	
- raise guard and place **MODE SELECTOR** switch in **REFUEL** position	
- place L **INNER TK REFUEL DEFUEL VALVES** switch in **OPEN** position	- fuel transfers from right inner tank to left inner tank
- check **FQI** and confirm fuel transfer is taking place	
- place L **INNER TK REFUEL DEFUEL VALVES** switch in **SHUT** position	- fuel transfer stops
- place **MODE SELECTOR** switch in **OFF** position and guarded	
4. On panel 430VU	
- release right **INR TK PUMP 1** pushbutton switch.	- Pump stops. - **OFF** legend comes on.

G. Close-Up

(1) Remove safety clips and tags and close circuit breakers 2QB (324/L58), 2QE (324/L60), 1QE (324/L61).

(2) On panel 430VU, push (in) the right outer tank **ISOL VALVES P/BSW**:
- the **OFF** legend goes off
- the flowbar flashes while the valve moves and comes on fully when the valve is fully open.

R
R (3) Close the access door 144DR.
R (4) De-energize the aircraft electrical network (Ref. 24-41-00, P. Block 301).
R (5) Make sure that the work area is clean and clear of all tools and other items of equipment.
R (6) Close the manhole cover 147AZ (Ref. 28-11-29, P. Block 401).
R (7) Install the transfer-valve actuator (Ref. 28-25-17, P. Block 401).
R (8) Refuel or defuel as required (Ref. 12-11-28, or 28-25-00, P. Block 301).
R (9) Remove the access platform.
R (10) Close the LH main-landing-gear door (Ref. 32-12-11, P. Block 301).

R TRANSFER VALVE (280044) -
R DEACTIVATION/REACTIVATION

Ref: MMEL Section 1-28, Item 23

R CAUTION : THIS PROCEDURE IS TO BE USED IN ACCORDANCE WITH THE REQUIREMENTS OF
R THE MMEL.

WARNING : LANDING GEAR - MAKE SURE THAT THE GROUND SAFETIES AND CHOCKS ARE IN POSITION.

FLIGHT CONTROLS - MAKE SURE THAT THE GROUND SAFETIES AND NOTICES ARE IN POSITION.

R YOU MUST OBEY THE SAFETY PRECAUTIONS IN 28-00-00, P. BLOCK 301.

R MAKE SURE THAT THE FIRE FIGHTING EQUIPMENT IS AVAILABLE AND ADEQUATE.

R MAKE SURE THAT YOU ISOLATE THE ELECTRICAL CIRCUITS UPON WHICH WORK
R IS IN PROGRESS.

1. Deactivation

A. Reason for the Job

R (1)To make sure that the inoperative transfer valve is deactivated closed
R and is locked in the SHUT position.

B. Equipment and Materials

ITEM	DESIGNATION
A.	Access Platform 2.5 m (8 ft)
B.	Circuit Breaker Safety Clip and Tag
C. D97B00-001	Actuator - Mechanical
D. ASNE0052R10B6SNF	Connector
E. NSA928007-10	Protection Cap
F.	Temporary Warning Placards - Transfer Valve Deactivated
G.	Lockwire, Corrosion-Resistant Steel Dia 0.8 mm (0.032 in)
Referenced Procedures	
- 20-28-11, P. Block 1	Electrical Bonding
- 24-41-00, P. Block 301	AC External Power Control
- 28-00-00, P. Block 301	Fuel - General
- 28-25-16, P. Block 401	Transfer Valve
- 28-25-17, P. Block 401	Transfer Valve Actuator
- 32-12-11, P. Block 401	Main Gear Main Door

C. Procedure

(1)Job Set-Up
(a)Energize the aircraft electrical network (Ref. 24-41-00, P. Block 301).
(b)Open the access door 144DR.
(c)On panel 110VU, make sure that the TRANSF. VALVE switch is in the CLOSED and guarded position, and that the OPEN indicator light is off.

R **ON A/C 101-200,

R CAUTION : CIRCUIT BREAKER 2QU CONTROLS THE TRANSFER VALVE (280044) AND THE
R THE ACT INLET VALVE(S). IF THE ACT(S) ARE INSTALLED AND
R SERVICABLE, THE CIRCUIT BREAKER 2QU MUST STAY CLOSED FOR THE
R CORRECT OPERATION OF THE ACT(S).

R **ON A/C 001-100,

(d)Not applicable.
(e)Open, safety and tag the circuit breaker that follows:

PANEL	SERVICE	IDENT.	LOCATION
132VU	FUEL/FUELLING/XFR VALVE	2QU	321/P55

R **ON A/C 101-200,

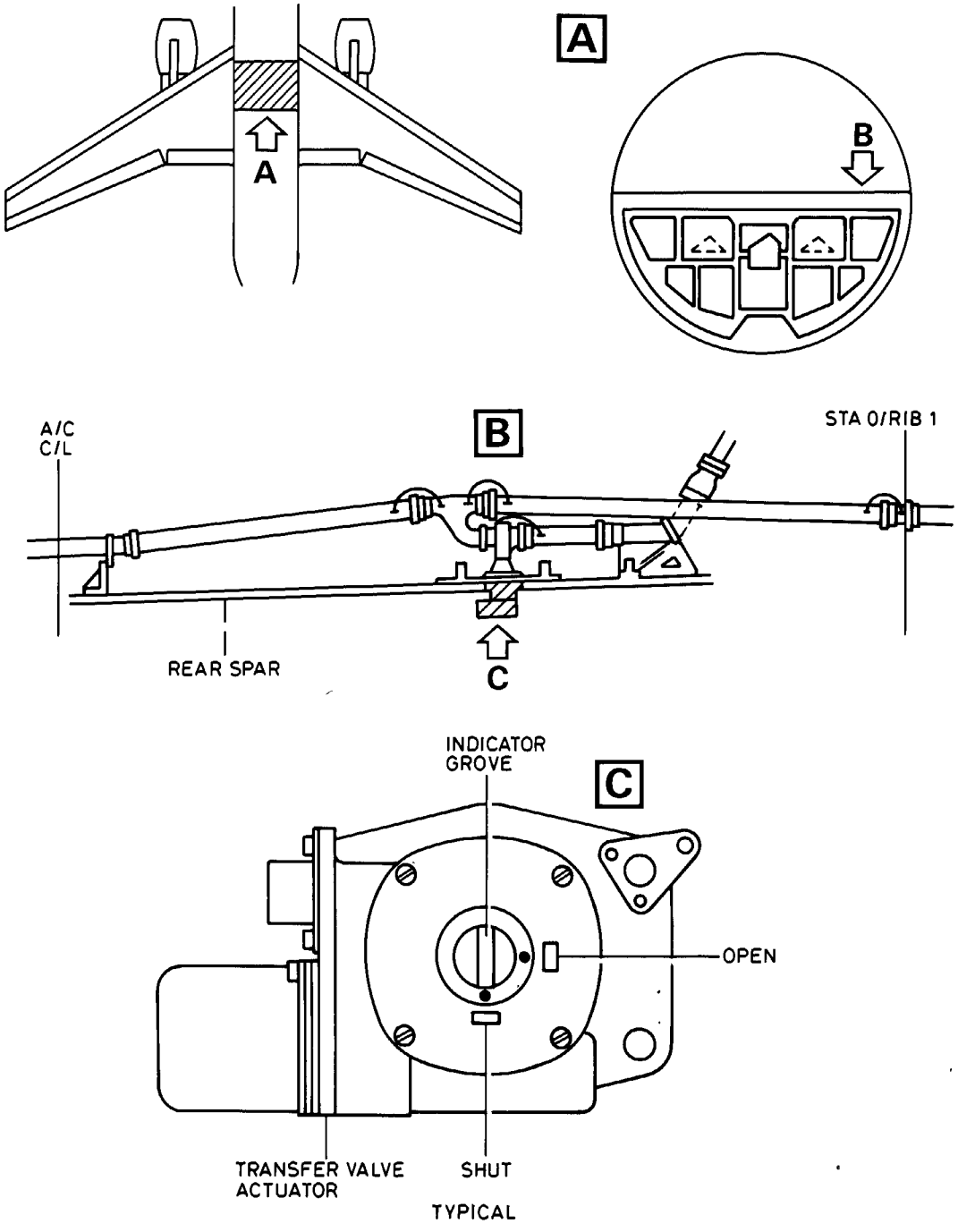
(d)If the ACT(s) are installed and serviceable, make sure that the circuit breaker that follows is closed:
(e)If the ACT(s) are not installed or are not serviceable, open safety and tag the circuit breaker that follows:

PANEL	SERVICE	IDENT.	LOCATION
132VU	FUEL/FUELLING/TRANSFER VALVE	2QU	321/P55

R **ON A/C ALL

(f)De-energize the aircraft electrical network (Ref. 24-41-00, P. Block 301).
(g)Open the RH main-landing-gear bay door (Ref. 32-12-11, P. Block 301).
(h)Put the access platform in position.

(2)Deactivate the transfer valve in the closed position
(Ref. Fig. 901)
(Ref. Fig. 902)
(a)Remove the transfer valve actuator (2) (Ref. 28-25-17, P. Block 401). Install a connector PN ASNE0052R10B6SNF and protection cap PN NSA938007-10 onto the electrical connector (1) to prevent damage and the ingress of water. Attach the electrical connector (1) safely to



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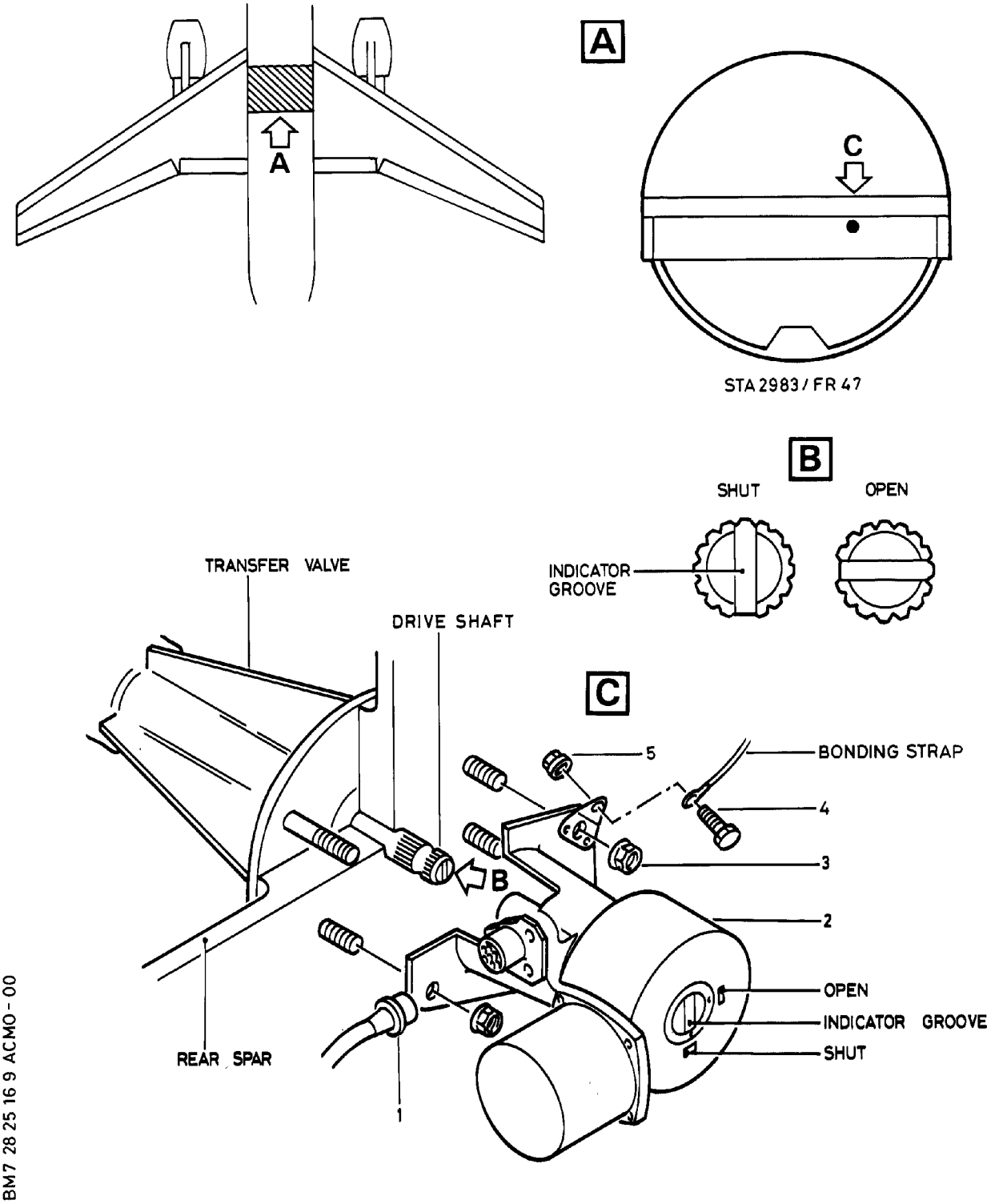
Transfer Valve - Visual check.
Figure 901



Transfer Valve and Actuator.
Figure 902

the adjacent structure.

CAUTION : WHEN YOU DO THE OPERATIONS THAT FOLLOW, TAKE CARE NOT TO DAMAGE THE SHAFT SPLINES.

(b)Install the mechanical actuator PN D97B00-001 onto the valve with the nuts (3).
(c)Manually operate the mechanical actuator control-lever to turn the valve shaft to the SHUT position.

NOTE : If the valve is jammed in the OPEN position, or will not shut fully, the valve must be replaced (Ref. 28-25-16, P. Block 401).

(d)Safety the mechanical actuator control-lever with lockwire.
(e)Secure the bonding strap to the mechanical actuator bonding-tag with the bolt (4) and the nut (5) (Ref. 20-28-11, P. Block 1).

(3)Close-Up
(a)Make sure that the work area is clean and clear of tools and other items of equipment.
(b)Remove the access platform.
(c)Close the RH main-landing-gear bay door (Ref. 32-12-11, P. Block 301).
(d)Attach a temporary warning placard to the TRANSF. VALVE switch on the refuel/defuel panel 110VU, warning that the transfer valve is deactivated closed and manually locked in the SHUT position.

NOTE : When the refuel/defuel panel (110VU) is energized, it is possible that the OPEN indicator light adjacent to the TRANSF. VALVE switch will come on. This should be ignored while the transfer valve is deactivated.

(e)Close the access door 144DR.

R **ON A/C 001-100,

(f)On panel 132VU, make sure that circuit breaker 2QU (Line 321/P55) is open, safetied and tagged.

R **ON A/C 101-200,

(f)On panel 132VU:
- If the ACT(s) are installed and serviceable, make sure that circuit breaker 2QU (Line 321/P55) is closed.
- If the ACT(s) are not installed or are not serviceable, make sure that circuit breaker 2QU (Line 321/P55) is open, safetied and tagged.

R **ON A/C ALL

(g)Attach a temporary warning placard to circuit breaker 2QU, warning that the transfer valve is deactivated closed.

(h)Make an entry in the aircraft technical log.

2. Reactivation

A. Make the valve fully operational as follows:
(1)Cut and remove the lockwire from the mechanical actuator PN D97B00-001.
(2)Remove the nuts (3) and remove the mechanical actuator from the valve.
(3)Install the transfer valve actuator that was removed in step 1.C.(2)(a) (Ref. 28-25-17, P. Block 401).
(4)Trouble shoot and identify the cause of the transfer valve malfunction and replace the defective component as follows:
(a)Valve fault - replace the valve (Ref. 28-25-16, P. Block 401).
(b)Actuator fault - replace the actuator (Ref. 28-25-17, P. Block 401).
(5)Open the access door 144DR.
(a)On panel 110VU:
- remove the temporary warning placard from the TRANSF. VALVE switch.
(6)Close the access door 144DR.

R **ON A/C 001-100,

(7)On panel 132VU, remove the temporary warning placard, the safety clip and tag and close the circuit breaker 2QU (321/P55).

R **ON A/C 101-200,

R (7)On panel 132VU:
- if the ACT(s) are not installed or are not serviceable, remove the temporary warning placard, the safety clip and tag and close circuit breaker 2QU (Line 321/P55).

R NOTE : If the ACT(s) are installed and are serviceable, the circuit
R breaker 2QU will already be closed.

R **ON A/C ALL

(8)Make an appropriate entry in the aircraft technical log.

TRANSFER VALVE ACTUATOR - REMOVAL/INSTALLATION

R **WARNING** : LANDING GEAR - MAKE SURE THAT THE GROUND SAFETIES AND CHOCKS ARE IN POSITION.

R FLIGHT CONTROLS - MAKE SURE THAT THE GROUND SAFETIES AND NOTICES ARE IN POSITION.

R MAKE SURE THAT YOU HAVE THE CORRECT FIRE FIGHTING EQUIPMENT AVAILABLE.

R BEFORE YOU SUPPLY POWER TO THE AIRCRAFT, MAKE SURE THAT ALL THE
R ELECTRICAL CIRCUITS IN MAINTENANCE ARE ISOLATED.

1. Equipment and Materials

ITEM	DESIGNATION
A.	Access Platform 2.50 m (8.3 ft)
B.	Circuit Breaker Safety Clips and Tags.
C.	Caps/Plugs
Referenced Procedures	
- 20-28-11, P. Block 1	Electrical Bonding
- 24-41-00, P. Block 301	AC External Power control
R - 28-25-00, P. Block 301	Refuel/Defuel System
- 32-12-11, P. Block 301	Main Landing Gear Door Opening

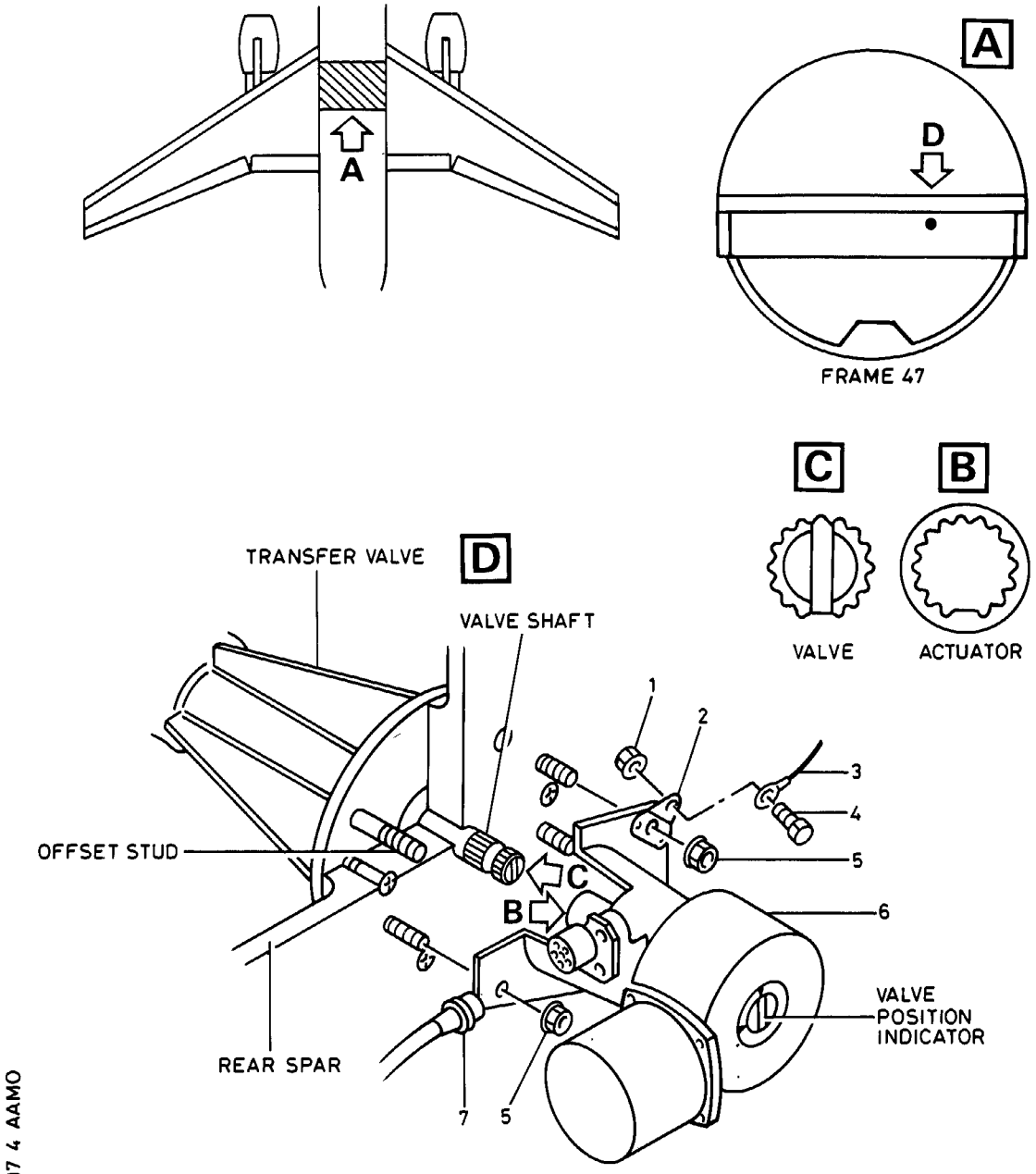
2. Procedure

A. Job Set-Up

R (1)Open the RH main-landing-gear door (Ref. 32-12-11, P. Block 301).
R (2)Put the access platform in position.
R (3)Energize the aircraft electrical network (Ref. 24-41-00,
R P. Block 301).
(4)Open the access door 144DR.
(a)On panel 110VU:
- make sure that the TRANSF. VALVE switch is in the CLOSED and guarded position.
(5)De-energize the aircraft electrical network (Ref. 24-41-00, P. Block 301).
(6)Open, safety and tag the circuit breaker that follows:

PANEL	SERVICE	IDENT.	LOCATION
132VU	FUEL/FUELLING/TRANSFER VALVE	2QU	321/P55

B. Removal
(Ref. Fig. 401)
(1)Disconnect electrical connector (7) from transfer valve actuator (6). Cap the electrical connectors.
(2)Remove nut (1) and bolt (4) and disconnect bonding strip (3) from tag (2).



Transfer Valve - Installation
Figure 401

(3)Remove nuts (5) and remove actuator (6) from rear spar.

C. Preparation of Replacement Component
(1)Make certain that interfaces of rear spar and actuator are clean and in correct condition.

D. Installation (Ref. Fig. 401)
(1)Close the transfer valve by rotating the valve shaft until the end groove is vertical.
(2)Make certain the valve position indicator on actuator (6) indicates shut.
(3)Install actuator (6) onto its attachment studs and engage the valve shaft in the actuator housing.
(4)Install and tighten nuts (5).
(5)Connect bonding lead (3) to tag (2) using bolt (4) and nut (1) (Ref. 20-28-11, P. Block 1).
(6)Remove protective caps and connect electrical connector (7) to actuator (6).

E. Test
(1)Remove safety clip and tag and close circuit breaker 2QU.
(2)Energize the aircraft electrical network (Ref. 24-41-00, P. Block 301).
R (3)If the trim tank contains fuel:
R - do the manual forward transfer procedure (Ref. 28-25-00, P. Block 301)
R or
R - defuel the trim tank until the trim-tank low-level sensor is dry and the
R trim tank is empty (Ref. 28-25-00, P. Block 301).
R (4)Do the test that follows:
R

ACTION	RESULT
1. On panel 110VU: - Lift the guard and put the **TRANSF. VALVE** switch in the open position.	On panel 110VU: - the **TRANSFER VALVE OPEN** indicator light comes on. In zone 143: - The transfer valve actuator moves the valve to the open position. - The mechanical indicator on the actuator moves to the in-line (open) position.
- Put the **TRANSF. VALVE** switch in the closed position and lower the guard.	On panel 110VU: - the **TRANSFER VALVE OPEN** indicator light goes off. In zone 143: - The transfer valve actuator moves the valve to the closed position. - The mechanical indicator on the actuator moves to the cross-line (closed) position.

ACTION	RESULT
2. Close the access door 144DR.	- The fuel panel 110VU is de-energized.

F. Close-Up
(1)Remove the access platform.
(2)Close the RH main-landing-gear door (Ref. 32-12-11, P. Block 301).
(3)De-energize the aircraft electrical network (Ref. 24-41-00, P. Block 301).
(4)Make sure that the work area is clean and clear of tools and all items of equipment.

FUEL DRAIN VALVE - REMOVAL/INSTALLATION

WARNING : FLIGHT CONTROLS - MAKE CERTAIN GROUND SAFETIES AND NOTICES ARE IN POSITION.

LANDING GEAR - MAKE CERTAIN GROUND SAFETIES AND CHOCKS ARE IN POSITION.

OBSERVE THE SAFETY PRECAUTIONS IN 28-00-00, P. BLOCK 301, AND IN 28-10-00, P. BLOCK 301.

MAKE CERTAIN THAT FIRE FIGHTING EQUIPMENT IS AVAILABLE AND ADEQUATE.

1. Equipment and Materials

ITEM	DESIGNATION
A.	Access Platform
B.	Seal
C.	Fuels (Ref. 20-31-00)
Referenced Procedures	
- 28-00-00, P. Block 301	Fuel
- 28-10-00, P. Block 301	Storage
- 28-11-22, P. Block 401	Manhole Cover (Wings)

2. Procedure

(Ref. Fig. 401)

A. Job Set-Up

CAUTION : LOCKWIRE MUST BE REMOVED AND INSTALLED OUTSIDE THE FUEL TANK.

(1)Remove appropriate manhole cover (Ref. 28-11-22, P. Block 401).
  (a)For outboard drain valve - 540(640)EB.
  (b)For inboard drain valve - 540(640)AB.

NOTE : Access to the inboard drain valve is through the cut-out at STA67/RIB2.

B. Removal

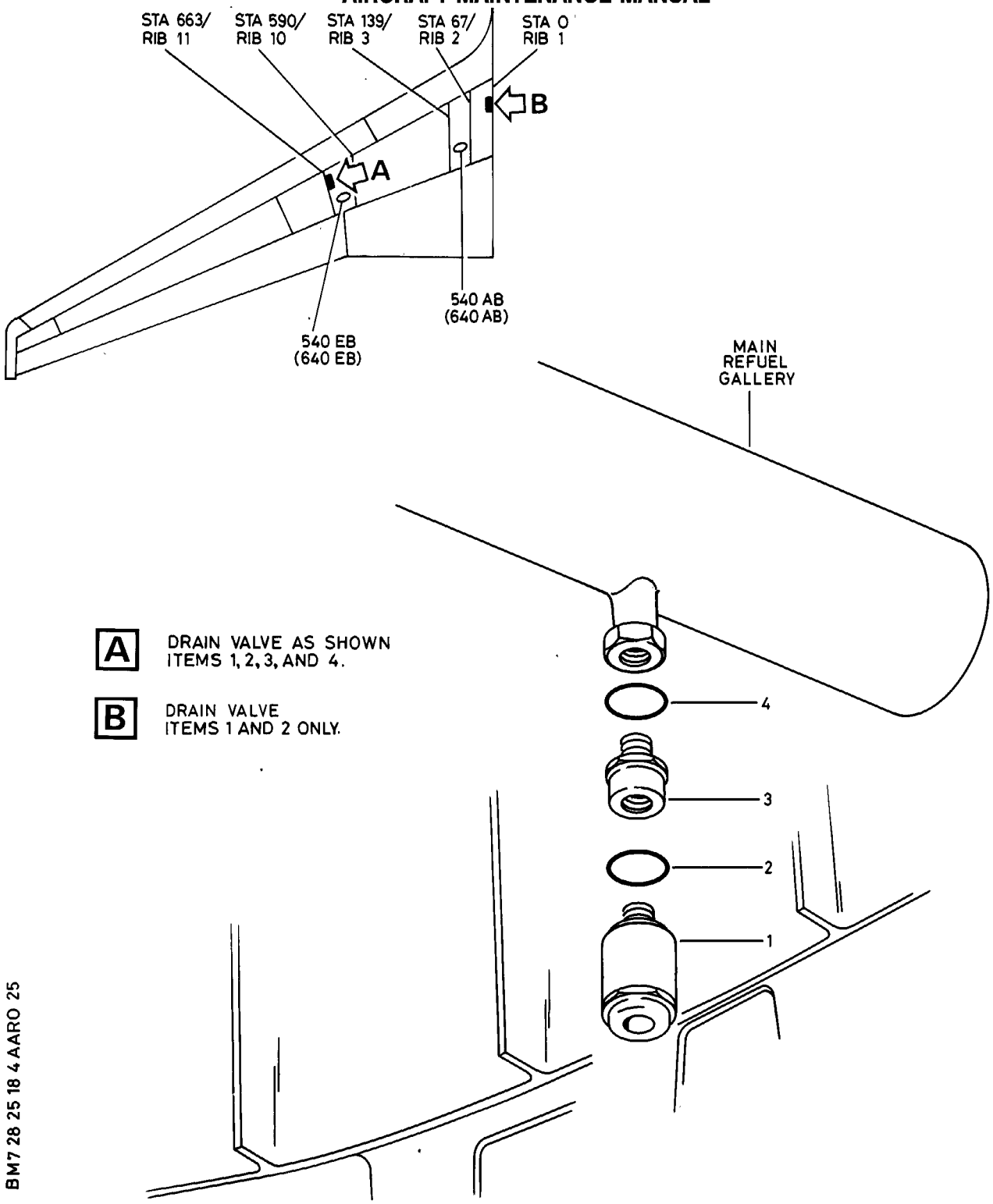
(1)Unscrew and withdraw drain valve (1), discard seal (2).

NOTE : On outboard drain valve at Rib 11 an adapter (3) and seal (4) are fitted between the drain valve and the refuel gallery.

(2)Clean and inspect component interface and adaptor fittings. Cap drain valve and refuel gallery orifices.

C. Preparation of Replacement Component

NOTE : As the valve is not checked after installation, make certain that it is serviceable, has been correctly stored and that all associated paperwork is in order.



Fuel Drain Valve - Installation
Figure 401

(1)For outboard drain valve at Rib 11 lubricate new seal (4) with fuel (Material No. 01-001) and install on adaptor (3).
(2)Install adaptor on drain valve.

D. Installation
(1)Lubricate new seal (2) with fuel (Material No. 01-001) and install on drain valve (1).
(1)Install drain valve (1) on refuel gallery.

E. Test
Not applicable.

F. Close-Up
(1)Make certain that work area is clean and clear of tools and miscellaneous items of equipment.
(2)Install manhole cover (Ref. 28-11-22, P. Block 401).
(3)Remove access platform.

AIR VENT VALVE - REMOVAL/INSTALLATION

WARNING: FLIGHT CONTROLS - MAKE CERTAIN GROUND SAFETIES AND NOTICES ARE IN POSITION.

LANDING GEAR - MAKE CERTAIN GROUND SAFETIES AND CHOCKS ARE IN POSITION.

OBSERVE THE SAFETY PRECAUTIONS IN 28-00-00, P. BLOCK 301.

MAKE CERTAIN THAT FIRE FIGHTING EQUIPMENT IS AVAILABLE AND ADEQUATE.

1. Equipment and Materials

ITEM	DESIGNATION
A.	Access Platform (4.5 m) (15 ft)
B.	O-ring Seal (Vent Valve)
C. Material No. 01-001	Fuels (Ref. 20-31-00)
D. Material No. 09-005	Sealants (Ref. 20-31-00)
Referenced Procedures	
- 28-00-00, P. Block 301	Servicing
- 28-11-22, P. Block 401	Manhole Cover Wings

2. Procedure

CAUTION : LOCKWIRE MUST BE REMOVED AND INSTALLED OUTSIDE THE FUEL TANK.

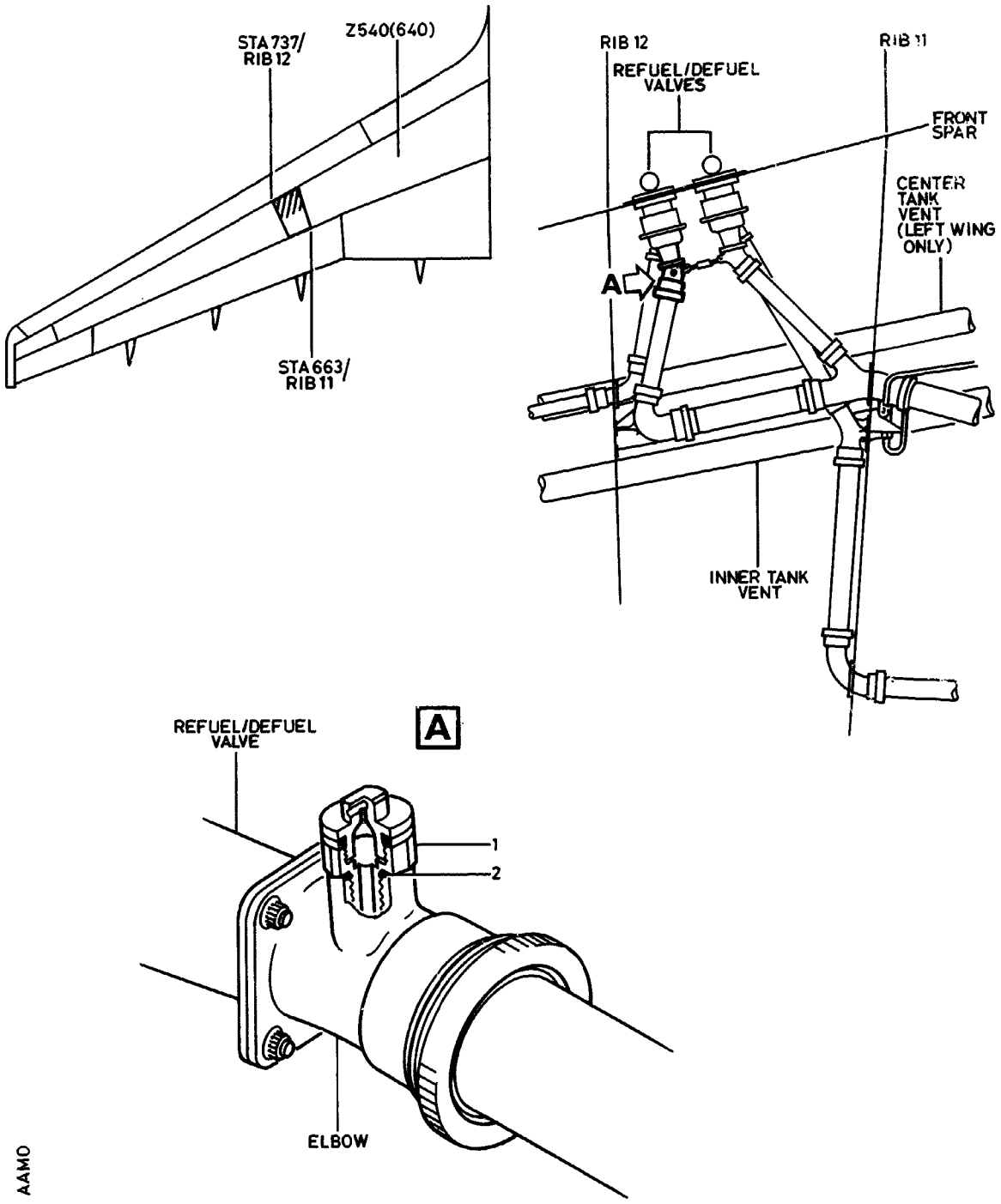
A. Job Set-Up
(1)Position access platform.
(2)Remove manhole cover 540 FB (640 FB) (Ref. 28-11-22, P. Block 401).

B. Removal
(Ref. Fig. 401)
(1)Unscrew vent valve (1) from outer refuel/defuel valve elbow. Discard O-ring seal (2).
(2)Clean and inspect component interface. Cap elbow connection and vent valve orifices.

C. Preparation of Replacement Component
(1)Bend tails to lie flat on vent valve then apply a 2.0 mm (0.08 in) thick coating of Material No. 09-005 to tails of lockwire on vent valve (1).

D. Installation
(1)Lubricate new O-ring seal (2) with Material No. 01-001 and place it in position on vent valve (1).
(2)Screw vent valve (1) into outer refuel/defuel valve elbow.

E. Close-Up
(1)Make certain that working area is clean and clear of miscellaneous items of equipment.



Air Vent Valve - Installation
Figure 401

(2)Install manhole cover 540 FB (640 FB) (Ref. 28-11-22, P. Block 401).
(3)Remove access platform.

R REFUELING DOOR MICROSWITCH - (23QU) - REMOVAL/INSTALLATION

R WARNING : LANDING GEAR - MAKE SURE THAT THE GROUND SAFETIES AND CHOCKS ARE IN
R POSITION.

R FLIGHT CONTROLS - MAKE SURE THAT THE GROUND SAFETIES AND NOTICES ARE
R IN POSITION.

R OBSERVE THE SAFETY PRECAUTIONS IN 28-00-00, P. BLOCK 301.

R MAKE SURE THAT THE FIRE FIGHTING EQUIPMENT IS AVAILABLE AND ADEQUATE.

R MAKE SURE THAT YOU ISOLATE THE ELECTRICAL CIRCUITS UPON WHICH WORK IS
R IN PROGRESS.

1. Equipment and Materials

ITEM	DESIGNATION
A.	Corrosion-Resistant Steel Lockwire,0.8 mm (0.032 in) dia.
B.	Circuit Breaker Safety Clips and Tags.
Referenced Procedures	
- 28-25-20, P. Block 501	Refueling Door Microswitch
- 28-00-00, P. Block 301	Fuel - General

2. Procedure
(Ref. Fig. 401)

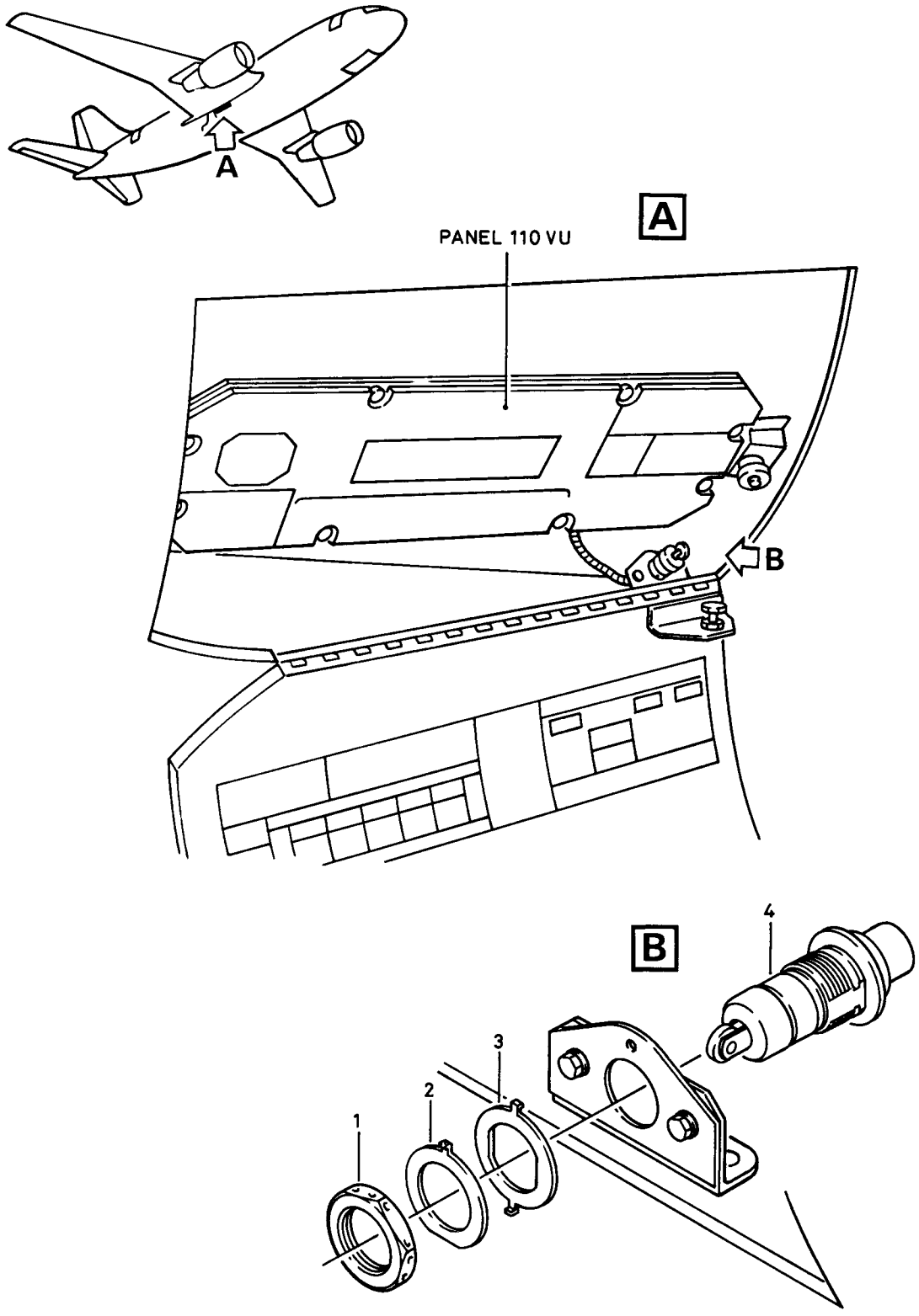
A. Job Set-Up.
R (1)Open, safety and tag the circuit breaker that follows:

PANEL	SERVICE	IDENT.	LOCATION
R 132VU	FUEL/FUELLING/CTL & REFUEL VALVE	1QU	321/P56

(2)Open external refueling door 144DR.

B. Removal
(1)Disconnect electrical connector from door microswitch (23QU) (4).
(2)Remove locking wire between washer (2) and nut (1).
(3)Remove nut (1), washer (2), locating washer (3) and microswitch (4).

C. Installation
R (1)Install microswitch (23QU) (4) and locating washer (3), make sure that
R the tongue of the locating washer engages the hole in support bracket.
(2)Install washer (2) and nut (1). Tighten nut and safety to washer with locking wire.
(3)Connect electrical connector to door microswitch (23QU).
(4)Remove safety clip and tag and close circuit breaker 1QU.



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Refueling Door Microswitch - Removal
Figure 401

R

D. Test
(1)Adjust and test microswitch (Ref. 28-25-20, P. Block 501).

E. Close-Up
R (1)Make sure that the work area is clean and clear of tools and all other items of equipment.
(2)Close external refueling door 144DR.

REFUELING DOOR MICROSWITCH (23QU)
ADJUSTMENT/TEST

WARNING : LANDING GEAR - MAKE CERTAIN GROUND SAFETIES AND CHOCKS ARE IN POSITION.

FLIGHT CONTROLS - MAKE CERTAIN GROUND SAFETIES AND NOTICES ARE IN POSITION.

OBSERVE THE SAFETY PRECAUTIONS IN 28-00-00, P. BLOCK 301.

MAKE CERTAIN THAT FIRE FIGHTING EQUIPMENT IS AVAILABLE AND ADEQUATE.

BEFORE POWER IS SUPPLIED TO THE AIRCRAFT MAKE CERTAIN THAT ELECTRICAL CIRCUITS UPON WHICH WORK IS IN PROGRESS ARE ISOLATED.

1. Equipment and Materials

ITEM	DESIGNATION
A.	Access Platform 4.5 m (15 ft)
B.	28V Test Lamp
C.	Circuit Breaker Safety Clips and Tags
Referenced Procedures	
- 24-41-00, P. Block 301	AC External Power Control
- 32-12-11, P. Block 301	Main Gear Main Door
- 28-00-00, P. Block 301	Fuel - General

2. Procedure

R (Ref. Fig. 501)
R (Ref. Fig. 502)

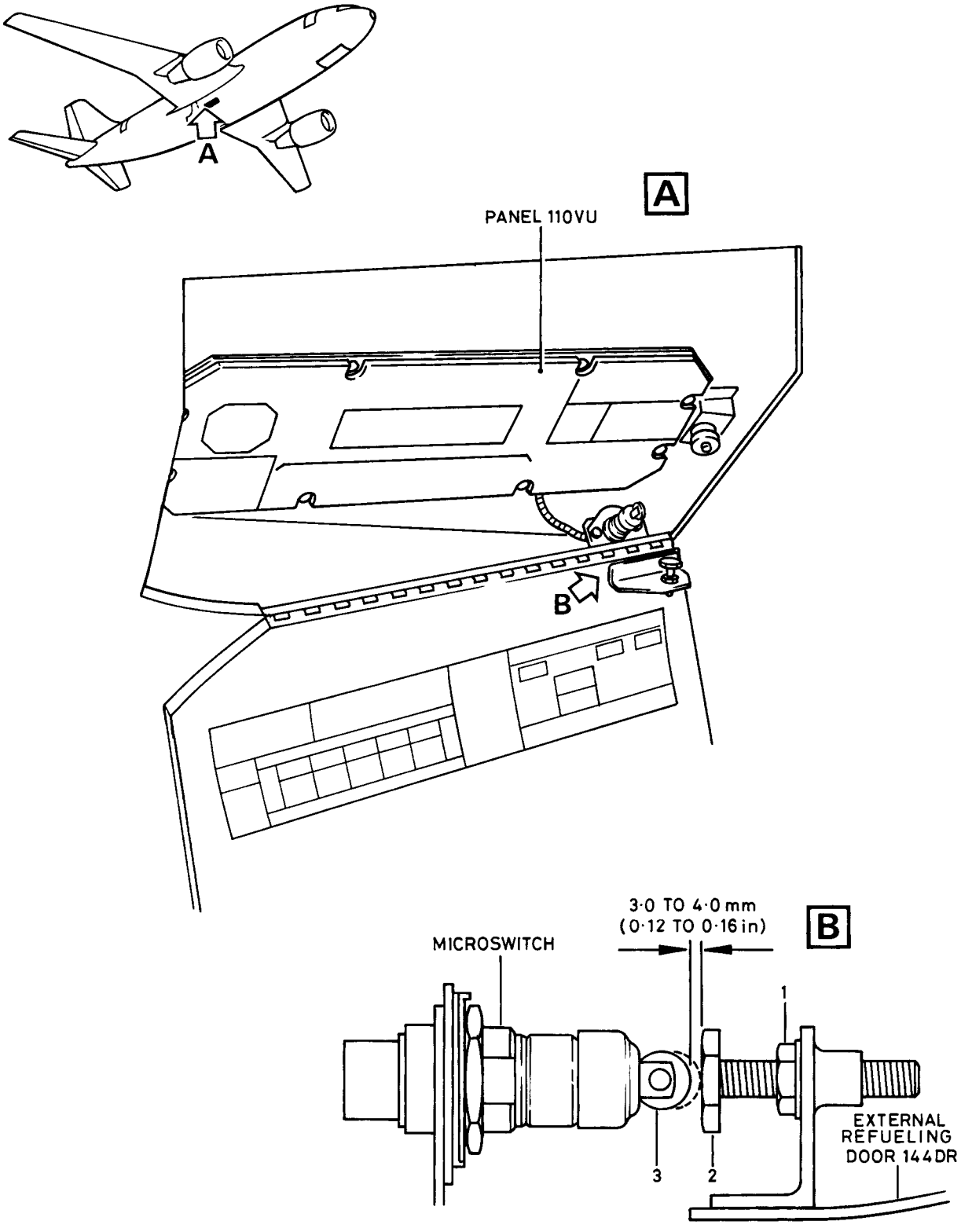
A. Job Set-Up
(1)Open external refueling door 144DR.

B. Adjustment
(1)Unscrew locknut (1) and adjust striker bolt (2) until bolt compresses microswitch plunger (3), between 3.0 to 4.0 mm (0.12 to 0.16 in), when external refueling door 144DR is closed. Open door panel and tighten locknut (1).

C. Test
(1)Energize the aircraft electrical network (Ref. 24-41-00, P. Block 301).
(2)Open, safety and tag the following circuit breaker:

PANEL	SERVICE	IDENT.	LOCATION
132VU	FUEL/FUELLING/CTL & REFUEL VALVE	1QU	321/P56

(3)Gain access to any one of the refuel/defuel valves:
(a)For wing tank fuel/defuel valve:



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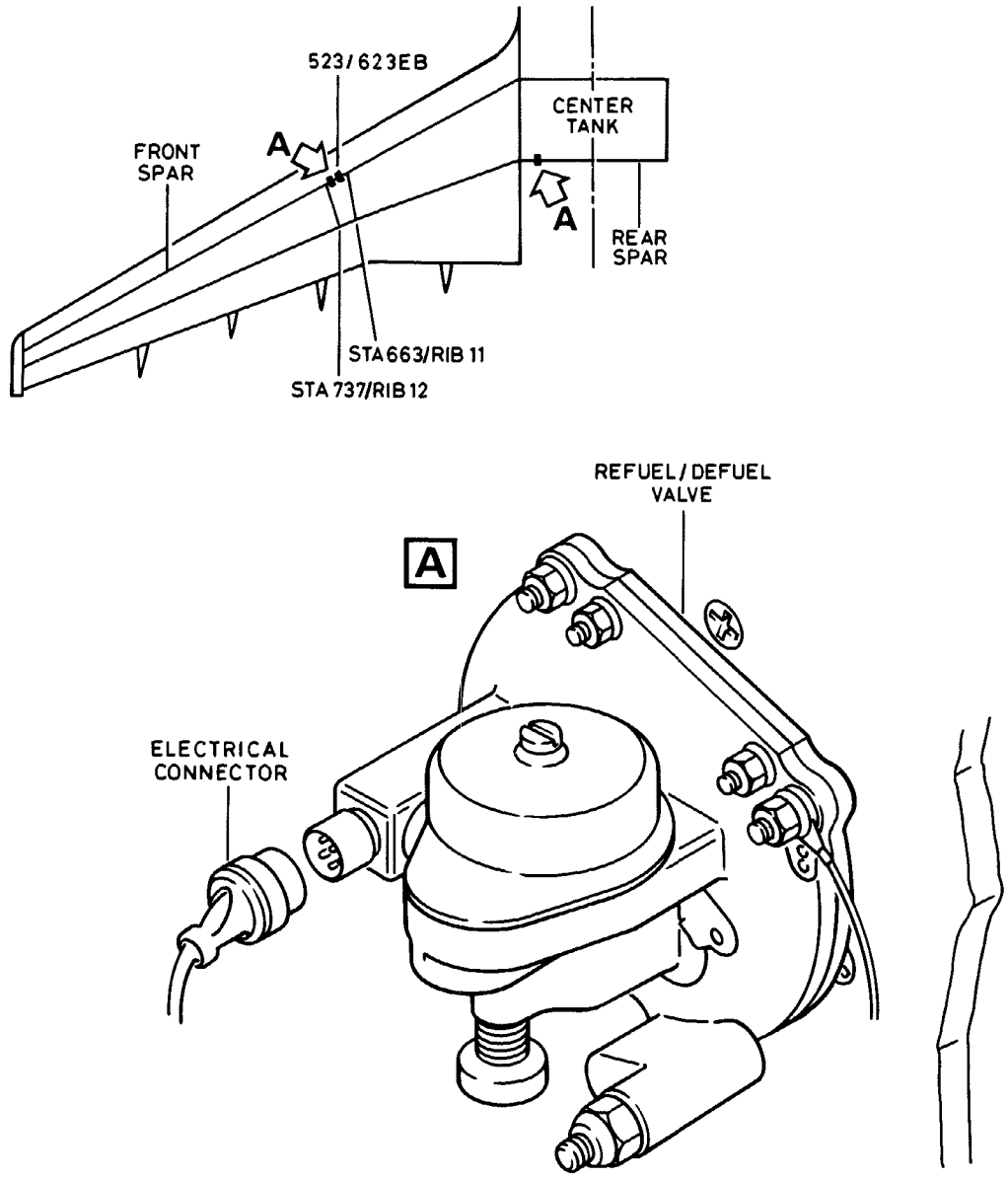
Refueling Door (144DR)
Microswitch - Adjustment
Figure 501

R



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Refuel/Defuel Valve Location
Figure 502

1Position access platform.
2Open access door 523EB (623 EB).

(b)For center tank refuel/defuel valve: open left main landing gear door (Ref. 32-12-11, P. Block 301).

(4)Disconnect electrical connector from appropriate tank refuel/defuel valve solenoid.

(5)Remove safety clip and tag and close circuit breaker 1QU.

(6)Perform the following:

ACTION	RESULT
At refuel/defuel valve: - connect 28V test lamp to pins A and B of electrical connector	
On panel 110VU: - raise guard and place MODE SELECTOR switch in DEFUEL position - raise guard and place appropriate REFUEL/DEFUEL VALVES switch in OPEN position	- test lamp comes on
Close external refueling door 144DR	- test lamp goes off
Open external refueling door 144DR	- test lamp comes on
On panel 110VU: - place appropriate REFUEL/DEFUEL VALVES switch in NORMAL position and guarded - place MODE SELECTOR switch in OFF position	- test lamp goes off
At refuel/defuel valve: - remove 28V test lamp	

(7)De-energize the aircraft electrical network (Ref. 24-41-00, P. Block 301).

(8)Connect electrical connector to appropriate refuel/defuel valve solenoid.

(9)Close external refueling door 144DR.

D. Close-Up

(1)Make certain work area is clean and clear of tools and miscellaneous items of equipment.

(2)As applicable, close access door 523EB (623 EB) or main landing gear

door.

(3)Remove access platform.

(4)Remove all ground handling and maintenance equipment, standard and special tools, together with ground power and replenishing equipment and miscellaneous items.

DIFFUSER-TRIM TANK REMOVAL/INSTALLATION

WARNING : LANDING GEAR - MAKE CERTAIN GROUND SAFETIES AND CHOCKS ARE IN POSITION.

FLIGHT CONTROLS - MAKE CERTAIN GROUND SAFETIES AND NOTICES ARE IN POSITION.

OBSERVE THE SAFETY PRECAUTIONS IN 28-00-00, P. BLOCK 301 AND 28-10-00, P. BLOCK 301.

MAKE CERTAIN THAT FIRE FIGHTING EQUIPMENT IS AVAILABLE AND ADEQUATE.

BEFORE POWER IS SUPPLIED TO THE AIRCRAFT MAKE CERTAIN THAT ELECTRICAL CIRCUITS UPON WHICH WORK IS IN PROGRESS ARE ISOLATED.

1. Equipment and Materials

ITEM	DESIGNATION
A.	Access Platform 24 ft (7m)
B.	O-ring
C. Material No. 01-001	Fuels (Ref.20-31-00)
D.	Circuit Breaker Safety Clips and Tags
Referenced Procedures	
- 12-11-28, P. Block 301	Replenishing of Fuel Tanks
- 12-32-28, P. Block 301	Fuel Sampling
- 20-28-11, P. Block 1	Electrical Bonding
- 28-00-00, P. Block 301	Fuel System - General
- 28-10-00, P. Block 301	Storage - Servicing
- 28-11-33, P. Block 401	Manhole Covers, Trim Tank
- 55-00-00, P. Block 301	Stabilizers - Standard Warnings and Procedures

2. Procedure

(Ref. Fig. 401)

A. Job Set-up

(1)Make horizontal and vertical stabilizers safe (Ref. 55-00-00, P. Block 301).

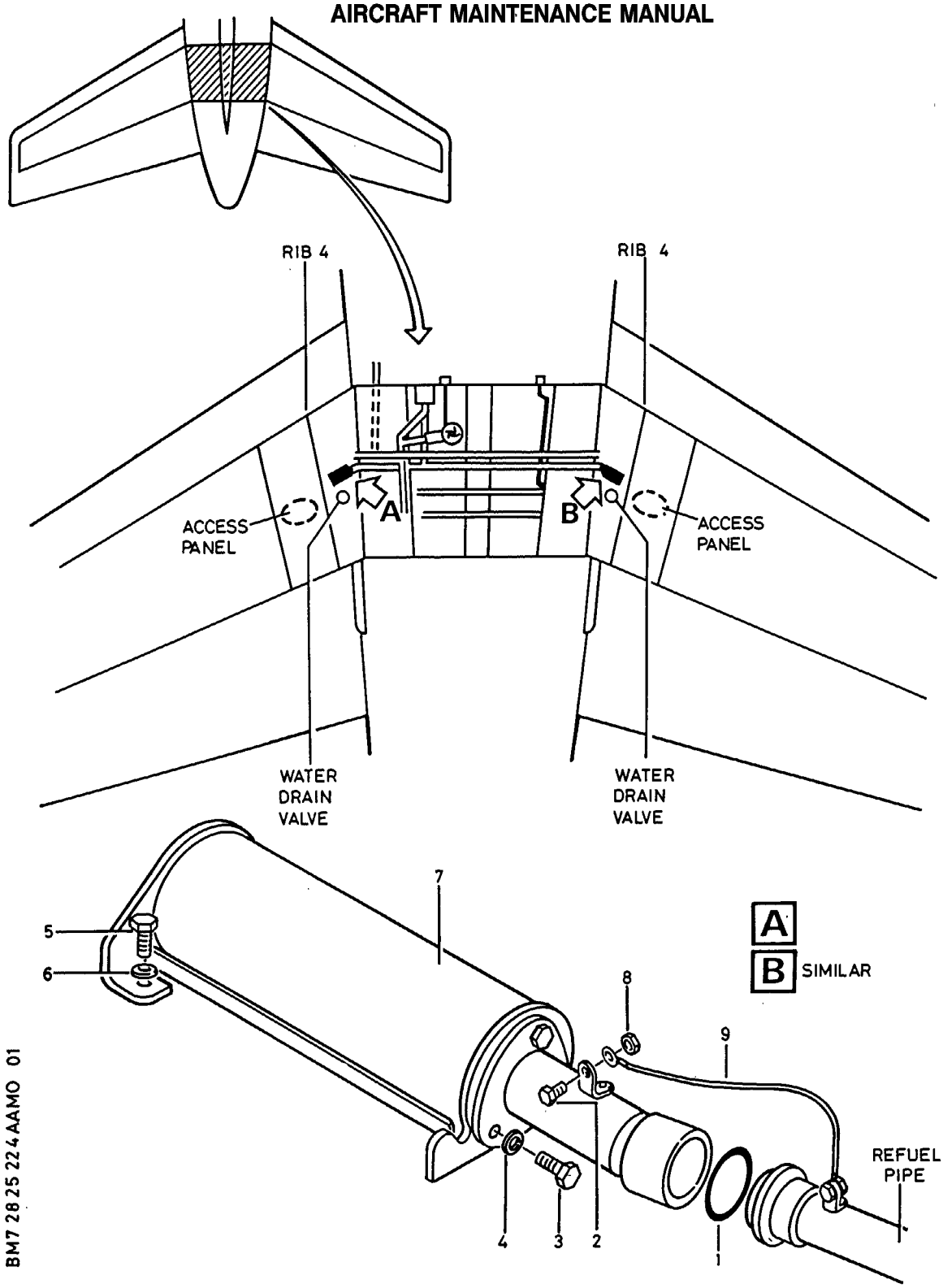
(2)Position access platform.

(3)Remove manhole cover 333(343)BB (Ref. 28-11-33, P. Block 401).

(4)Drain trim tank residual fuel thru water drain valves (Ref. 12-32-28, P. Block 301).

(5)Open, safety and tag the following circuit breaker:

PANEL	SERVICE	IDENT.	LOCATION
132VU	FUEL/TRIM TANK/FWD XFR MAIN VALVE	1QL	325/K53



Diffuser (Trim Tank) - Installation
Figure 401

R

B. Removal
(1)Remove nut (8) and bolt (2) and disconnect bonding strap (9) from tag on diffuser (7).
(2)Remove bolts (3) and (5) and washers (4) and (6).
(3)Withdraw diffuser (7) and discard O-ring (1).

C. Installation
(1)Wet new O-ring (1) with fuel (Material No. 01-001) and install on refuel pipe.
(2)Carefully locate diffuser (7) on refuel pipe and align securing bolt holes.
(3)Install washers (4) and install and tighten bolts (3).
(4)Install washers (6) and install and tighten bolts (5).
(5)Position bonding strap (9) and secure with nut (8) and bolt (2). (Ref. 20-28-11, P. Block 1).
(6)Make certain refuel pipe has axial movement of 6 mm (0.236 in) min. Ensure both flanges interlock at extremities of movement and set pipe in central position.
(7)Make certain that working area is clean and clear of tools and miscellaneous items of equipment.
(8)Close manhole cover 333(343)BB (Ref. 28-11-33, P. Block 401).

D. Test
(1)Remove safety clip and tag and close circuit breaker 1QL on panel 132VU Line 325/K53.
(2)Refuel trim tank (Ref. 12-11-28, P. Block 301).
(3)Make certain manhole cover and water drain valves do not leak.

E. Close-up
(1)Remove access platform.
(2)Return stabilizers to operating condition (Ref. 55-00-00, P. Block 301).

TRIM TANK REFUEL/TRANSFER VALVE
REMOVAL/INSTALLATION

WARNING: LANDING GEAR - MAKE CERTAIN GROUND SAFETIES AND WHEEL CHOCKS ARE IN POSITION.

FLIGHT CONTROLS - MAKE CERTAIN THAT GROUND SAFETIES AND NOTICES ARE IN POSITION.

MAKE CERTAIN THAT FIRE FIGHTING EQUIPMENT IS AVAILABLE AND ADEQUATE.

BEFORE AND DURING MAINTENANCE OPERATIONS TO BE UNDERTAKEN INSIDE A FUEL TANK, THE PRESCRIBED SAFETY PRECAUTIONS MUST BE RIGOROUSLY OBSERVED (REF. 28-00-00, P. BLOCK 301).

BEFORE POWER IS SUPPLIED TO THE AIRCRAFT MAKE CERTAIN THAT ELECTRICAL CIRCUITS UPON WHICH WORK IS IN PROGRESS ARE ISOLATED.

1. Equipment and Materials

ITEM	DESIGNATION
A.	Container
B.	O-ring
C.	Blanking Caps
D. Material No. 01-001	Fuels (Ref. 20-31-00)
E.	Circuit Breaker Safety Clips and Tags
Referenced Procedures	
- 05-57-11, P. Block 1	Aircraft Stability
- 12-11-28, P. Block 301	Replenishing of Fuel Tanks
- 20-28-11, P. Block 1	Electrical Bonding
- 24-41-00, P. Block 301	AC External Power Control
- 28-00-00, P. Block 301	Fuel - General
- 28-11-35, P. Block 401	Vapor Seal
- 28-42-38, P. Block 501	Fuel Quantity Computer (15QT)

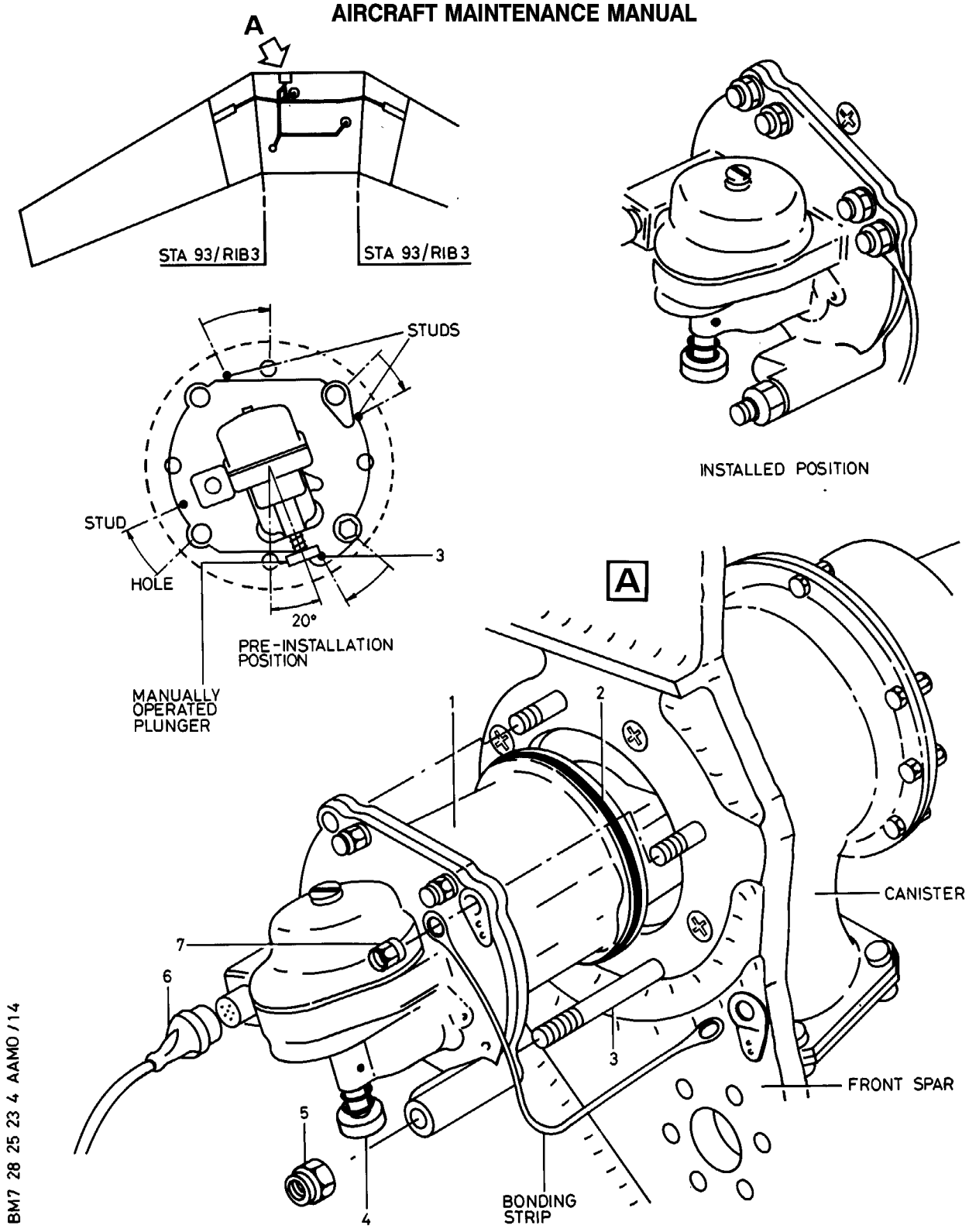
2. Procedure
(Ref. Fig. 401)

A. Job Set-Up
(1)Open, safety and tag the following circuit breakers:

PANEL	SERVICE	IDENT.	LOCATION
132VU	FUEL/FUELLING/CTL & REFUEL VALVE	1QU	321/P56
132VU	FUEL/FUELLING/XFR VALVE	2QU	321/P55

(2)Remove the vapor seal cover on the LH side of the trim tank front spar (Ref. 28-11-35, P. Block 401.)

B. Removal



Refuel/Transfer Valve - Installation Details
Figure 401

(1)Disconnect electrical connector (6) and install cap.
(2)Remove nut (5) and three nuts (7). Disconnect bonding strap.
(3)Put container below valve element (1). Remove valve element 1.4 in (35.56 mm) onto the internal stop, then turn it counter-clockwise through 20 deg. and complete the removal.
(4)Remove and discard O-ring (2).
(5)Seal canister and valve element orifices with caps.

C. Preparation of Replacement Component
(1)Apply fuel (Material No. 01-001) to new O-ring (2) and position in groove on valve element body.

D. Installation
(1)Remove any dirt and inspect component interface.
(2)Remove caps from canister orifice and valve orifice.

(3)CAUTION: MAKE CERTAIN CANISTER SLEEVE IS FULLY OUTWARD ON SEAT.

Hold valve element (1) at canister orifice with manually operated plunger (4) pointing downward, approximately 20 deg. to the right of vertical.
(4)Put valve element (1) into canister until stud (3) engages the recess in the valve element flange.
(5)Make certain that end face of stud (3) is held against bottom of recess and turn element (1) clockwise approximately 20 deg. to connect with canister sleeve and to put studs in line with holes. Using hand pressure only, push element (1) fully into canister.
(6)Check that there is no gap between element mounting and spar flange. A gap of approximately 0.1 in (2.5 mm) indicates that element (1) is not correctly engaged with sleeve. If a gap exists, do not continue with installation; instead, do steps D. (3) thru (5) again.
(7)Connect bonding strap and install one nut (5) and three nuts (7). (Ref. 20-28-11, P. Block 1).
(8)Remove cap and connect electrical connector (6).

E. Preparation for Test
(1)Remove the safety clips and tags and close the following circuit breakers:

PANEL	SERVICE	IDENT.	LOCATION
22VU	FUEL/TRIM TK/FWD XFR PUMP 1/CTL	3QN	201/J22
22VU	FUEL/TRIM TK/FWD XFR PUMP 1/WARN	5QN	201/J23
132VU	FUEL/TRIM TK/XFR PUMP 2/WARN	6QN	325/K54
132VU	FUEL/TRIM TK/XFR PUMP 2/CTL	4QN	325/K55
132VU	FUEL/FQI SUPPLY & IND	1QT	321/P59
132VU	FUEL/FQI CHAN SUPPLY 1	3QT	321/P60
132VU	FUEL/FQI CHAN SUPPLY 2	4QT	321/P61
132VU	FUEL/FUELLING/CTL & REFUEL VALVE	1QU	321/P56
132VU	FUEL/FUELLING/XFR VALVE	2QU	321/P55

(2)Energize aircraft electrical network (Ref. 24-41-00, P. Block 301).
(3)Open access door 144DR.
(4)On panel 110VU, make certain PWR SUPPLY switch is set to NORM position and guarded .
(5)Do the functional test of the FUEL QTY computer (15QT) (Ref. 28-42-38 P. Block 501).
(6)Connect the tanker (Ref. 12-11-28, P. Block 301).

R **ON A/C 001-100,

WARNING: WHEN TRANSFERRING FUEL TO THE TRIM TANK MAKE SURE THAT THE AIRCRAFT REMAINS WITHIN SAFE C G. LIMITS (REF. 05-57-11, P. BLOCK 1).

F. Test

ACTION	RESULT
1. On panel 110VU: - hold the FUEL QTY switch in the TT position and note the contents of the trim tank	
2. If the trim tank is less than full:	On panel 110VU: - the TRIM TK HIGH LEVEL indicator light is off
- on panel 110VU, raise the guard and place the MODE SELECTOR switch in the REFUEL position	
- raise the guards and place the CTR TK and TRIM TK REFUEL-DEFUEL-VALVES switches in the OPEN position	
- raise the guards and place all the other REFUEL-DEFUEL-VALVES switches in the SHUT position	
- hold the FUEL QTY switch in the TT position	
- start refueling (Ref. 12-11-28, P. Block 301)	- on the FUEL QTY indicator (FQI), the CTR/TT contents increase
- place the CTR TK and TRIM TK REFUEL-DEFUEL-VALVES switches in the SHUT position	- CTR/TT contents on FQI stabilize

ACTION	RESULT
- stop refueling	
- release the **FUEL QTY** switch to the **CTR & TT** position	
3. If the trim tank is full:	- the **TRIM TK HIGH LEVEL** indicator light is on
- on panel **110VU**, raise the guard and place the **MODE SELECTOR** switch in the **DEFUEL** position	
- raise the guard and place the **TRIM TK REFUEL-DEFUEL-VALVES** switch in the **OPEN** position	
- raise the guards and place all the other **REFUEL-DEFUEL VALVES** switches in the **SHUT** position	
- start defueling (**Ref. 28-25-00, P. Block 301**) and hold the **FUEL QTY** switch in the **TT** position	- **CTR/TT** contents on **FQI**, decrease
- place the **TRIM TK REFUEL-DEFUEL-VALVE** switch in the **SHUT** position	- **CTR/TT** contents on **FQI**, stabilize
- stop defueling	
- release the **FUEL QTY** switch to the **CTR & TT** position	
4. On panel **110VU**:	
- place the **MODE SELECTOR** switch in the **REFUEL** position	
- place the **CTR TK** and **TRIM TK REFUEL-DEFUEL-VALVES** switches in the **OPEN** position	
- make sure that all the other **REFUEL-DEFUEL-VALVES** switches are in the **SHUT** position	

ACTION	RESULT
- hold the FUEL QTY switch in the TT position	
- start refueling (Ref. 12-11-28, P. Block 301)	- CTR/TT contents on FQI, increase
- place the CTR TK and TRIM TK REFUEL-DEFUEL-VALVES switches in the SHUT position	- CTR/TT contents on FQI, stabilizes
- stop refueling	
- release the FUEL QTY switch to the CTR & TT position	
5. Put the tank contents back to the original figure:	
- place the MODE SELECTOR switch in the OFF position and guarded	
- place all the REFUEL-DEFUEL-VALVES switches in the NORM position and guarded	
6. Check the refuel/transfer valve for external leaks	

R **ON A/C 101-200,

R WARNING: WHEN TRANSFERRING FUEL TO THE TRIM TANK MAKE SURE THAT THE
R AIRCRAFT REMAINS WITHIN SAFE C G. LIMITS (REF. 05-57-11,
R P. BLOCK 1).

F. Test

ACTION	RESULT
1. On panel 110VU: - place the FQI DISPLAY switch in the TT position and note the contents of the trim tank	
2. If the trim tank is less than full:	On panel 110VU: - the TRIM TK HIGH LEVEL indicator light is off

ACTION	RESULT
- on panel 110VU, raise the guard and place the MODE SELECTOR switch in the REFUEL position	
- raise the guards and place the CTR TK and the TRIM TK REFUEL-DEFUEL-VALVES switches in the OPEN position	
- raise the guards and place all the other REFUEL-DEFUEL-VALVES switches in the SHUT position	
- start refueling (Ref. 12-11-28, P. Block 301)	- on FUEL QTY indicator (FQI) CTR/TT contents increase
- on panel 110VU, place the CTR TK and TRIM TK REFUEL-DEFUEL-VALVES switches in the SHUT position	- CTR/TT contents on FQI, stabilize
- stop refueling	
3. If the trim tank is full:	On panel 110VU: - the TRIM TK HIGH LEVEL indicator light is on
- on panel 110VU, raise the guard and place the MODE SELECTOR switch in the DEFUEL position	
- raise the guard and place the TRIM TK REFUEL-DEFUEL-VALVES switch in the OPEN position	
- raise the guards and place all the other REFUEL-DEFUEL-VALVES switches in the SHUT position	
- start defueling (Ref. 28-25-00, P. Block 301)	- CTR/TT contents on FQI, decrease
- on panel 110VU, place the TRIM TK REFUEL-	- CTR/TT contents on FQI, stabilize

ACTION	RESULT
DEFUEL-VALVES switch in the **SHUT** position	
- stop defueling	
4. On panel 110VU:	
- place the **MODE SELECTOR** switch in the **REFUEL** position	
- place the **CTR TK** and **TRIM TK REFUEL-DEFUEL-VALVES** switches in the **OPEN** position	
- make sure that all the other **REFUEL-DEFUEL-VALVES** switches are in the **SHUT** position	
- start refueling (Ref. 12-11-28, P. Block 301)	- CTR/TT contents on FQI, increase
- on panel 110VU, place the **CTR TK** and **TRIM TK REFUEL-DEFUEL-VALVES** switches in the **SHUT** position	- CTR/TT contents on FQI, stabilize
- stop refueling	
5. Put the tank contents back to the original figure	
- on panel 110VU, place the **MODE SELECTOR** switch in the **OFF** position and guarded	
- place all the **REFUEL-DEFUEL-VALVES** switches in the **NORM** position and guarded	
- place the **FQI DISPLAY** switch in the **CTR & AUX/ACT & TT** position	
6. Check the refuel-transfer valve for external leaks	

R **ON A/C ALL

G. Close-Up
(1)Close access door 144DR.
(2)De-energize the aircraft electrical network (Ref. 24-41-00, P. Block 301).
(3)Disconnect the tanker (Ref. 12-11-28 P. Block 301).
(4)Install the refuel/transfer valve vapor seal cover (Ref. 28-11-35, P. Block 401).

TRIM TANK REFUEL/TRANSFER VALVE DEACTIVATION/REACTIVATION

Ref. MMEL Sect 1-28, Item 42

CAUTION : THIS PROCEDURE IS TO BE USED IN ACCORDANCE WITH THE REQUIREMENTS OF THE MMEL.

R WARNING : LANDING GEAR - MAKE SURE THAT THE GROUND SAFETIES AND CHOCKS ARE IN
R POSITION.

R FLIGHT CONTROLS - MAKE SURE THAT THE GROUND SAFETIES AND NOTICES ARE
R IN POSITION.

R 1. Deactivation

R A. Reason for the Job

R CAUTION : IF THE TRIM-TANK REFUEL/TRANSFER VALVE IS UNSERVICEABLE IN THE
R OPEN POSITION BECAUSE OF ELECTRICAL FAILURE, YOU MUST NOT REFUEL
R THE TRIM TANK UNTIL THE REACTIVATION PROCEDURE HAS BEEN DONE.

R (1)To let the aircraft continue to operate when the trim-tank refuel/
R transfer valve is unserviceable in the closed position.

R B. Equipment and Materials

ITEM	DESIGNATION
A.	Access Platform 2 m (6.5 ft)
B.	Electrical Blanking Caps
C.	Tanker, capable of 50 psi (3.45 bar)
D.	Warning Placard(s)
Referenced Procedures	
- 12-11-28, P. Block 301	Replenishing of Fuel Tanks
- 28-11-35, P. Block 401	Vapor Seal
- 28-13-00, P. Block 501	External Ventilation System
- 28-25-00, P. Block 1	TSM - Refueling
- 28-25-23, P. Block 401	Trim Tank Refuel/Transfer Valve
- 32-12-11, P. Block 301	Main Gear Main Door
- 55-00-00, P. Block 301	Stabilizers - General

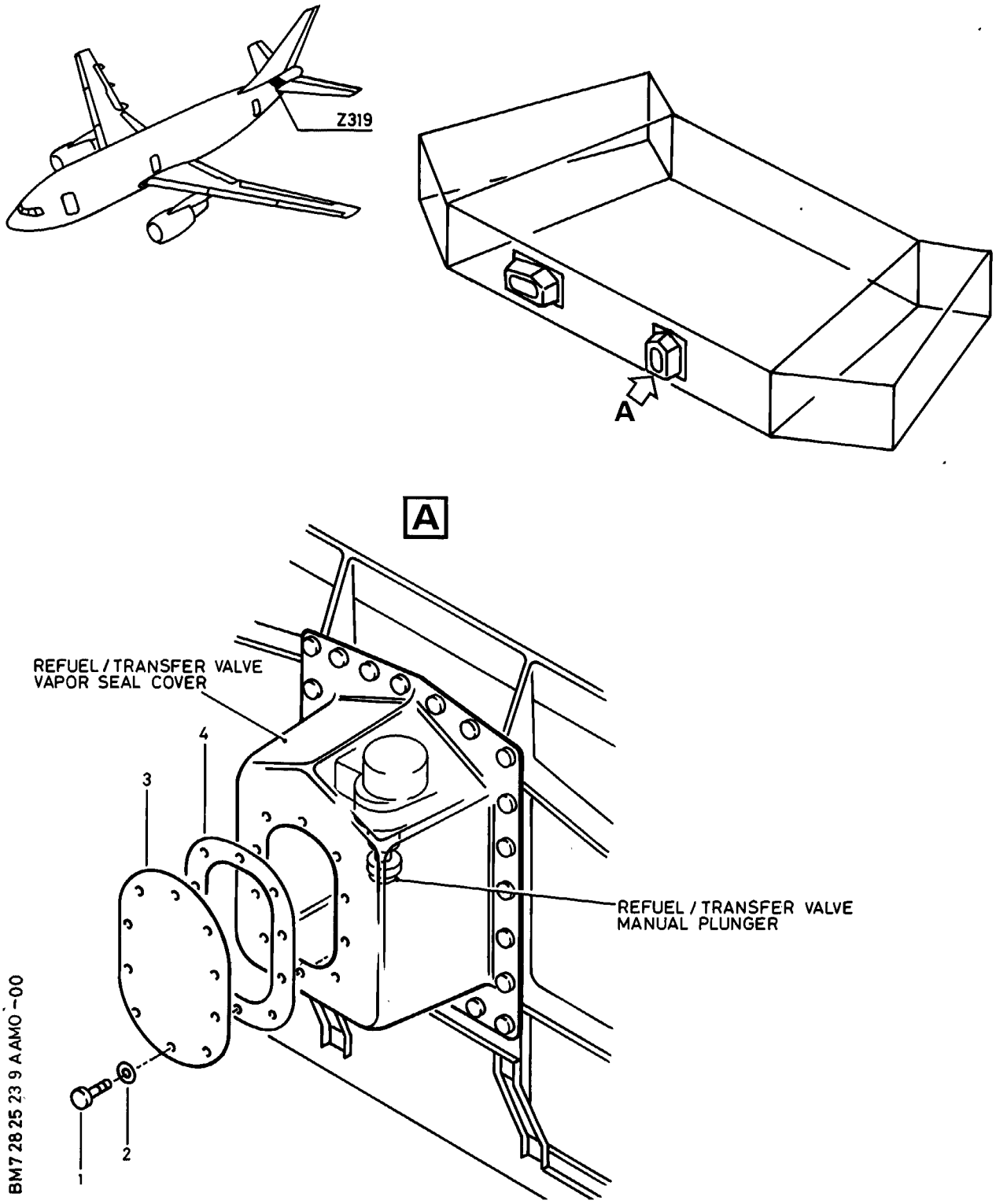
R C. Deactivate the trim tank refuel/transfer valve

R (Ref. Fig. 901)

R (1)Open the LH main-landing-gear door (Ref. 32-12-11, P. Block 301).

R (2)Put the 2 m (6.5 ft) access platform in position to get access to the
R trim tank refuel/defuel valve on FR 47.

R (3)Open, safety and tag the circuit breakers that follow:



Trim-Tank Refuel/Transfer Valve Vapor Seal Cover
Figure 901

R

PANEL	SERVICE	IDENT.	LOCATION
132VU	FUEL/FUELLING/CTL & REFUEL VALVE	1QU	321/P56
132VU	FUEL/FUELLING/XFR VALVE	2QU	321/P55

R (4)To get access to the refuel transfer valve on the front spar of the trim
R tank do the steps that follow:
R (a)Loosen the bolts (1) in the access panel (3) (in the vapor seal cover)
R in a symmetrical diagonal pattern.
R (b)Remove the bolts (1) and the washers (2).
R (c)Remove the access panel (3) and the seal (4).

(5)Disconnect the electrical connector from the refuel/transfer valve and install the electrical blanking caps on the plug and the receptacle.

(6)Safely attach the electrical connector to the adjacent structure.

(7)Do the procedure that follows to make sure that the trim-tank refuel/transfer valve is closed.

(a)Connect the fuel tanker to the refuel/defuel coupling(s) (Ref. 12-11-28, P. Block 301).

(b)Energize the aircraft electrical network (Ref. 24-41-00, P. Block 301).

(c)Do the functional test of the FUEL QTY computer (15QT) (Ref. 28-42-38, P. Block 501).

(d)On panel 430VU, make sure that the TRIM TK ISOL VALVE P/BSW is pushed (in).

(e)Open the access door 144DR.

NOTE : The trim-tank isolation valve opens automatically when the access door 144DR is opened.

(f)On panel 110VU:
- Lift the guard and put the TRIM TK REFUEL-DEFUEL-VALVE switch in the SHUT position.
- Put the FUEL QTY/FQI DISPLAY switch in the TT position.
- Make sure that the MODE SELECTOR/SELECT switch is in the OFF position and the guard is lowered.

(g)Use the fuel tanker to pressurize the refuel system with fuel to 50 psi (3.45 bar).

CAUTION : IF THE TRIM TANK CONTENTS INCREASE AT STEP (h), YOU MUST REPLACE THE TRIM-TANK REFUEL/TRANSFER VALVE BEFORE THE NEXT FLIGHT.

(h)On the trim-tank refuel/defuel valve located on FR 47, push (in) and hold the plunger for five minutes. Monitor the FQI on panel 110VU, to make sure that the trim tank contents do not change.

NOTE : If there is no change in the trim tank contents at step (h), the trim-tank refuel/transfer valve is closed correctly.

**ON A/C 001-100,

(j)Put the FUEL QTY switch in the CTR & TT position.

**ON A/C 101-200,

(j)Put the FQI DISPLAY switch in the CTR & AUX & TT position.

**ON A/C 101-200,

Post SB 28-2108 For A/C 101-200,

(j)Put the FQI DISPLAY switch in the CTR-TT & ACT position

**ON A/C ALL

(8)Attach a warning placard.
(a)On panel 110VU, attach a warning placard to the TRIM TK REFUEL-DEFUEL-VALVE switch to tell personnel not to use the switch in the NORM or the OPEN positions.
(b)Close the access door 144DR.
(c)Make an applicable entry in the aircraft technical log.
(9)If the aircraft is to be refueled at this time, do the Refuel Procedure in paragraphs 3.A. and 3.B.
(10)If the aircraft is not to be refueled, do the Close-up procedure in paragraph 1.D.

D. Close-Up
(1)De-energize the aircraft electrical network (Ref. 24-41-00, P. Block 301).
(2)Disconnect the fuel tanker (Ref. 12-11-28, P. Block 301).
R (3)Make a check of the trim tank refuel/transfer valve access panel seal
R (4) for the correct condition. If necessary, discard and replace the
R seal.
R (4)Make a check of the trim tank refuel/transfer valve access panel
R washers (2) for the correct condition. If necessary, discard and
R replace the washers.
R (5)Install the access panel (3) and the seal (4) in the refuel/transfer
R valve cover on the trim tank front spar. Install the bolts (1) and the
R washers (2) and tighten the bolts (1) in a symmetrical diagonal pattern.
R (6)Do the leak test of the refuel/transfer valve cover on the front spar
R of the trim tank (Ref. 28-13-00, P. Block 501 Paragraph 2.E.)
R (7)Make sure that the work area is clean and clear of tools and all other items of equipment.
R (8)On panel 132VU, remove the safety clips and tags and close the circuit breakers 1QU and 2QU.

R 2. Reactivation
R A. Put the trim-tank refuel/transfer valve in a serviceable condition.
R (1)Identify the cause of the valve malfunction (Ref. TSM 28-25-00).
R (2)If the trim-tank refuel/transfer valve is defective, do the procedure that follows:
R (a)Replace the defective trim-tank refuel/transfer valve (Ref. 28-25-23, P. Block 401).
R (b)Remove the warning placard from the refuel/defuel panel.
R (c)Make an applicable entry in the aircraft technical log.
R (3)If the trim-tank refuel/transfer valve is serviceable, correct the cause of the valve malfunction, and do the Reactivation procedure.

R B. Reactivation procedure.

R (1)Open, safety and tag the circuit breakers that follow:

PANEL	SERVICE	IDENT.	LOCATION
132VU	FUEL/FUELLING/CTL & REFUEL VALVE	1QU	321/P56
132VU	FUEL/FUELLING/XFR VALVE	2QU	321/P55

R (2)Remove the LH vapor seal cover from the front spar of the trim tank (Ref. 28-11-35, P. Block 401) to get access to the trim-tank refuel/transfer valve.
R (3)Remove the blanking caps and connect the electrical connector to the trim tank refuel/transfer valve.
R (4)Open the access door 144DR.
R (5)On panel 110VU, remove the warning placard from the TRIM TK REFUEL-DEFUEL-VALVE switch, put the switch in the NORM position and lower the guard.

R C. Preparation for the test
R (1)On panel 132VU, remove the safety clips and tags and close the circuit breakers 1QU and 2QU.
R (2)Make sure that the circuit breakers that follow are closed:

PANEL	SERVICE	IDENT.	LOCATION
22VU	FUEL/TRIM TK/FWD XFR PUMP 1/CTL	3QN	201/J22
22VU	FUEL/TRIM TK/FWD XFR PUMP 1/WARN	5QN	201/J23
132VU	FUEL/TRIM TK/XFR PUMP 2/WARN	6QN	325/K54
132VU	FUEL/TRIM TK/XFR PUMP 2/CTL	4QN	325/K55
132VU	FUEL/FQI SUPPLY & IND	1QT	321/P59
132VU	FUEL/FQI CHAN SUPPLY 1	3QT	321/P60
132VU	FUEL/FQI CHAN SUPPLY 2	4QT	321/P61

R (3)Connect the fuel tanker to the refuel/defuel coupling(s) (Ref. 12-11-28, P. Block 301).
R (4)Energize the aircraft electrical network (Ref. 24-41-00, P. Block 301).
R (5)On panel 110VU, make sure that the PWR SUPPLY switch is set to the NORM position and the guard is lowered.

(6)Do the functional test of the FUEL QTY computer (15QT) (Ref. 28-42-38, P. Block 501).

WARNING : WHEN YOU TRANSFER FUEL TO THE TRIM TANK, MAKE SURE THAT THE AIRCRAFT REMAINS WITHIN THE SAFE C G. LIMITS (REF. 05-57-11, P. BLOCK 1).

R **ON A/C 001-100,

D. Test

ACTION	RESULT
1. On panel 110VU: - Put the FUEL QTY switch in the TT position and record the contents of the trim tank.	

R **ON A/C 101-200,

D. Test

ACTION	RESULT
1. On panel 110VU: - Put the FQI DISPLAY switch in the TT position and record the contents of the trim tank.	

R **ON A/C ALL

2. If the trim tank is less than full:	On panel 110VU: - the TRIM TK HIGH LEVEL indicator light is off.
- On panel 110VU, lift the guard and put the MODE SELECTOR/SELECT switch in the REFUEL position.	
- Lift the guards and put the CTR TK and TRIM TK REFUEL-DEFUEL-VALVES switches in the OPEN position.	
- lift the guards and put all the other REFUEL-DEFUEL-VALVES switches in the SHUT position.	
- Start to refuel (Ref. 12-11-28, P. Block 301).	- on the FUEL QTY indicator (FQI), the CTR/TT contents increase.

ACTION	RESULT
- Put the CTR TK and TRIM TK REFUEL-DEFUEL-VALVES switches in the SHUT position.	- on the FQI, the CTR/TT contents stabilize.
- Stop the refuel.	
3. If the trim tank is full:	- the TRIM TK HIGH LEVEL indicator light is on.
- On panel 110VU, lift the guard and put the MODE SELECTOR/SELECT switch in the DEFUEL position.	
- Lift the guard and put the TRIM TK REFUEL-DEFUEL-VALVES switch in the OPEN position.	
- Lift the guards and put all the other REFUEL-DEFUEL-VALVES switches in the SHUT position.	
- Start to defuel (Ref. 28-25-00, P. Block 301).	- on the FQI, the CTR/TT contents decrease.
- Put the TRIM TK REFUEL-DEFUEL-VALVE switch in the SHUT position.	- on the FQI, the CTR/TT contents stabilize.
- Stop the defuel.	
4. On panel 110VU: - Put the MODE SELECTOR/SELECT switch in the REFUEL position.	
- Put the CTR TK and TRIM TK REFUEL-DEFUEL-VALVES switches in the OPEN position. Make sure that all the other REFUEL-DEFUEL-VALVES switches are in the SHUT position.	
- Start to refuel (Ref. 12-11-28, P. Block 301).	- On the FQI, the CTR/TT contents increase.
- Put the CTR TK and TRIM TK REFUEL-DEFUEL-VALVES switches in the SHUT position.	- On the FQI, the CTR/TT contents stabilize.

ACTION	RESULT
- Stop the refuel.	

R **ON A/C 001-100,

5. Put the tank contents back to the original value.

6. On panel 110VU:
   - Put the **MODE SELECTOR** switch in the **OFF** position and lower the guard.
   - Put all the **REFUEL-DEFUEL-VALVES** switches in the **NORM** position and lower the guards.
   - Put the **FUEL QTY** switch in the **CTR & TT** position.

7. Examine the refuel/transfer valve for external leaks.

R **ON A/C 101-200,

5. Put the tank contents back to the original value.

6. On panel 110VU:
   - Put the **MODE SELECTOR** switch in the **OFF** position and lower the guard.
   - Put all the **REFUEL-DEFUEL-VALVES** switches in the **NORM** position and lower the guards.
   - Put the **FQI DISPLAY** switch in the **CTR & AUX & TT** position.

7. Examine the refuel-transfer valve for external leaks.

R **ON A/C 101-200,

R Post SB 28-2108 For A/C 101-200,

ACTION	RESULT
5. Put the tank contents back to the original value.	
6. On panel 110VU: - Put the **MODE SELECT** switch in the **OFF** position and lower the guard. - Put all the **REFUEL-DEFUEL-VALVES** switches in the **NORM** position and lower the guards. - Put the **FQI DISPLAY** switch in the **CTR-TT & ACT** position.	
7. Examine the refuel-transfer valve for external leaks.	

R **ON A/C ALL

E. Close-Up
(1)Close the access door 144DR.
(2)De-energize the aircraft electrical network (Ref. 24-41-00, P. Block 301).
(3)Disconnect the tanker from the aircraft (Ref. 12-11-28, P. Block 301).
(4)Install the trim-tank LH vapor-seal cover (Ref. 28-11-35, P. Block 401).

3. Refuel Procedure (Valve Deactivated)

A. Refuel the trim tank when the refuel/transfer valve is electrically inoperative.

NOTE : The **TRIM TK REFUEL-DEFUEL-VALVE** switch on panel 110VU, operates both the trim-tank refuel/defuel valve and the trim-tank refuel/transfer valve. In some cases of electrical failure, it may be necessary to push the plungers on the two valves simultaneously, to to refuel the trim tank.

(1)If necessary, replenish the trim tank.
(a)Remove the LH vapor seal cover (Ref. 28-11-35, P. Block 401) to get access to the trim-tank refuel/transfer valve.
(b)If necessary, open the LH (RH) main-landing-gear door (Ref. 32-12-11, P. Block 301) and put the 2 m (6.5 ft) access platform in position.
(c)Get access to the trim-tank refuel/defuel valve located on FR 47.

NOTE : If the manual plunger of the trim tank refuel/transfer valve is

inoperative because of mechanical failure, you cannot refuel the the trim tank until you have done the Reactivation Procedure.

(d)To refuel the trim tank, do the procedure for Manual Pressure Refueling with Aircraft Electrical Network Energized (Ref. 12-11-28, P. Block 301):
- make sure that the TRIM TK refuel/defuel valve switch stays in the SHUT position
- push (in) the manual plungers on the trim-tank refuel/defuel valve and the trim-tank refuel/transfer valve when you do the refueling procedure.

(2)When the refuel procedure is completed, do the test in para. 1.C. step (7) to make sure that the refuel/transfer valve is closed,

B. Close-Up
(1)Install the LH vapor seal cover (Ref. 28-11-35, P. Block 401).
(2)Make sure that the work area is clean and clear of tools and all other items of equipment.
(3)If applicable, remove the 2 m (6.5 ft) access platform and close the LH (RH) main-landing-gear bay-door (Ref. 32-12-11, P. Block 301).

TRIM TANK REFUEL/TRANSFER VALVE CANISTER REMOVAL/INSTALLATION

WARNING : LANDING GEAR - MAKE CERTAIN GROUND SAFETIES AND WHEEL CHOCKS ARE IN POSITION.

FLIGHT CONTROLS - MAKE CERTAIN THAT GROUND SAFETIES AND NOTICES ARE IN POSITION.

MAKE CERTAIN THAT FIRE FIGHTING EQUIPMENT IS AVAILABLE AND ADEQUATE.

BEFORE AND DURING MAINTENANCE OPERATIONS TO BE UNDERTAKEN INSIDE A FUEL TANK, THE PRESCRIBED SAFETY PRECAUTIONS MUST BE RIGOROUSLY OBSERVED (REF. 28-00-00, P. BLOCK 301, AND 28-10-00, P. BLOCK 301).

BEFORE POWER IS SUPPLIED TO THE AIRCRAFT MAKE CERTAIN THAT ELECTRICAL CIRCUITS UPON WHICH WORK IS IN PROGRESS ARE ISOLATED.

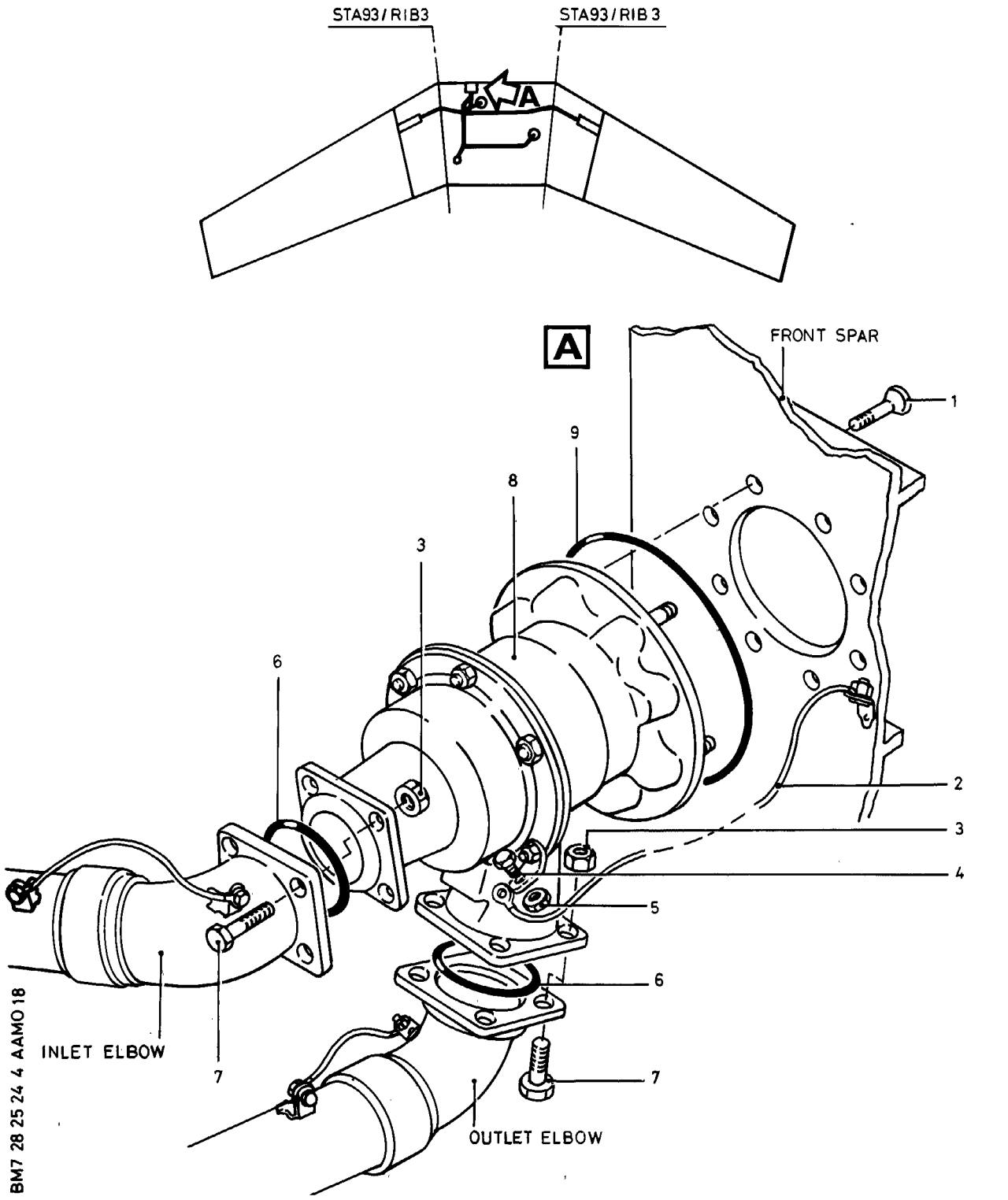
1. Equipment and Materials

ITEM	DESIGNATION
A.	Access Platform
B.	Blanks/Caps
C.	O-rings
D. Material No. 01-001	Fuels (Ref. 20-31-00)
Referenced Procedures	
- 20-28-11, P. Block 1	Electrical Bonding
- 28-00-00, P. Block 301	Fuel - General
- 28-10-00, P. Block 301	Storage
- 28-11-33, P. Block 401	Trim Tank Manhole Cover
- 28-11-35, P. Block 401	Vapor Seal
- 28-25-23, P. Block 401	Refuel Transfer Valve
- 55-00-00, P. Block 301	Stabilizers

2. Procedure

A. Job Set-Up
(1)Make horizontal and vertical stabilizers safe (Ref. 55-00-00, P. Block 301).
(2)Position access platform.
(3)Open access door 312AR.
(4)Remove vapor seal cover (Ref. 28-11-35, P. Block 401).
(5)Remove valve element (Ref. 28-25-23, P. Block 401).
(6)Remove manhole cover 319AZ (Ref. 28-11-33, P. Block 401).

B. Removal
(Ref. Fig. 401)
(1)Remove nut (5) and screw (4) securing bonding lead (2) to canister (8).
(2)Remove nuts (3) and bolts (7) securing inlet and outlet elbows to canister (8).
(3)Slide inlet and outlet pipes and elbows clear of canister.



Refuel/Transfer Valve Canister - Removal/Installation
Figure 401

(4)Remove bolts (1) securing canister to front spar and remove canister from spar.
(5)Remove and discard O-ring seals (6) and (9).
(6)Blank canister ports and spar aperture. Cap open line ends.

C. Installation
(1)Remove blanks from canister and spar.
(2)Make certain interfaces of canister (8) and front spar are clean and in good condition.
(3)Lubricate new O-ring seals (6) and (9) with Fuel (Material No. 01-001) and install on canister inlet, outlet and mounting flange.
(4)Locate canister studs into holes in front spar and secure canister to front spar with bolts (1).
(5)Remove blanks and connect inlet and outlet line elbows to canister (8). Secure elbows to canister with bolts (7) and nuts (3).
(6)Connect bonding lead (2) and secure with screw (4) and nut (5) (Ref. 20-28-11, P. Block 1).
(7)Return all disturbed pipelines to their mid-travel position between each joint.
(8)Make certain working area is clean and clear of tools and miscellaneous items of equipment.
(9)Install manhole cover (Ref. 28-11-33, P. Block 401).
(10)Install valve element (Ref. 28-25-23, P. Block 401).

D. Test
(1)Refuel tank (Ref. 12-11-28, P. Block 301) and check canister for evidence of leakage.

E. Close-Up
(1)Install vapor seal cover (Ref. 28-11-35, P. Block 401).
(2)Close access door 312AR.
(3)Remove access platform.
(4)Remove all ground handling equipment, standard and special tools, all access equipment and miscellaneous items.
(5)Remove safeties applied to horizontal and vertical stabilizers.

AUXILIARY TANK REFUEL/DEFUEL VALVE (69QU) - REMOVAL/INSTALLATION

WARNING : LANDING GEAR - MAKE CERTAIN GROUND SAFETIES AND CHOCKS ARE IN POSITION.
FLIGHT CONTROLS - MAKE CERTAIN GROUND SAFETIES AND NOTICES ARE IN POSITION.
OBSERVE THE SAFETY PRECAUTIONS IN 28-00-00 P. BLOCK 301.
MAKE CERTAIN THAT FIRE FIGHTING EQUIPMENT IS AVAILABLE AND ADEQUATE.
BEFORE POWER IS SUPPLIED TO THE AIRCRAFT MAKE CERTAIN THAT ELECTRICAL CIRCUITS UPON WHICH WORK IS IN PROGRESS ARE ISOLATED.

1. Equipment and Materials

ITEM	DESIGNATION
A.	Access Platform 2.6 m (8ft. 8in.)
B.	Container
C.	O-Ring
D.	Circuit Breaker Safety Clips
E.	Protective Caps
F. Material No. 01-001	Fuels (Ref. 20-31-00)
Referenced Procedures	
- 28-00-00, P. Block 301	General
- 32-12-11, P. Block 301	Main Gear Main Door - Ground Door(s) Opening

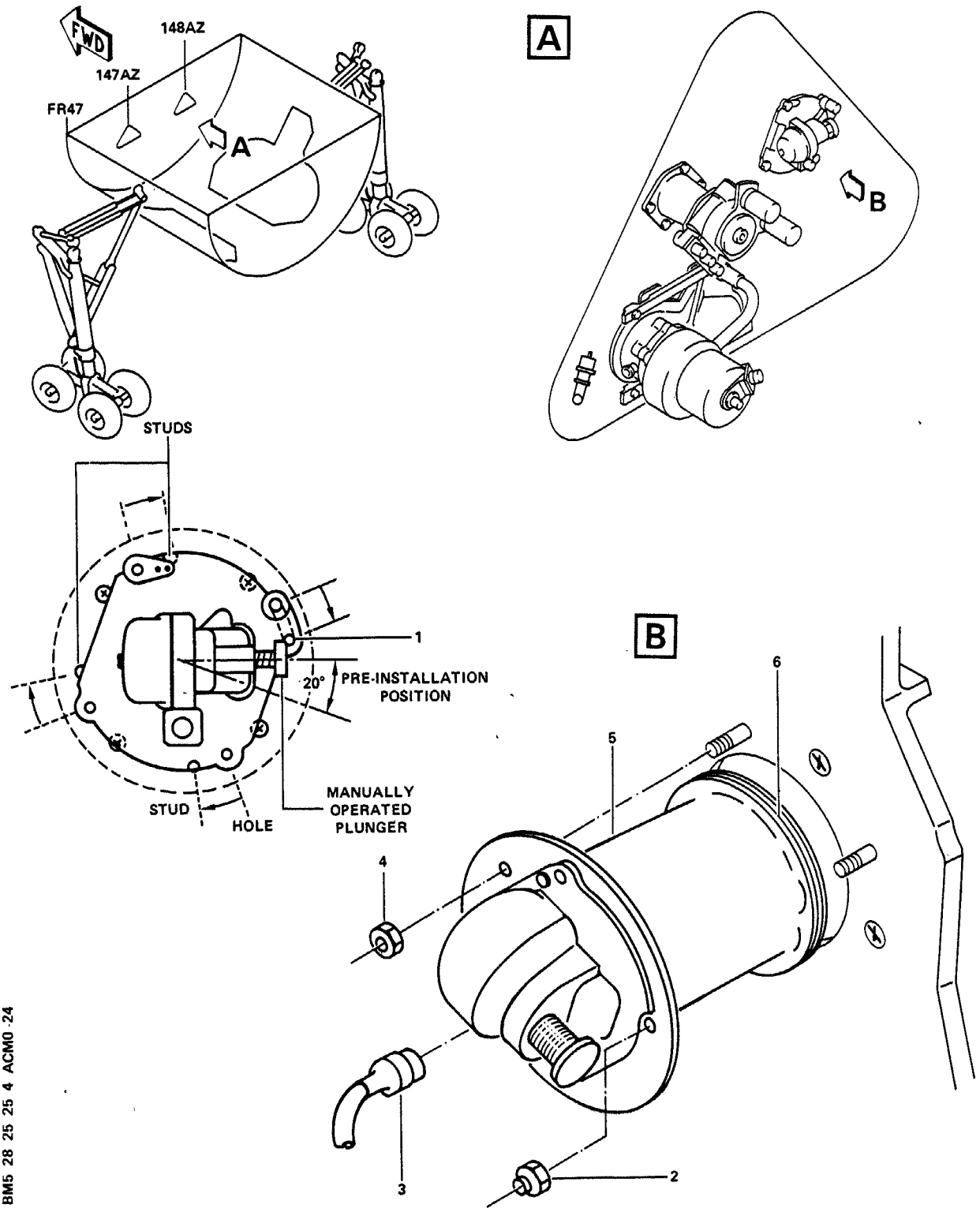
2. Procedure
(Ref. Fig. 401)

A. Job Set-Up
(1)Open, safety and tag the following circuit breakers :

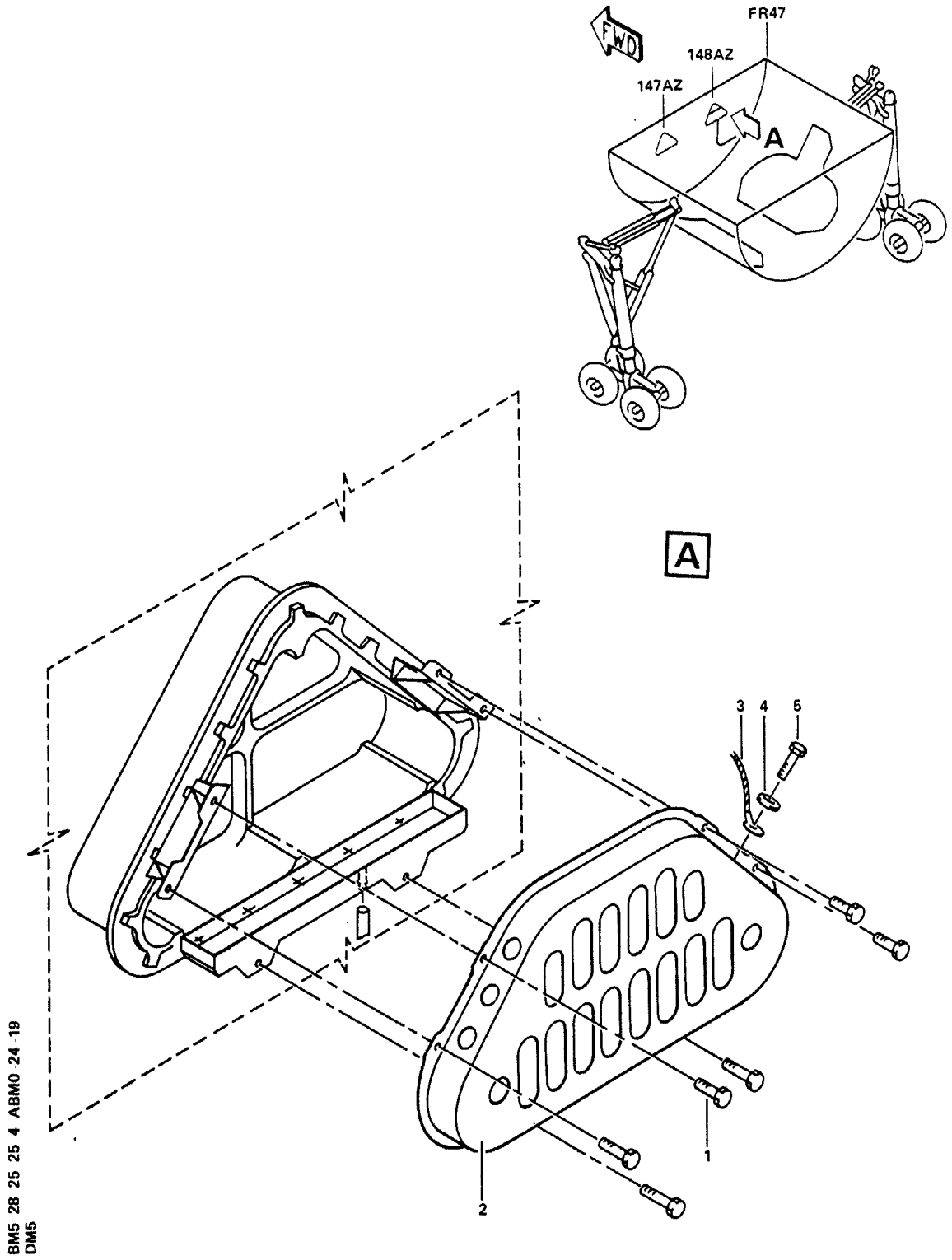
PANEL	SERVICE	IDENT.	LOCATION
132VU	FUEL/CTR TK/R/PUMP/CTL	64QA	323/M59
132VU	FUEL/CTR TK/R/PUMP/WARN	102QA	322/N59
132VU	FUEL/AUX TK/VENT & PRESS VALVE	3QH	325/K57
132VU	AUX TK/XFR VALVE/MOTOR 1	4QH	325/K58
132VU	FUEL/FUELLING/TRANSFER/VALVE	2QU	321/P55

(2)Open right main gear door (Ref. 32-12-11, P. Block 301).
(3)Position access platform.
(4)Removal of fairing
(Ref. Fig. 402)
(a)Remove screw (5), washer (4) and disconnect bonding strip (3).
(b)Remove screws (1) and remove fairing (2).
(5)Place fluid recovery container under valve.

B. Removal
(1)Disconnect and cap electrical connector (3).
(2)Remove lock nut (2) and discard.
(3)Remove lock nuts (4) and discard.



Auxiliary Tank Refuel/Defuel Valve
Figure 401



Fairing
Figure 402

(4)Disengage valve (5) from internal stop, turn valve counterclockwise and remove.
(5)Remove and discard O-ring (6).

C. Installation
(1)Smear new O-ring (6) with Material No. 01-001 and install in groove provided in valve (5) body.
(2)Insert valve (5) in canister until stud (1) is engaged.
(3)Turn valve (5) clockwise and push fully home.
(4)Install lock nuts (4).
(5)Install lock nut (2).
(6)Remove proctective cap and connect electrical connector (3).

D. Close-Up
(1)Remove safety clips and tags and close circuit breakers 64QA, 102QA, 3QH, 4QH and 2QU.
(2)Installation of fairing (Ref. Fig. 402)
(a)Install fairing (2) on manhole cover 148AZ ; Install screws (1) and tighten.
(b)Install bonding strip (3) on support. Install washer (4), screw (5) and tighten.
(3)Remove fluid recovery container.
(4)Make certain that working area is clean and clear of tools and miscellaneous items of equipment.
(5)Remove access platform.
(6)Close main gear door (Ref. 32-12-11, P. Block 301).

REFUEL/DEFUEL VALVE CANISTER (280438) - REMOVAL/INSTALLATION

WARNING : LANDING GEAR. MAKE CERTAIN GROUND SAFETIES AND CHOCKS ARE IN POSITION.
FLIGHT CONTROLS. MAKE CERTAIN GROUND SAFETIES AND NOTICES ARE IN POSITION.
OBSERVE THE SAFETIES PRECAUTIONS IN 28-00-00, P. Block 301.
MAKE CERTAIN THAT FIRE FIGHTING EQUIPMENT IS AVAILABLE AND ADEQUATE.
BEFORE POWER IS SUPPLIED TO THE AIRCRAFT MAKE CERTAIN THAT ELECTRICAL CIRCUITS UPON WHICH WORK IS IN PROGRESS ARE ISOLATED.

1. Equipment and Materials

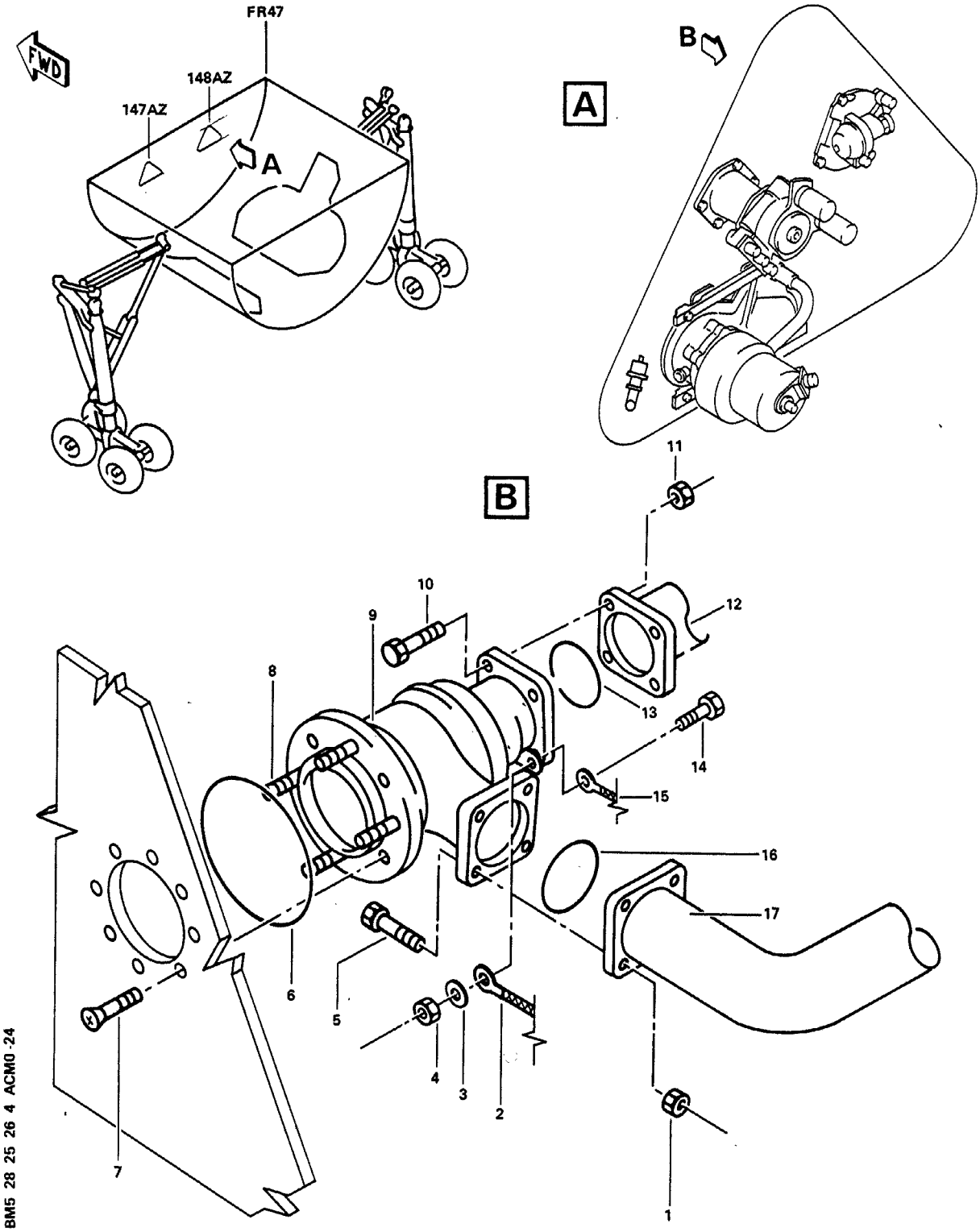
ITEM	DESIGNATION
A.	Access Platform 2.5 m to 4 m (8 ft. to 13 ft.)
B.	Containers
C.	O.Rings
D.	Circuit breakers safety clips
E. Material No. 01-001	Fuel (Ref. 20-31-00)
F. Material No. 16-001	Structure Paints (Ref. 20-31-00)
Referenced Procedures	
- 12-11-28, P. Block 1	Fuel Tank Resplenishing
- 28-00-00, P. Block 301	Fuel
- 28-10-00, P. Block 301	Storage
- 28-11-29, P. Block 401	Center Tank Manhole Cover
- 28-25-25, P. Block 401	Refuel/Defuel Valve
- 32-12-11, P. Block 301	Main Gear Main door - (Ground Door(s) Opening)
- 28-25-00, P. Block 301	Refuel/Defuel System

2. Procedure
(Ref. Fig. 401)

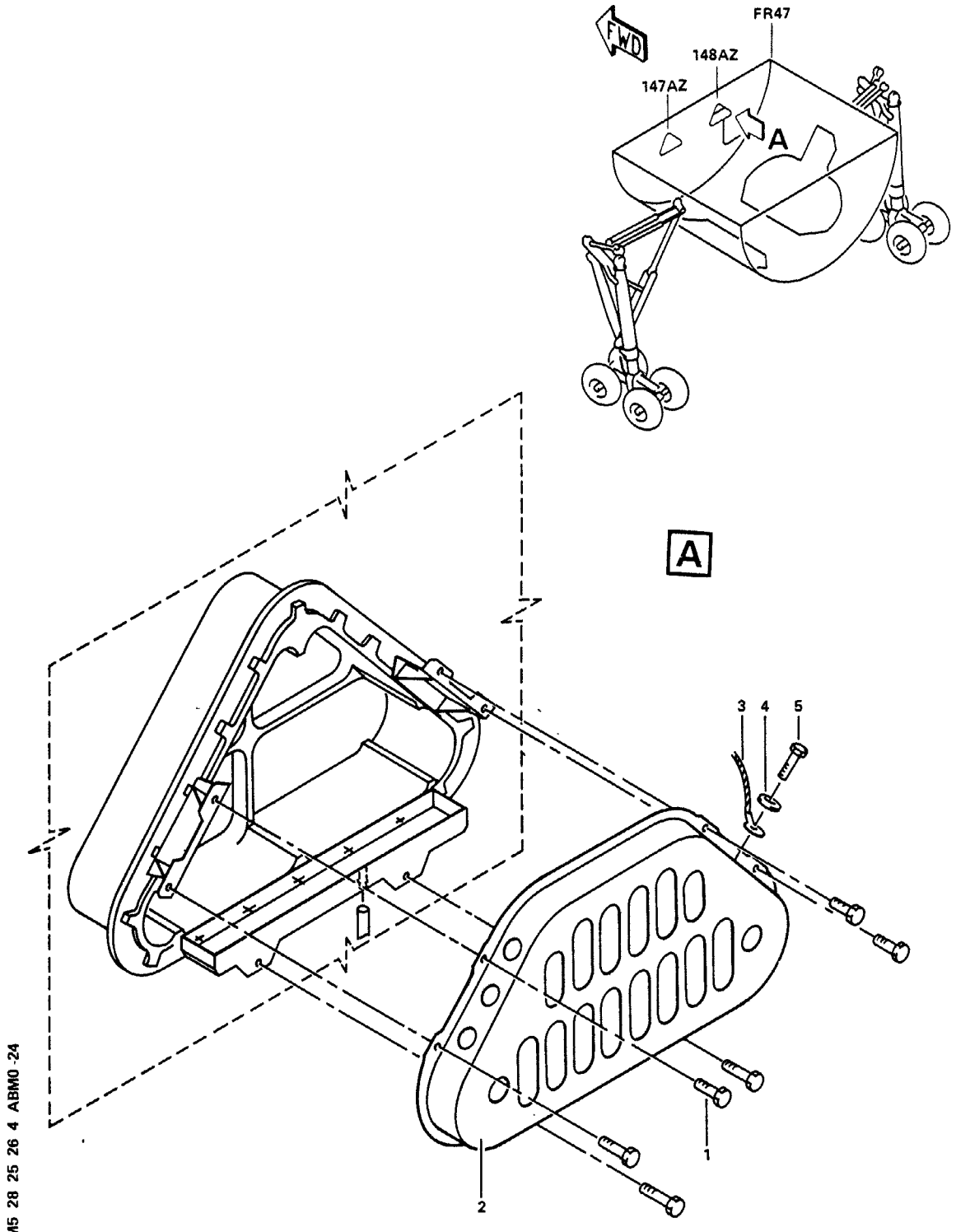
A. Job Set-Up
(1)Open, safety and tag the following circuit breakers :

PANEL	SERVICE	IDENT.	LOCATION
132VU	FUEL/CTR TK/R/PUMP/CTL	64QA	323/M59
132VU	FUEL/CTR TK/R/PUMP/WARN	102QA	322/N59
132VU	FUEL/AUX TK/VENT & PRESS VALVE	3QH	325/K57
132VU	FUEL/AUX TK/XTR VALVE/MOTOR 1	4QH	325/K58

(2)Defuel center tank (Ref. 28-25-00, P. Block 301)
(3)Open appropriate main gear main door (Ref. 32-12-11, P. Block 301).
(4)Position access platform.
(5)Removal of fairing
(Ref. Fig. 402)
(a)Remove screw (5), washer (4) and disconnect bonding strip (3).
(b)Remove screws (1) and remove fairing (2).
(6)Remove Refuel/Defuel Valve (Ref. 28-25-25, P. Block 401).
(7)Remove manhole cover 147AZ (Ref. 28-11-29, P. Block 401).



Refuel/Defuel Valve Canister
Figure 401



Fairing
Figure 402

(8)Gain access to center tank and observe prescribed safety precautions (Ref. 28-00-00, P. Block 301 and 28-10-00, P. Block 301).
(9)Place fluid recovery container under canister.

B. Removal

NOTE : If canister removal requires a greater clearance, unscrew couplings of closest lines

(1)Remove nut (4), washer (3) ans screw (14) ; disconnect bonding strips (2) and (15).
(2)Unscrew nuts (11) and remove screws (10) ; disconnect line (12) ; recover O.Ring (13) and discard it.
(3)Unscrew nuts (1) and remove screws (5) ; disconnect line (17) ; recover O.Ring (16) and discard it.
(4)Remove screws (7) ; remove canister (9) ; recover O.Ring (6) and discard it.

C. Installation

NOTE : Take care not to damage O.Rings.

(1)Smear new O-ring (6) with Material No. 01-001 and install in groove in canister (9).
(2)Locate canister studs (8) into holes in rear spar.
(3)Install countersunk screws (7) and tighten.
(4)Smear new O-ring (16) with Material No. 01-001 and install in groove in line (17).
(5)Connect line (17) to canister (9) ; install screws (5) nuts (1) and tighten.
(6)Smear new O-ring (13) with Material No. 01-001 and install in groove in line (12).
(7)Connect line (12) to canister (9) ; install screws (10), nuts (11) and tighten.
(8)Install bonding strips (2) and (15) on support ; install screw (14), washer (3), nut (4) and tighten.
(9)Apply a coat of paint with Material No.16-001 on screws and nuts.

D. Close-Up

(1)Remove safety clips and tags and close circuit breakers 64QA, 102QA, 3QH and 4QH.
(2)Remove fluid recovery container.
(3)make certain that working area is clean and clear of tools and miscellaneous items of equipment.
(4)Close manhole cover 147AZ (Ref. 28-11-29, P. Block 401).
(5)Refuel center tank (ref. 12-11-28, P. Block 1).
(6)Install Refuel/Defuel Valve (Ref. 28-25-25, P. Block 401).
(7)Installation of fairing (Ref. Fig. 402)
  (a)Install fairing (2) on manhole cover 148AZ ; install screws (1) and tighten.
  (b)Install bonding strip (3) on support. Install washer (4), screw (5) and tighten.
(8)Remove access platform.
(9)Close main gear door (Ref. 32-12-11, P. Block 301).

FUEL TRANSFER (CG) CONTROL SYSTEM - DESCRIPTION AND OPERATION

1. General

The Fuel Transfer (CG) Control System is used to reduce trim drag during flight which improves fuel economy.

The position of the CG is controlled by automatic fuel transfer initiated from the results of computations by the CG computer (Ref. 31-46-00). By comparing the actual CG with a permanently stored value for each flight phase a fuel transfer will be initiated as necessary.

If the CG is forward of the flight phase value an aft transfer (if the trim tank is not full), from center or inner wing tanks will take place until the CG reaches the required position. Fuel transfer will stop if the trim tank high level sensor signals tank full; thereafter further rearward movement of CG will only occur as a result of fuel burn.

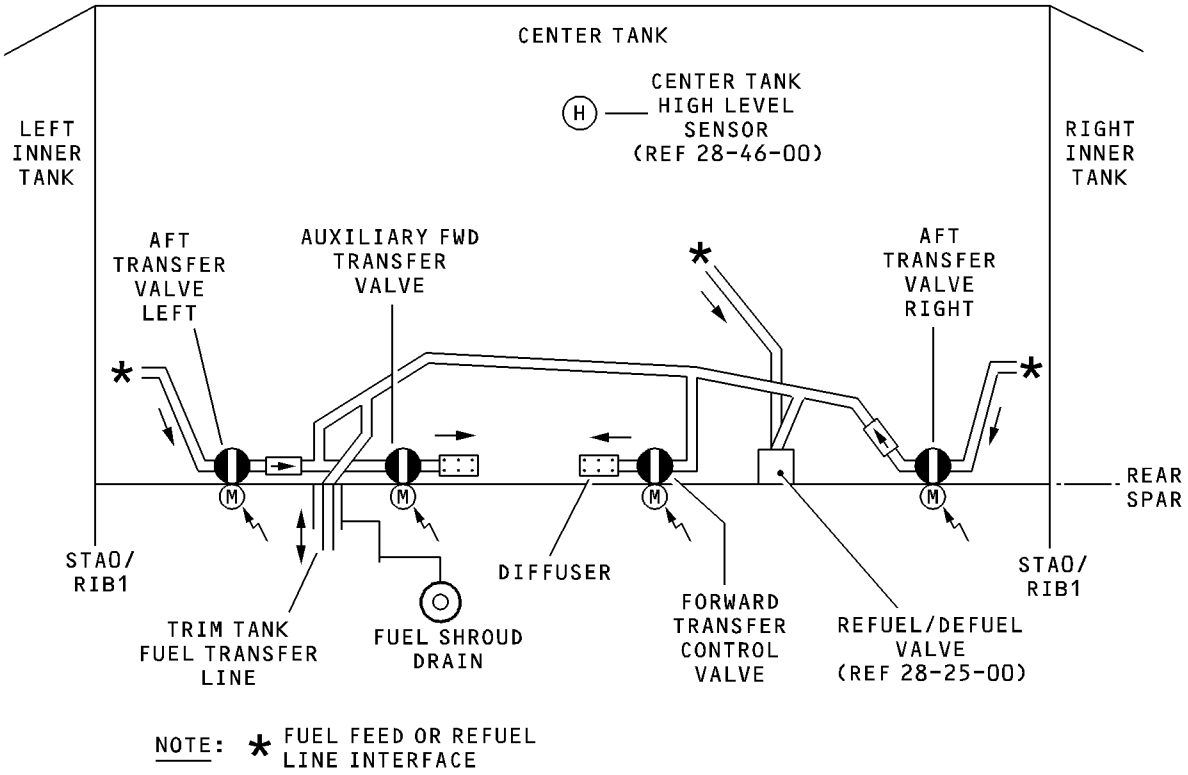
If the CG is aft of the flight phase value a forward transfer from trim tank to the center tank will take place. The fuel quantity transfer will move the CG forward to approximately 0.5% MAC ahead of the target CG.

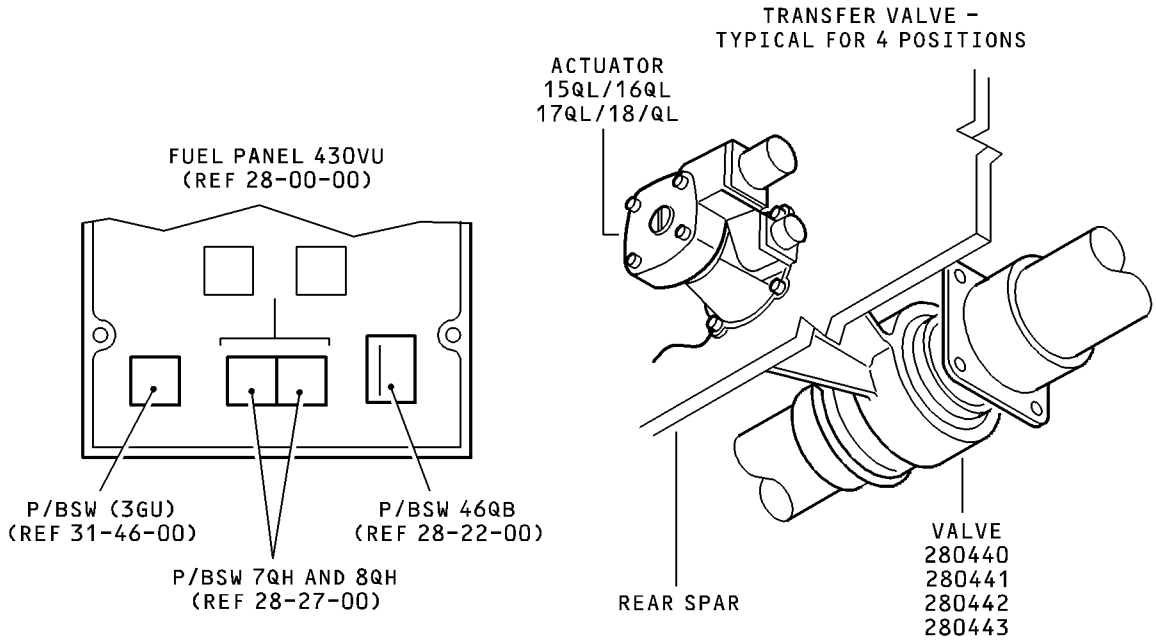
2. Component Location

(Ref. Fig. 001)

FIN	FUNCTIONAL DESIGNATION	PANEL	ZONE	ACCESS DOOR	ATA REF
280440	VALVE - AFT TRANSFER L		141	147AZ	28-26-18
280441	VALVE - AUXILIARY FWD TRANSFER		141	147AZ	28-26-13
280442	VALVE - FWD TRANSFER		142	148AZ	28-26-11
280443	VALVE - AFT TRANSFER R		142	148AZ	28-26-18
1QL	C/B - FUEL/TRIM TANK/FWD XFR/MAIN VALVE	132VU	212	325/K53	
2QL	C/B - FUEL/TRIM TANK FWD XFR/AUX VALVE	22VU	210	201/J21	
4QL	C/B - FUEL/TRIM TANK/AFT L & R XFR/VALVE	132VU	212	325/K56	
6QL	RELAY - AFT XFR VALVE CTL, R	90VU	122		
7QL	RELAY - AFT XFR VALVE CTL, L	90VU	122		
8QL	RELAY - AUX FWD XFR CTL	104VU	120		
9QL	RELAY - AUX FWD XFR CTL	104VU	120		
11QL	RELAY - AUTO XFR, TRIM TK PUMP 1	107VU	121		
12QL	RELAY - AUTO XFR, TRIM TK PUMP 2	107VU	121		
15QL	ACTUATOR - AUXILIARY TRANSFER VALVE		147	734	28-26-14
16QL	ACTUATOR - FWD TRANSFER CONTROL VALVE		148	734	28-26-12
17QL	ACTUATOR - AFT TRANSFER VALVE L		148	734	28-26-17
18QL	ACTUATOR - AFT TRANSFER VALVE R		148	734	28-26-17

3. Description




FUEL PANEL 430VU (REF 28-00-00)
P/BSW (3GU) (REF 31-46-00)
P/BSW 46QB (REF 28-22-00)
P/BSW 7QH AND 8QH (REF 28-27-00)
TRANSFER VALVE - TYPICAL FOR 4 POSITIONS
ACTUATOR 15QL/16QL 17QL/18/QL
REAR SPAR
VALVE 280440 280441 280442 280443

BM8 28 26 00 0 QAMO 02

Transfer System - Component Location
Figure 001

R

The Fuel Transfer (Center of Gravity) Control System has four shut-off valves and related actuators. It also includes the necessary relays to control the operation of these valves and the two related fuel pumps (Ref. 28-27-00).

The valves are located in the center tank. Each valve is operated between the open/shut position by its actuator to provide control of these functions:
- forward transfer (one valve)
- auxiliary forward transfer (one valve)
- aft transfer (two valves).

The forward transfer valve is used with the related fuel pumps during fuel transfer (auto mode operation) from the trim tank to the center tank. The auxiliary transfer valve operates during a forward gravity-feed fuel-transfer (manual mode operation). This valve also operates with the related forward transfer valve to get a fast forward transfer (auto mode operation).

The C of G computer supplies two outputs to control the operation of the two aft transfer valves (auto mode operation). One goes to the left transfer valve, the other goes to the right transfer valve. This lets the computer open one valve or the two at the same time to get the correct fuel transfer from the center or inner tanks to the trim tank. The computer can also open these two valves at the same time to inhibit a gravity forward fuel transfer. This occurs if the forward transfer valves do not close when necessary.

R **ON A/C 101-200,

R A. Automatic Mode

The Fuel Transfer (CG) Control System can only exert control over the various pumps and valves when the TRIM TK ISOL VALVE pushbutton switch and either trim tank pushbutton switch are pressed (in).

In flight, with slats retracted and below Flight Level (FL) 205 (approximately 20,500ft), a nominal CG target will be maintained (Ref. 31-46-00). This is selected so that if a landing is required shortly after take off the CG will not be aft of the landing limit.

In flight, with slats retracted fuel transfer forward will take place automatically, fuel transfer aft takes place at approximately FL205, controlled by the CG Computer, also, fuel transfer from the ACT will take place automatically although this is not controlled by the CG Computer under normal conditions.

With the aircraft above FL205 the system will maintain the CG at a target value.

When the aircraft descends below FL205, CG control is discontinued and all remaining fuel in the trim tank is transfered forward.

The isolation valve stays open when the slats are extended, and is signalled to close by the landing gear downlock during the landing phase.

**ON A/C ALL

R Post SB 28-2126 For A/C 104-104,

A. Automatic Mode

The shut off valves that are in the system and the related fuel pumps will only operate in an auto mode (controlled by the C of G computer) (Ref. 31-46-00) when these conditions are set:
- the P/BSW TRIM TK ISOL VALVE pushed (in) (green flow bar comes on) (Ref. 28-22-00)
- the P/BSW TRIM TK PUMP 1 and/or TRIM TK PUMP 2 pushed in (OFF annunciator not on) (Ref. 28-27-00)
- the P/BSW TRIM TANK AUTO MODE released (out) (FWD annunciator not on) (Ref. 31-46-00)
- the left or right speed brake is not extended (this would prevent aft transfer) (message SPD BRK shown in amber on the ECAM SD)(Ref. 27-61-00).

In flight, with the slats retracted and below Flight Level (FL) 205, (approx 20,500ft) a nominal CG target will be maintained (Ref. 31-46-00). This is selected so that if a landing is required within a short time after a take off the CG will not be aft of the landing limit.

With the aircraft above FL205 the system will maintain the CG close to the cruise target CG.

When the aircraft descends below FL205, CG control stops and all fuel that remains in the trim tank is transfered forward under the control of the CGCC.

**ON A/C 001-100,

B. Alternate Mode

If any of the following fuel system failures occur:
- both flight management computers (FMC's)
- both digital air data computers (DADC)
- both fuel flow indicators
- FQI
- a discrepancy between the FQI and the CGCC monitor
- power down for a period greater than 200 milli-seconds
- solenoid refuel transfer valve

- forward transfer control valve
- forward auxiliary transfer valve
- a center tank pump
- both pumps within one inner wing
- both trim tank pumps
- aft transfer valves (LH or RH).

The computer will operate in a degraded mode; in this mode a forward transfer will be initiated depending on failure (Ref. 31-46-00, P. Block 1).

NOTE : Computer also switches to a degraded mode when there is a combination of input data failures from IRS ADC and FMC.

**ON A/C 101-200,

B. Alternate Mode

If any of the following fuel system failures occur:
- a center tank pump
- FQI
- transfer valves not opening when signalled.

The computer will operate in a degraded mode; in this mode a forward transfer will be initiated depending on failure (Ref. 31-40-00, P. Block 1).

NOTE : Computer also switches to a degraded mode when there is a combination of input data failures from IRS ADC and FMC.

**ON A/C ALL

C. System Monitoring

The CG computer is dual channel with each channel operating independently from the other. Validity of FQI data and transfer system status is monitored by the CG computer.

**ON A/C 101-200,

Calibration sensors are installed in the inner, center, trim tank and ACT(s) (Ref. 28-46-00, P. Block 1). When a sensor becomes wet during a refuel procedure it signals the CGCC which compares the fuel quantity data in its memory with the FQIC data. This makes sure that if there is incorrect data from the FQIC, the correct fuel quantities cannot be significantly different than the quantities shown.

**ON A/C 001-100,

Calibration sensors are installed in the inner, center and trim tank (Ref. 28-46-00, P. Block 1). When the trim tank sensor becomes wet during a refuel procedure it signals the CGCC which compares the fuel quantity data in it memory with the FQIC data. This makes sure that if there is incorrect data from the FQIC, the correct fuel quantity cannot be significantly different than the quantity shown. The calibration sensors in the inner and center tank do not signal the CGCC if they become wet during a refuel procedure.

**ON A/C 101-200,

Post SB 28-2105 For A/C 101-200,

R Post SB 28-2126 For A/C 104-104,

Calibration sensors are installed in the inner, center, trim tank and ACT(s) (Ref. 28-46-00, P. Block 1). When the trim tank sensor becomes wet during a refuel procedure it signals the CGCC which compares the fuel quantity data in its memory with the FQIC data. This makes sure that if there is incorrect data from the FQIC, the correct fuel quantity cannot be significantly different than the quantity shown. The calibration sensors in the inner, center and ACT(s) do not signal the CGCC if they become wet during a refuel procedure.

**ON A/C ALL

The CG computer continuously monitors the FQI for step changes due to system failures and, in flight, compares FQI indications with fuel flow.

During fuel transfers the CG computer monitors the position of the transfer valves to detect when a forward or aft transfer takes place. It calculates the fuel transfer rate, compares this to standard transfer/attitude rates and valves open time then adds/subtracts the result from the quantities of the tanks being used.

4. Operation

**ON A/C ALL

(Ref. Fig. 002)

R **ON A/C 101-101, 104-104,

(Ref. Fig. 003)

R **ON A/C 001-100, 102-103, 105-200,

(Ref. Fig. 004)

**ON A/C ALL

A. Automatic Mode

To operate the system both TRIM TK pump pushbutton switches must be pressed in, and Zero Fuel Center of Gravity (ZFCG) and Zero Fuel Weight (ZFW) fed into the Flight Management System (FMS).

If the CG does not conform to the stored value for the appropriate flight phase a forward or aft transfer will be initiated.

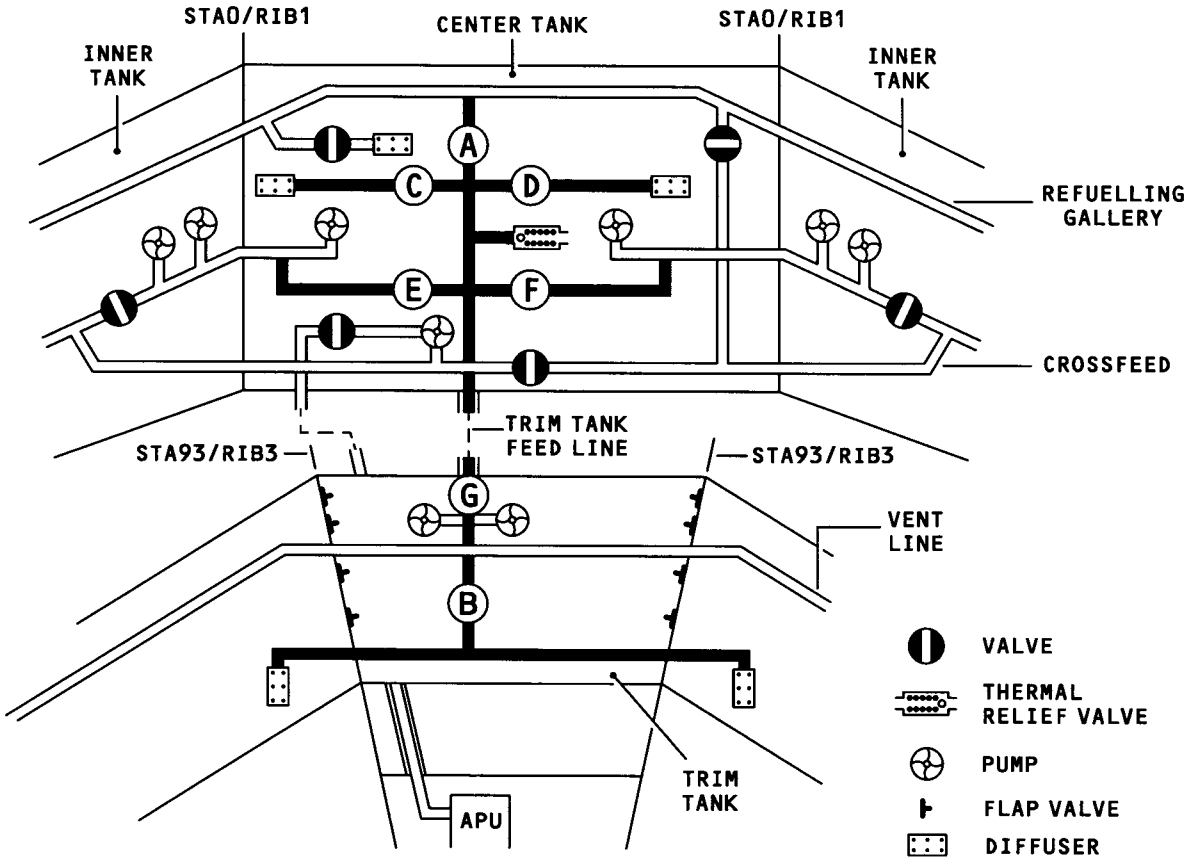
When an aft transfer is required the valves B, E and F will be opened and fuel transfered from the center or inner tank, depending upon which tank is being used for fuel feed. If fuel is being transfered from the inner tanks the CG computer will ensure an equal amount of fuel is taken from both sides. The quantity of fuel transfered to move the CG will be controlled by the CG computer using FQI data. If a center tank pump fails rearward transfer will be stopped to avoid depleting the outer tanks. Valves B, E and F will be signalled to close when the required quantity has been transfered.

**ON A/C 001-100,

When a forward transfer is required due to fuel burn causing a rearward shift of the CG, the trim tank transfer pumps will be selected on and transfer valve C opened automatically. Valve C will close automatically after the transfer has been completed.

**ON A/C 101-200,

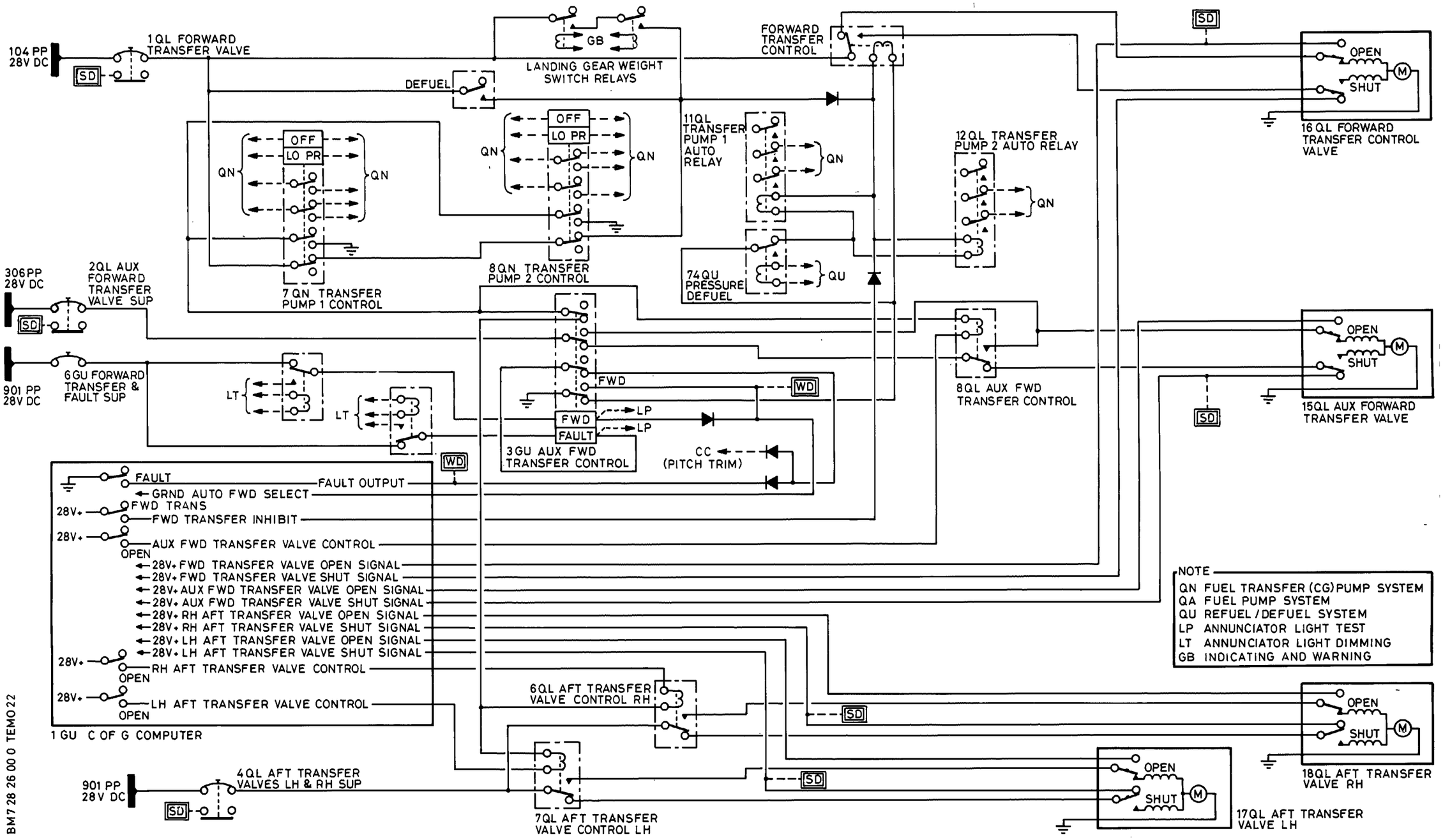
When a forward transfer is required due to fuel burn causing a rearward



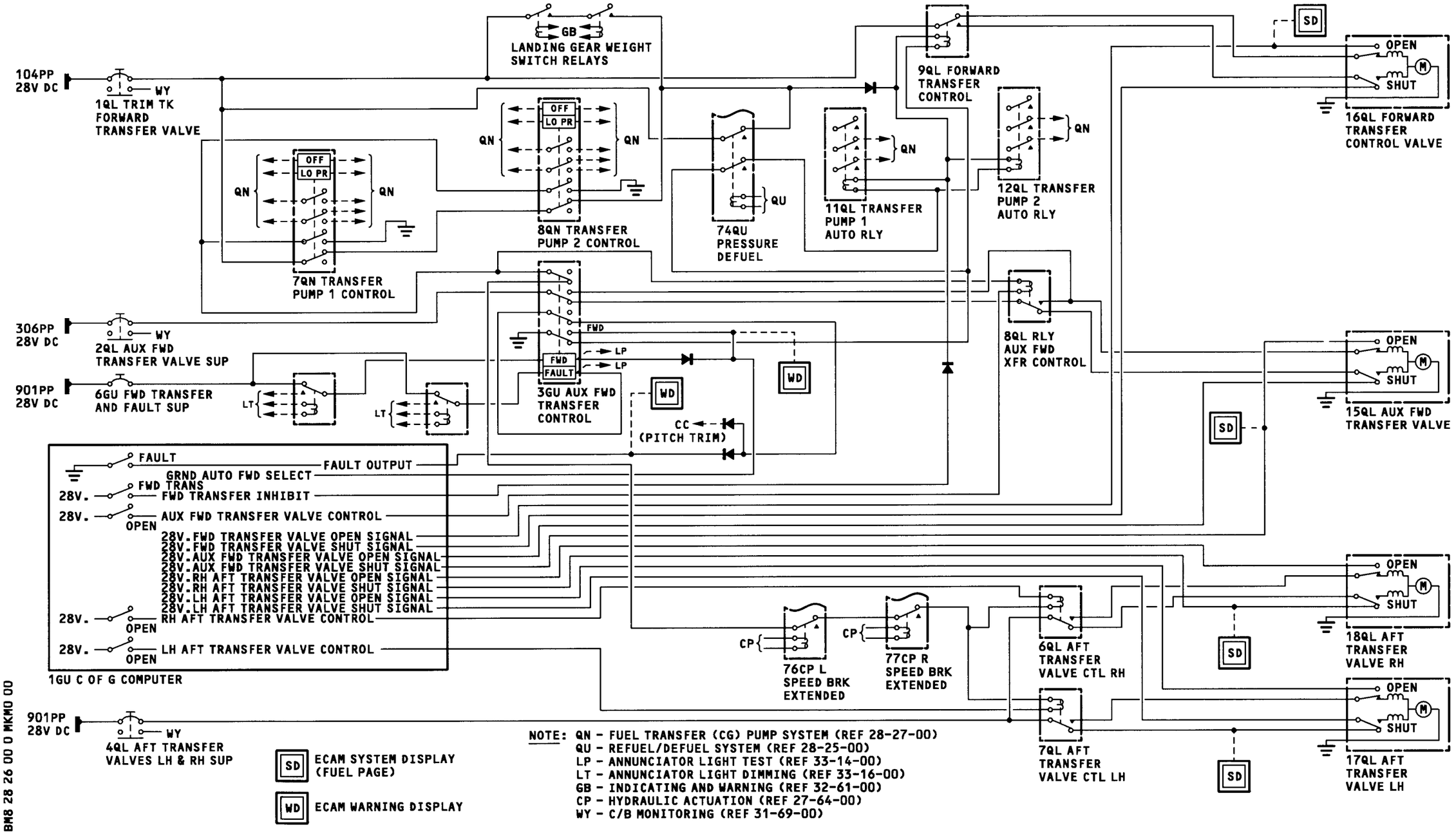
CGCC MODE	TT-PUMPS 1 AND 2	A REFUEL/ DEFUEL VALVE	B REFUEL/ DEFUEL XFER VALVE	C AUX FORWARD XFER VALVE	D FORWARD XFER VALVE	E AFT XFER VALVE LEFT	F AFT XFER VALVE RIGHT	G TRIM TK ISO-LATION VALVE
NO TRANSFER	OFF	CONTROLLED ONLY BY FQI SYSTEM	CLOSED	CLOSED	CLOSED	CLOSED	CLOSED	OPEN
AFT TRANSFER CENTER TANK TO TRIM TANK	OFF		OPEN	CLOSED	CLOSED	OPEN	OPEN	OPEN
AFT TRANSFER INNER WING TANKS TO TRIM TANKS	OFF		OPEN	CLOSED	CLOSED	OPEN	OPEN	OPEN
AFT TRANSFER LEFT INNER WING TANK TO TRIM TANK	OFF		OPEN	CLOSED	CLOSED	OPEN	CLOSED	OPEN
AFT TRANSFER RIGHT INNER WING TANK TO TRIM TANK	OFF		OPEN	CLOSED	CLOSED	CLOSED	OPEN	OPEN
NORMAL FWD TRANSFER	ON		CLOSED	CLOSED	OPEN	CLOSED	CLOSED	OPEN
FAST FWD TRANSFER	ON		CLOSED	OPEN	OPEN	CLOSED	CLOSED	OPEN
GRAVITY FWD TRANSFER	OFF		CLOSED	OPEN	OPEN	CLOSED	CLOSED	OPEN

BM8 28 26 00 0 MCM0 01

Transfer System Operation
Figure 002



Transfer Control - Circuit Diagram
Figure 003



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Trim-Tank Transfer Control - Circuit Diagram
Figure 004

shift of the CG, the trim tank transfer pumps will be selected on and transfer valve C opened automatically. Valve C will close automatically after the transfer has been completed. If a forward transfer occurs while the engines are supplied from the inner tanks, the center tank pumps will come on, until the supply is switched back to the inner tanks.

R **ON A/C ALL

If a forward transfer occurs while the engines are supplied from either the inner tanks (or, if empty, the outer tanks), the center tank pumps will come on as soon as the low level sensors are rewetted. Except when the first inner tank enters the scavenge mode when the center tank pumps will not run for 3 minutes even though the center tank low level sensors are wet.
The CG will be controlled by fuel transfer until the inner tank reaches empty. The center tank continues to feed. When the center-tank fuel quantity is 500 kg (1100 lb) the FQI computer starts to transfer fuel from the trim tank. When 500 kg (1100 lb) has been transfered forward the FQI computer signals to the CGCC and the transfer stops. A further forward transfer of 500 kg (1100 lb) will take place every time the center tank fuel-quantity decreases to 500 kg (1100 lb) until the trim tank is empty, or the aircraft descends below FL200. Below FL200, any fuel that remains in the trim tank will be transferred forward into the center tank by use of valves C and D. This gives the crew sufficient time to confirm the CG position and, if necessary, correct it manually before landing.

B. Override Manual Control

NOTE : The TRIM TK ISOL VALVE pushbutton switch overrides the isolation valve selection made by the automatic transfer system or the TRIM TK AUTO MODE pushbutton position.

The AUTO/MODE pushbutton switch provides override manual control and indication:

- With the pushbutton released out, control of transfer pumps and valve control is through the CG computer.

R **ON A/C 001-100,

- With the pushbutton switch pressed in and TRIM TK PUMP pushbutton switches pressed in the pumps will run and valves C, D and G open irrespective of CG computer commands or center tank high level signal. The FWD legend will come on when the pushbutton switch is pressed in indicating a manually selected forward transfer.

NOTE : Valve G will not open if previously selected shut by its own push button.

R **ON A/C 101-200,

- With the pushbutton switch pressed in and **TRIM TK PUMP** pushbutton switches pressed in the pumps will run and valves **C** and **D** open irrespective of **CG** computer commands or center tank high level signal. The **FWD** legend will come on when the pushbutton switch is pressed in indicating a manually selected forward transfer.

R **ON A/C ALL

The **FAULT** caption will be illuminated by a signal from the **CG** computer when:
- **CG** moves aft of flight limit.
- **A** failure in the **CG** computer is detected.
- Further detected faults when in alternate mode.

When a manually selected forward transfer is initiated and valves **C** and **D** open, the transfer rate is increased because valve **D** pipe outlet does not incorporate a restrictor. With both valves open the trim tank will empty from full in 11 minutes.

The center tank overflow relief valve will open to avoid over pressurization.

FUEL TRANSFER (CG) CONTROL SYSTEM - ADJUSTMENT/TEST

WARNING : BEFORE POWER IS SUPPLIED TO THE AIRCRAFT MAKE CERTAIN THAT ELECTRICAL CIRCUITS UPON WHICH WORK IS IN PROGRESS ARE ISOLATED.

CAUTION : DURING OPERATIONAL TEST ANY FUEL CONTAINED IN THE TRIM TANK WILL GRAVITY DRAIN INTO THE CENTER TANK. BEFORE STARTING TEST EITHER DEFUEL THE TRIM TANK (REF. 28-25-00, P. BLOCK 301) OR MAKE CERTAIN TRANSFER FROM TRIM TANK WILL NOT EXCEED CENTER TANK CAPACITY.

1. Operational Test - Manual Forward Transfer Control

A. Reason for the Job

(1) To prove operation of transfer control valve, auxiliary transfer valve and trim tank isolation valve actuators by **TRIM TK AUTO MODE** pushbutton switch.

B. Equipment and Materials

ITEM	DESIGNATION
A.	Access Platform 8ft (2.5m)
B.	Access Platform 26ft (8m)
Referenced Procedures	
- 24-41-00, P. Block 301	AC External Power Control
- 28-25-00, P. Block 301	Refuel/Defuel System
- 32-12-11, P. Block 301	Main Gear Main Door

C. Procedure

(1) Job Set-Up.

(a) Open LH or RH main landing gear bay door (Ref. 32-12-11, P. Block 301)

(b) Position access platform.

(c) Locate transfer control valve actuator (16QL) and auxiliary transfer valve actuator (15QL). Make certain that indicator grooves on actuator shafts show that valves are **SHUT**.

(d) Position access platform and open access door **313 AL**

(e) Gain access to trim tank isolation valve actuator (48QB). Make certain that indicator groove on actuator shaft that valve is **SHUT**.

(f) Energize the aircraft electrical network and make certain that electronics racks are ventilated (Ref. 24-41-00, P. Block 301)

(g) Make certain that the following circuit breakers are closed:

PANEL	SERVICE	IDENT.	LOCATION
22VU	FUEL/TRIM TANK/FWD XFR.AUX VALVE	2QL	201/J21
22VU	FUEL/TRIM TANK/FWD XFR PUMP 1 CTL	3QN	201/J22
22VU	FUEL/TRIM TANK/FWD XFR PUMP 1 WARN	5QN	201/J23
132VU	FUEL/TRIM TANK/ISOL VALVE	45QB	325/K52
132VU	FUEL/TRIM TK/FWD XFR MAIN VALVE	1QL	325/K53
132VU	FUEL/TRIM TANK TK/KFR PUMP 2 CTL	4QN	325/K55

PANEL	SERVICE	IDENT.	LOCATION
132VU	FUEL/TRIM TK/XFR PUMP 2 WARN	6QN	325/K54

NOTE : If TRIM TK 1SOL VALVE pushbutton switch on panel 430VU is selected on (pressed in) when refuel panel door is closed, flowbar will not come on.

(h)Make certain that refuel panel access door 144DR is closed.
(i)On panel 430VU:
1Make certain that TRIM TK PUMP 1 and 2 pushbutton switches are released (out) and OFF legends are on.
2Make certain that TRIM TK ISOL VALVE pushbutton switch is pressed in and flowbar and OFF legends are off.

(2)Test.

ACTION	RESULT
1. On panel 430VU: - press in TRIM TK AUTO MODE pushbutton switch	On panel 430VU: - TRIM TK AUTO MODE FWD legend comes on -TRIM TK ISOL VALVE flowbar flashes as valve is in transit to OPEN position - when valve is fully open flowbar comes on steady In Zone 147: - Indicator groove on auxiliary transfer valve actuator (15QL) moves to OPEN position In Zone 148: - indicator groove on transfer control valve actuator (16QL) moves to OPEN position In Zone 312: - indicator groove on trim tank isolation valve actuator (48QB) moves to OPEN position
2. On panel 430VU: - release (out) TRIM TK AUTO MODE pushbutton switch	On panel 430VU: - TRIM TK AUTO MODE FWD legend goes off - TRIM TK ISOL VALVE flowbar flashes as valve is in transit to SHUT position - when valve is fully shut flowbar goes off

ACTION	RESULT
	In Zones 147, 148 and 312: - indicator grooves on auxiliary transfer valve, transfer control valve and trim tank isolation valve move to SHUT position

(3)Close-Up
(a)Make certain that Zones 147 and 148 are clean and clear of tools and miscellaneous items of equipment.
(b)Remove access platform.
(c)Close LH or RH main landing gear bay door (Ref. 32-12-11, P. Block 301).
(d)De-energize the aircraft electrical network (Ref. 24-41-00, P. Block 301).
(e)Make certain that Zone 312 is clean and clear of tools and miscellaneous items of equipment.
(f)Close access door 313AL and remove access platform.

2. Excess Aft CG Warning Test

A. Excess aft CG warning test (Ref. 31-51-00, P. Block 501).

FUEL TRANSFER (CG) CONTROL SYSTEM DEACTIVATION/REACTIVATION

Ref. MMEL Sect. 1-28, Item 43

CAUTION : THIS PROCEDURE IS TO BE USED ACCORDING TO THE REQUIREMENTS OF THE MMEL.

WARNING : CHECK THAT THE LANDING GEAR GROUND SAFETIES INCLUDING WHEEL CHOCKS ARE IN POSITION.
BEFORE POWER IS APPLIED, MAKE CERTAIN THAT ELECTRICAL CIRCUITS UPON WHICH WORK IS IN PROGRESS ARE ISOLATED.
BEFORE APPLYING OR RELIEVING HYDRAULIC SYSTEM PRESSURE, MAKE CERTAIN THAT THE TRAVEL RANGES OF THE CONTROL SURFACES ARE CLEAR.
BEFORE PRESSURIZING HYDRAULIC SYSTEMS, CHECK THAT ALL CONTROLS ARE SET TO CORRESPOND WITH THE ACTUAL POSITION OF THE SERVICES THEY OPERATE.
BEFORE PROCEEDING WITH MAINTENANCE WORK ON OR NEAR MECHANICAL FLIGHT CONTROLS OR PRIMARY FLIGHT CONTROL SURFACES, LANDING GEARS, ASSOCIATED DOORS OR ANY MOVING COMPONENT, MAKE CERTAIN THAT GROUND SAFETIES AND/OR WARNING NOTICES ARE IN CORRECT POSITION TO PREVENT INADVERTENT OPERATION OF CONTROLS.

1. Deactivation

A. Reason for the Job

(1) The normal automatic mode may be inoperative provided the alternative alternative automatic mode is operative.

(a) To reed out the present system status of CGCC system.

(b) To ensure none of the two forward transfere valves have been reported failed in the present status.

NOTE : The normal automatic mode may be inoperative provided the alternative automatic mode is operative.

B. Equipment and Materials

ITEM	DESIGNATION
(1)	Access Platform, 2.3 m (7.5 ft.)

Referenced Procedures

- 24-41-00, P. Block 301	AC External Power Control
- 52-30-00, P. Block 301	FWD and AFT Cargo Compartment Doors

C. Procedure

(1)Job Set-Up

(a)In Flight Compartment, open access door 211PZ to gain access to electronics rack 90VU.

NOTE : Alternatively position access platform.
Open FWD cargo compartment door 811 and secure with safety lock (Ref. 52-30-00, P. Block 301).
In FWD cargo compartment open access door 131AZ.

(b)Connect electrical ground power unit and energize aircraft electrical network (Ref. 24-41-00, P. Block 301).

(c)Make certain that electronics racks ventilation is correct.

(d)Make certain that the following circuit breakers are closed:

PANEL	SERVICE	IDENT.	LOCATION
22VU	FUEL-TRIM TANK-FWD XFR CGCC	2GU	201/J24
132VU	FUEL TRIM TANK CGCC	6GU	325/K51

(e)Test

ACTION	RESULT
1. On computer 1GU in 94VU: - Place momentarily display switch to the TEST position and release it to the neutral position.	C. BITE Display of computer 1GU in 94VU the following test sequence is running: - NO FAILURE END or a message consisting of failure number with failure message, failure number with failure message, ... etc. followed by the message END is displayd for the indication of present system status. - BITE Display goes of.
2. Check the BITE content and confirm that the following messages are not present: - FWD TRANSFER CONTROL VALVE - FWD AUXILIARY TRANSFER VALVE	

(4)Close-Up

(a)Make certain that working area is clean and clear of tools and miscellaneous items of equipment.

(b)Close access doors 211PZ and 131AZ.

(c)Remove safety lock and close FWD cargo compartment door (Ref. 52-30-00, P. Block 301).

(d)Remove access platform.

(e)If message is present, make an entry in the aircraft technical log that alternative mode is inoperativ.

2. Reactivation

A. If message is present troubleshoot the system to identify FWD control or AUX transfer valves malfunction (Ref. TSM 28-26-00).

TRANSFER (CG) CONTROL VALVE (280442) - REMOVAL/INSTALLATION

WARNING: LANDING GEAR - MAKE CERTAIN GROUND SAFETIES AND CHOCKS ARE IN POSITION.

FLIGHT CONTROLS - MAKE CERTAIN GROUND SAFETIES AND NOTICES ARE IN POSITION.

OBSERVE SAFETY PRECAUTIONS IN 28-00-00, P. BLOCK 301 and 28-10-00, P. BLOCK 301.

MAKE CERTAIN FIRE FIGHTING EQUIPMENT IS AVAILABLE AND ADEQUATE.

BEFORE POWER IS SUPPLIED TO THE AIRCRAFT MAKE CERTAIN THAT ELECTRICAL CIRCUITS UPON WHICH WORK IS IN PROGRESS ARE ISOLATED.

1. Equipment and Materials

ITEM	DESIGNATION
A.	Access Platform 2.5 m (8 ft).
B.	Container
C.	O-ring
D.	Circuit Breaker Safety Clips and Tags
E.	Warning Notices Prohibiting Movement of Fuel
F.	Blanking Caps/Plugs
G. Material No. 01-001	Fuels (Ref. 20-31-00).
Referenced Procedures	
- 20-28-11, P. Block 1	Electrical Bonding
- 28-00-00, P. Block 301	Fuel - General
- 28-10-00, P. Block 301	Storage
- 28-11-29, P. Block 401	Manhole Cover - Center Tank
- 28-25-00, P. Block 301	Refuel/Defuel System
- 28-26-00, P. Block 501	Fuel Transfer (CG) Control
- 28-26-12, P. Block 401	Transfer (CG) Control Valve - Actuator
- 32-12-11, P. Block 301	Main Gear Main Door

2. Procedure

(Ref. Fig. 401)

A. Job Set-Up

R (1)Defuel the trim tank, the center tank and the two inner tanks (Ref. 28-25-00, P. Block 301).

R (2)Open the access door 144DR.

R (3)Position the warning notices on the refuel/defuel panel 110VU, and in the flight compartment on the overhead panel 430VU.

(4)Open, safety and tag the following circuit breakers:

PANEL	SERVICE	IDENT.	LOCATION
22VU	FUEL/TRIM TANK FWD XFR AUX VALVE	2QL	201/J21
22VU	FUEL/TRIM TANK FWD XFR PUMP 1/CTL	3QN	201/J22

PANEL	SERVICE	IDENT.	LOCATION
22VU	FUEL/TRIM TANK FWD XFR PUMP 1/WARN	5QN	201/J23
22VU	FUEL/TRIM TANK FWD XFR CGCC	2GU	201/J24
132VU	FUEL/FUELLING/CTL & REFUEL VALVE	1QU	321/P56
132VU	FUEL/TRIM TANK/CGCC	6GU	325/K51
132VU	FUEL/TRIM TANK/ISOL VALVE	45QB	325/K52
132VU	FUEL/TRIM TANK/FWR XFR MAIN VALVE	1QL	325/K53
132VU	FUEL/TRIM TANK/XFR PUMP 2/WARN	6QN	325/K54
132VU	FUEL/TRIM TANK/XFR PUMP 2/CTL	4QN	325/K55
132VU	FUEL/TRIM TANK/AFT L & R XFR VALVE	4QL	325/K56

R **ON A/C 001-100,

(5)Open RH main landing gear bay door (Ref. 32-12-11, P. Block 301).
(6)Put access platform in position.
(7)Remove center tank manhole cover 148AZ (Ref. 28-11-29, P. Block 401).
(8)Remove transfer (CG) control valve actuator (Ref. 28-26-12, P. Block 401).

R **ON A/C 101-200,

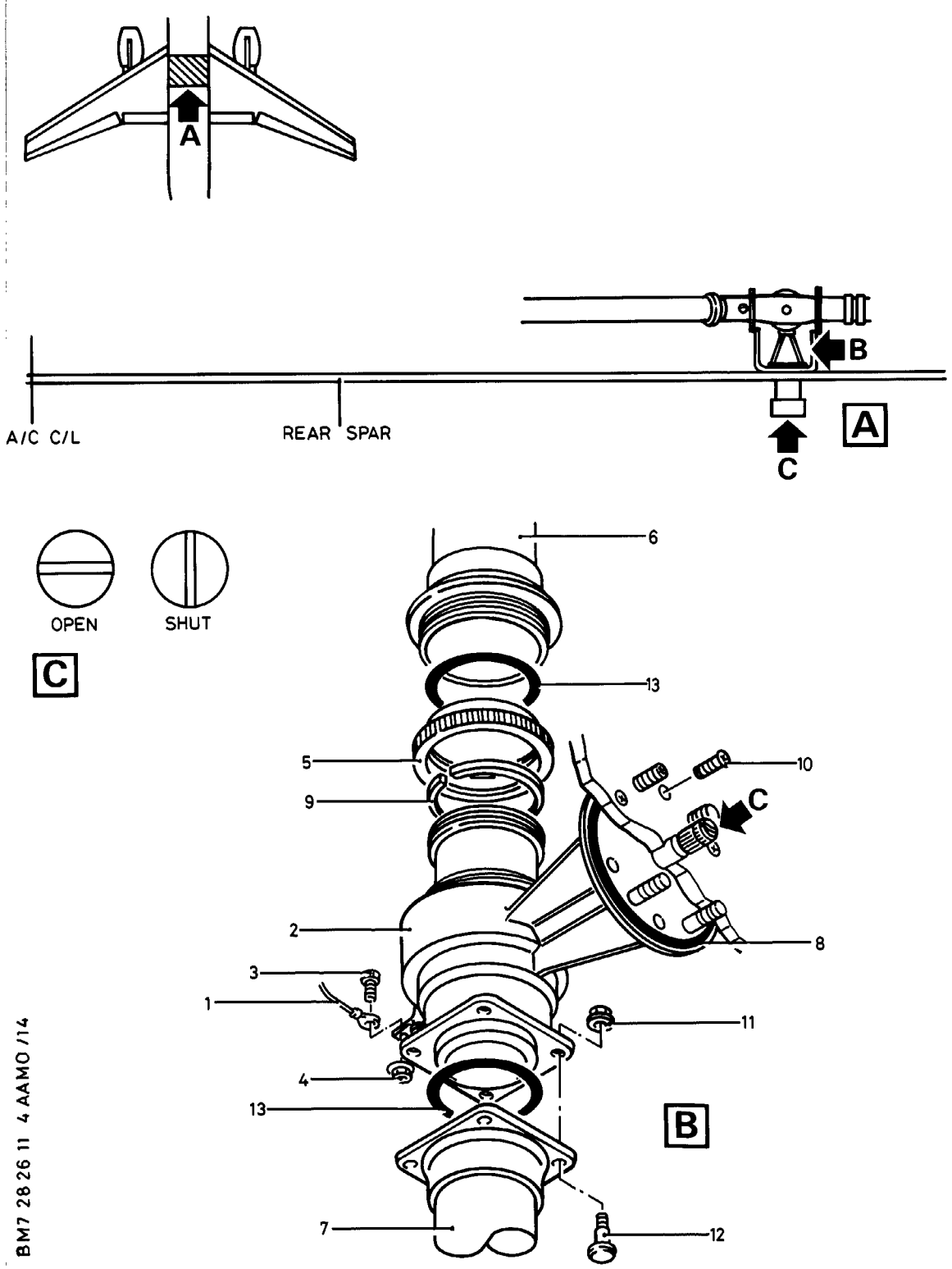
(5)Open LH main landing gear bay door (Ref. 32-12-11, P. Block 301).
(6)Put access platform in position.
(7)Remove center tank manhole cover 147AZ (Ref. 28-11-29, P. Block 401).
(8)Remove transfer (CG) control valve actuator (Ref. 28-26-12, P. Block 401).

R **ON A/C ALL

B. Removal (Ref. Fig. 401)
(1)Remove nut (4) and bolt (3) and disconnect bonding strap (1).
(2)Loosen coupling nut (5).
(3)Remove nuts (11) and bolts (12).
(4)Put container below line couplings. Disconnect and remove T pipe assembly (6) and elbow assembly (7). Recover and remove residual fuel.
(5)Discard O-rings (13) at disconnected T pipe assembly and elbow assembly.
(6)Remove screws (10) and remove valve (2). Discard O-ring (8). If a replacement valve is to be installed, extract retaining ring (9) and remove coupling nut (5).
(7)Clean and inspect component interface and line end-fittings. Seal open line ends and control valve orifices with caps.

C. Preparation of Replacement Component.
(1)Install coupling nut (5) and retaining ring (9) on replacement valve.

D. Installation
(1)Remove caps from line ends and control valve orifices.
(2)Apply fuel (Material No. 01-001) to replacement O-ring (8) and install in groove on mounting flange of valve (2).



Transfer Control Valve - Installation
Figure 401

(3)Install valve (2) and attach with screws (10).
(4)Apply fuel (Material No. 01-001) to replacement O-rings (13) and install at elbow (7) and T pipe assembly (6).
(5)Put T pipe (6) on valve (2) and attach with coupling nut (5).
(6)Attach elbow assembly flange (7) to valve (2) with bolts (12) and nuts (11).
(7)Connect bonding strap (1) with bolt (3) and nut (4) (Ref. 20-28-11, P. Block 1).
(8)Replace transfer (CG) control valve actuator (Ref. 28-26-12, P. Block 401).
(9)Make certain that working are is clean and clear of tools and miscellaneous items of equipment.

R **ON A/C 001-100,

(10)Install center tank manhole cover 148AZ (Ref. 28-11-29, P. Block 401).

R **ON A/C 101-200,

(10)Install center tank manhole cover 147AZ (Ref. 28-11-29, P. Block 401).

R **ON A/C ALL

E. Preparation for Test
(1)Remove safety clips and tags and close circuit breakers 2QL, 3QN 5QN, 2GU, 6GU, 45QB, 1QL, 6QN, 4QN, 4QL and 1QU.

F. Test
(1)Do the operational test (Ref. 28-26-00, P. Block 501).

R **ON A/C 001-100,

G. Close-Up
(1)Remove access platform.
(2)Close RH main landing gear bay door (Ref. 32-12-11, P. Block 301).
(3)Remove warning notices.

R **ON A/C 101-200,

G. Close-Up
(1)Remove access platform.
(2)Close LH main landing gear bay door (Ref. 32-12-11, P. Block 301).
(3)Remove warning notices.

R **ON A/C ALL

(4)Close the access door 144DR.

TRANSFER (CG) CONTROL VALVE (280442) - DEACTIVATION/REACTIVATION

Ref: MMEL Sect. 1-28, Item 35

CAUTION : THIS PROCEDURE TO BE USED IN ACCORDANCE WITH THE REQUIREMENTS OF THE MMEL.

WARNING : LANDING GEAR - MAKE SURE THAT THE GROUND SAFETIES AND CHOCKS ARE IN POSITION.

FLIGHT CONTROLS - MAKE SURE THAT THE GROUND SAFETIES AND NOTICES ARE IN POSITION.

YOU MUST OBEY THE SAFETY PRECAUTIONS IN 28-00-00, P. BLOCK 301.

MAKE SURE THAT THE FIRE FIGHTING EQUIPMENT IS AVAILABLE AND IS ADEQUATE.

MAKE SURE THAT YOU ISOLATE THE ELECTRICAL CIRCUITS UPON WHICH WORK IS IN PROGRESS.

1. Deactivation

A. Reason for the Job
(1)To make sure that the inoperative transfer control valve is in the shut position.

B. Equipment and Materials

ITEM	DESIGNATION
A.	Access Platform 2.5 m (8 ft)
B.	Warning Placard informing crew, transfer control valve is locked SHUT mechanically.
C. D97B00-001	Actuator - Mechanical
D.	Circuit Breaker Safety Clip and Tag
E.	Lockwire, Corrosion Resistant Steel 0.8 mm (0.032 in)
Referenced Procedures	
- 20-28-11, P. Block 1	Electrical Bonding
- 28-00-00, P. Block 301	Fuel - General
- 28-25-00, P. Block 301	Refuel/Defuel System
- 28-26-11, P. Block 401	Transfer (CG) Control Valve
- 28-26-12, P. Block 401	Transfer (CG) Control Valve Actuator
- 32-12-11, P. Block 301	Main Gear Main Door

C. Procedure

(1)Job Set-Up

R (a)Open the RH main landing gear bay door (Ref. 32-12-11, P. Block 301).

R (b)Position the access platform.

(2)Removal

R (Ref. Fig. 901) (Sheet 1/2)

R (Ref. Fig. 901) (Sheet 2/2)

CAUTION : BEFORE YOU SHUT THE TRANSFER CONTROL VALVE, MAKE SURE THAT THE TRIM TANK IS EMPTY OR THAT FUEL IN THE TRIM TANK IS LIMITED TO 1996 kg (4400 lb).

(a)If necessary, defuel or transfer the fuel from the trim tank (Ref. 28-25-00, P. Block 301).

(b)Remove the actuator (4) from the transfer-control valve (Ref. 28-26-12, P. Block 401). Stow the electrical connector (5) securely.

CAUTION : WHEN YOU DO THE OPERATIONS THAT FOLLOW, MAKE SURE THAT YOU DO NOT DAMAGE THE SPLINES ON THE SHAFT OF THE VALVE.

(c)Install the mechanical actuator PN D97B00-001 onto the valve with the nuts (3).

(d)Manually operate the control-lever on the mechanical actuator to turn

R the shaft of the valve to the SHUT position (Ref. Fig. 901) (Sheet 2).

NOTE : If the valve is jammed in the OPEN position or will not shut fully, the valve must be replaced (Ref. 28-26-11, P. Block 401).

(e)Safety the control-lever on the mechanical actuator with lockwire.

(f)Attach the bonding strap to the bonding-tag on the mechanical actuator with the bolt (2) and the nut (1) (Ref. 20-28-11, P. Block 1).

(3)Close-Up

(a)Make sure that the work area is clean and clear of all tools and other items of equipment.

(b)Remove the access platform.

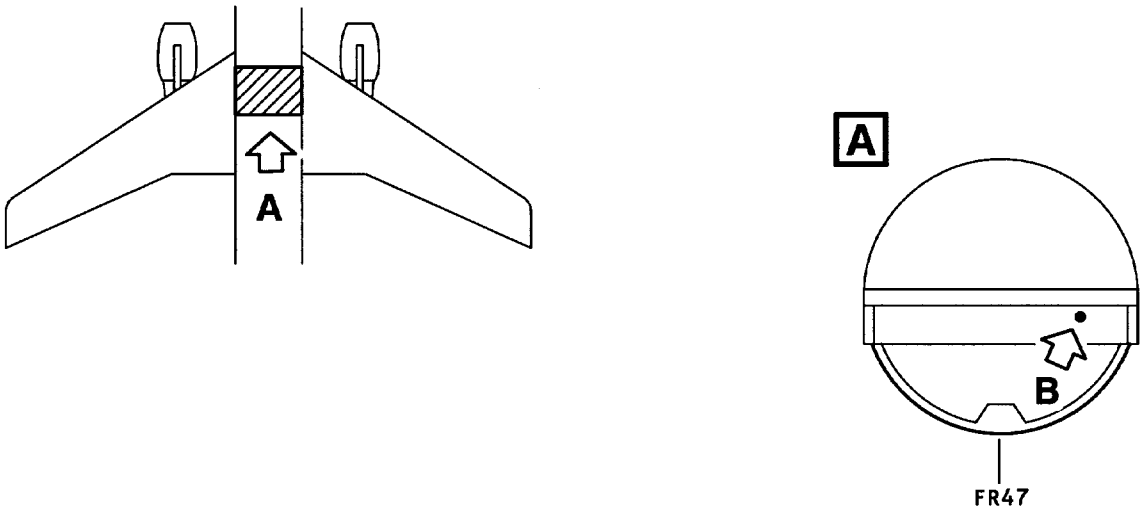
(c)Close the RH main landing gear bay door (Ref. 32-12-11, P. Block 301).

(d)Put a temporary warning placard in the flight compartment to tell the flight crew that the transfer control valve is locked in the shut position.

(e)Make sure this circuit breaker is open, safetied and tagged:

PANEL	SERVICE	IDENT.	LOCATION
132VU	FUEL/TRIM TANK FWD XFR/MAIN VALVE	1QL	325/K53

(f)Make an entry in the aircraft technical log.



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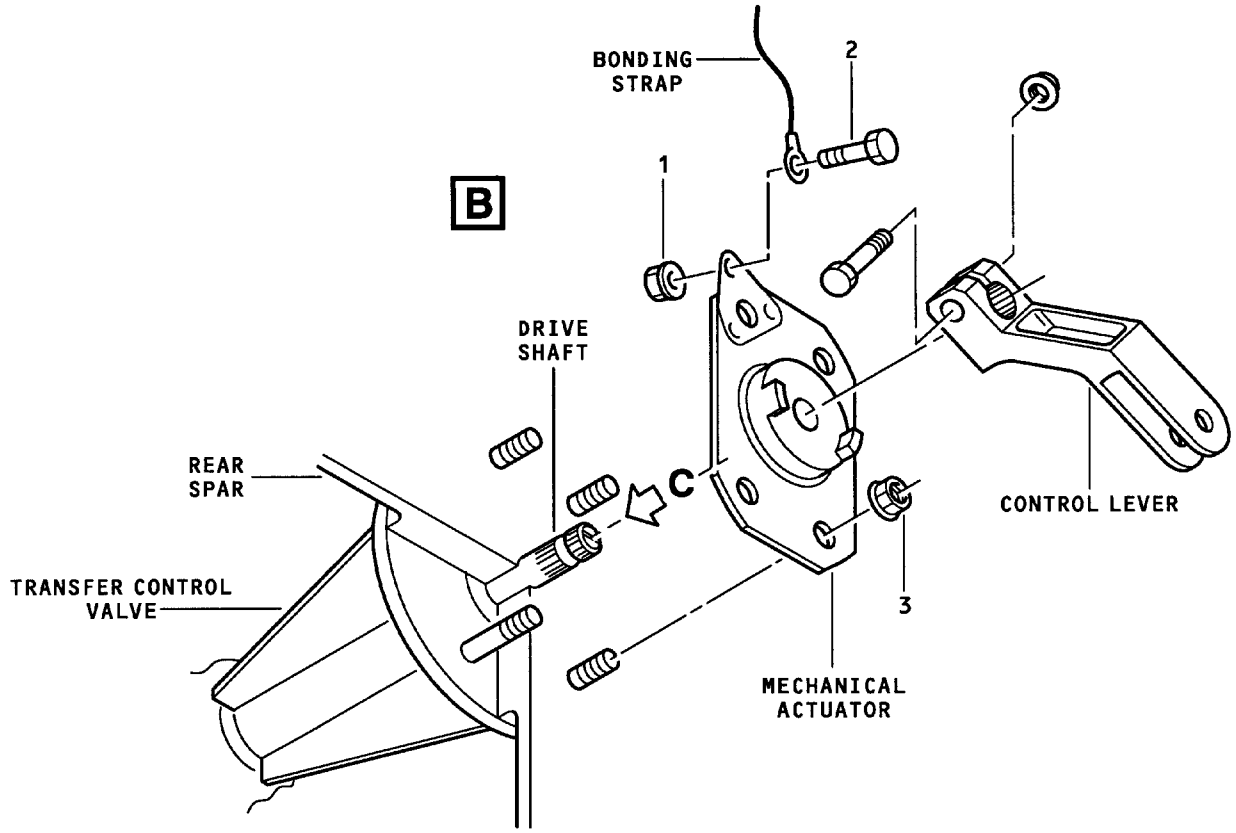
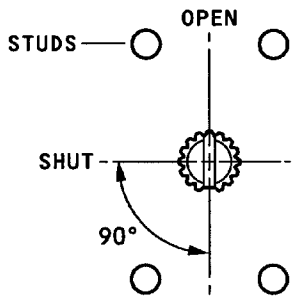
Transfer Control Valve - Deactivation
(Sheet 1/2)
Figure 901

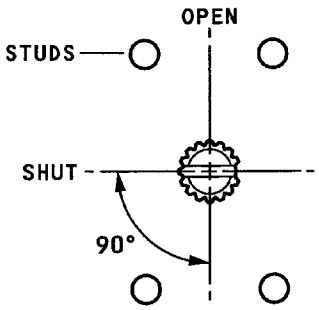
R



C TRANSFER CONTROL VALVE OPEN POSITION



C TRANSFER CONTROL VALVE SHUT POSITION



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Transfer Control Valve - Deactivation
(Sheet 2/2)
Figure 901

R

2. Reactivation

A. Make the valve fully operational as follows:
(1)Trouble shoot to identify cause of transfer control valve malfunction and replace defective component as follows:
(a)Valve fault - replace valve (Ref. 28-26-11, P. Block 401).
(b)Actuator fault - replace actuator (Ref. 28-26-12, P. Block 401).
(2)Remove warning notice from flight compartment.
(3)Make an appropriate entry in the aircraft technical log.

TRANSFER (CG) CONTROL VALVE ACTUATOR - REMOVAL/INSTALLATION

WARNING: LANDING GEAR - MAKE CERTAIN GROUND SAFETIES AND CHOCKS ARE IN POSITION.

FLIGHT CONTROLS - MAKE CERTAIN GROUND SAFETIES AND NOTICES ARE IN POSITION.

OBSERVE SAFETY PRECAUTIONS IN 28-00-00, P. BLOCK 301.

MAKE CERTAIN FIRE FIGHTING EQUIPMENT IS AVAILABLE AND ADEQUATE.

BEFORE POWER IS SUPPLIED TO THE AIRCRAFT MAKE CERTAIN THAT ELECTRICAL CIRCUITS UPON WHICH WORK IS IN PROGRESS ARE ISOLATED.

1. Equipment and Materials

ITEM	DESIGNATION
A.	Access Platform 2.5 m (8 ft.)
B.	Circuit Breaker Safety Clip and Tag
C.	Warning Notices Prohibiting Movement of Fuel
D.	Protective Caps
Referenced Procedures	
- 20-28-11, P. Block 1	Electrical Bonding
- 28-00-00, P. Block 301	Fuel - General
- 28-26-00, P. Block 501	Fuel Transfer (CG) Control System
- 32-12-11, P. Block 301	Main Gear Main Door

2. Procedure

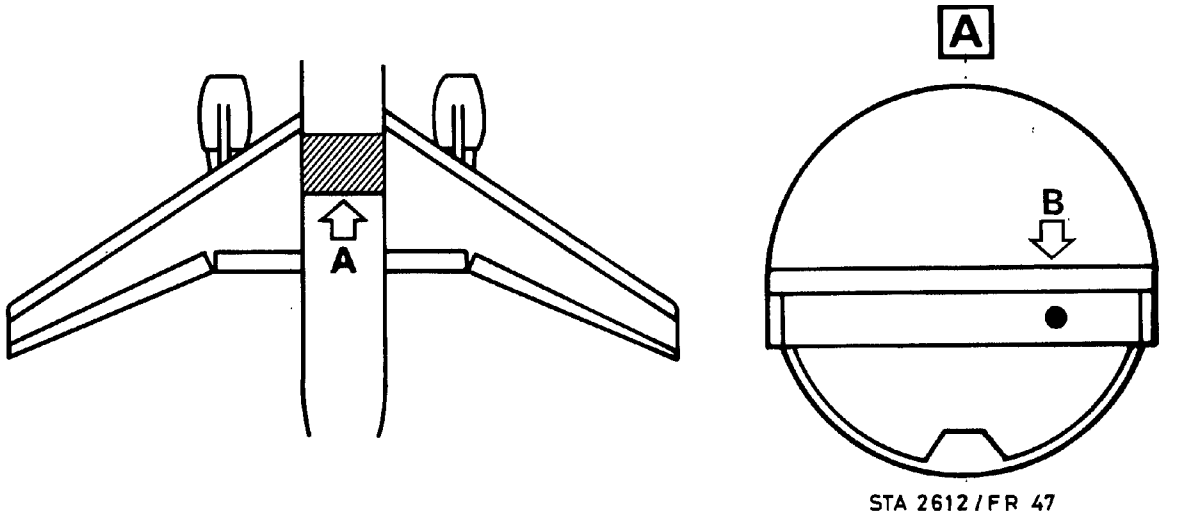
A. Job Set-Up
(1) Display warning notice on overhead panel 430VU.
(2) Open, safety and tag the following circuit breaker:

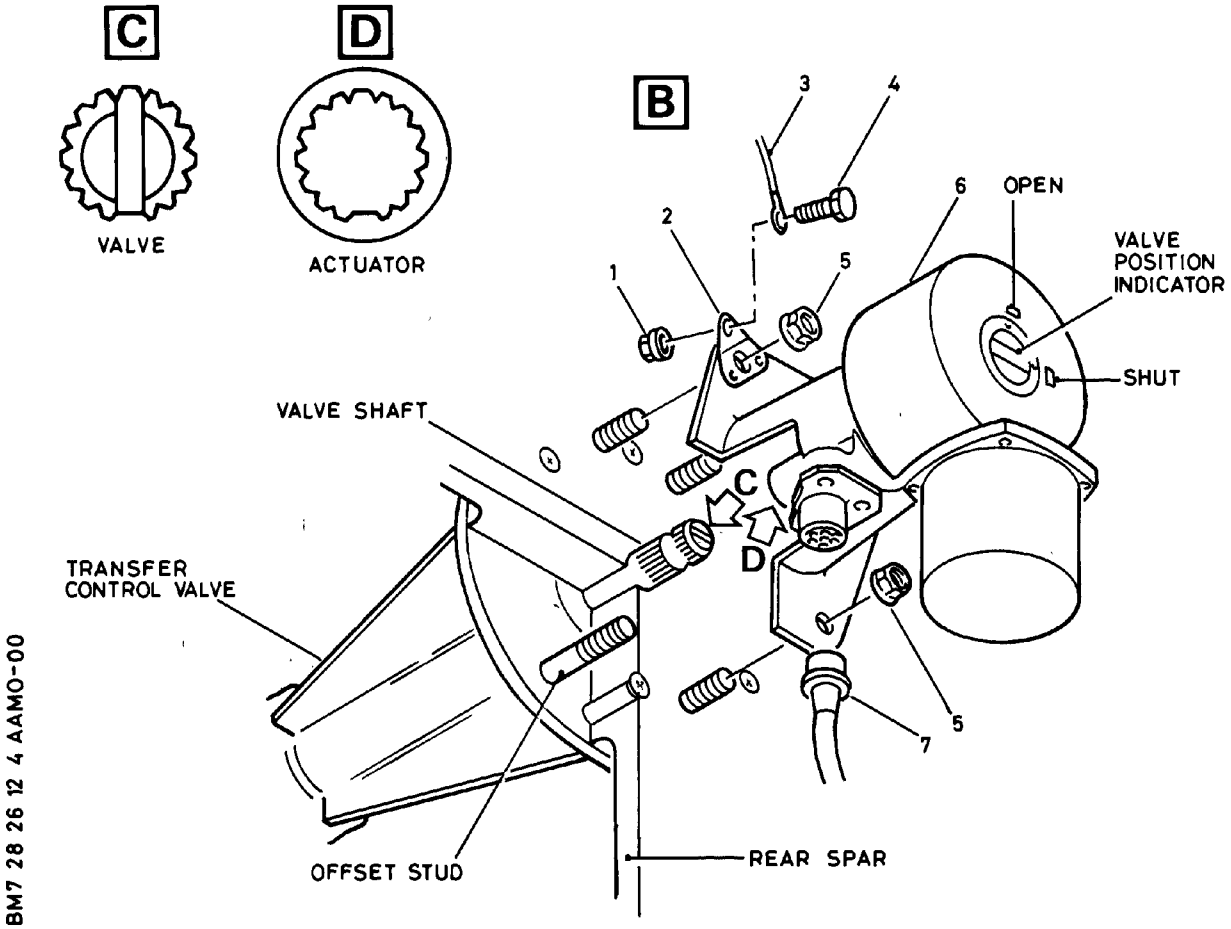
PANEL	SERVICE	IDENT.	LOCATION
132VU	FUEL - TRIM TANK - FWD XFR MAIN VALVE	1QL	325/K53

(3) Open RH main landing gear bay door (Ref. 32-12-11, P. Block 301).
(4) Position access platform.

B. Removal
(Ref. Fig. 401)
(1) Disconnect electrical connector (7) from valve actuator (6). Cap electrical connectors.
(2) Remove nut (1) and bolt (4) and disconnect bonding strap (3) from tag (2).
(3) Remove nuts (5) and remove actuator (6) from rear spar.

C. Preparation for Installation





Transfer Control Valve Actuator - Installation
Figure 401

(1)Make certain that interface of rear spar and actuator is clean and in correct condition.

D. Installation (Ref. Fig. 401)

CAUTION : DURING THE FOLLOWING OPERATIONS, TAKE CARE NOT TO DAMAGE SHAFT SERRATIONS.

(1)Turn valve shaft and position end groove horizontally (valve shut).
(2)Make certain that valve position indicator on actuator (6) indicates shut.
(3)Install actuator (6) onto attachment studs and engage valve shaft in actuator housing.
(4)Install and tighten nuts (5).
(5)Connect bonding strap (3) to tag (2) using bolt (4) and nut (1). (Ref. 20-28-11, P. Block 1).
(6)Remove protective caps and connect electrical connector (7) to actuator (6).

E. Preparation For Test
(1)On panel 132VU, remove safety clip and tag and close circuit breaker 1QL (325/K53).
(2)Remove warning notice.

F. Test
(1)Do the functional test (Ref. 28-26-00, P. Block 501).

G. Close-Up
(1)Make certain working area is clean and clear of tools and miscellaneous items of equipment.
(2)Remove access platform.
(3)Close RH main landing gear bay door (Ref. 32-12-11, P. Block 301).

AUXILIARY TRANSFER (CG) VALVE - REMOVAL/INSTALLATION

WARNING: LANDING GEAR -MAKE CERTAIN GROUND SAFETIES AND CHOCKS ARE IN POSITION.

FLIGHT CONTROLS - MAKE CERTAIN GROUND SAFETIES AND NOTICES ARE IN POSITION.

OBSERVE SAFETY PRECAUTIONS IN 28-00-00, P.BLOCK 301 and 28-10-00, P.BLOCK 301.

MAKE CERTAIN FIRE FIGHTING EQUIPMENT IS AVAILABLE AND ADEQUATE.

BEFORE POWER IS SUPPLIED TO THE AIRCRAFT MAKE CERTAIN THAT ELECTRICAL CIRCUITS UPON WHICH WORK IS IN PROGRESS ARE ISOLATED.

1. Equipment and Materials

ITEM	DESIGNATION
A.	Access Platform 2.5 m (8 ft)
B.	Container
C.	O-ring
D.	Circuit Breaker Safety Clips and Tags
E.	Warning Notices Prohibiting Movement of Fuel
F. Material No. 01-001	Fuels (Ref. 20-31-00)
G.	Blanking Caps/Plugs
Referenced Procedures	
- 20-28-11, P. Block 1	Electrical Bonding
- 28-00-00, P. Block 301	Fuel - General
- 28-10-00, P. Block 301	Storage
- 28-11-29, P. Block 401	Manhole Cover - Center Tank
- 28-25-00, P. Block 301	Refuel/Defuel System
- 28-26-14, P. Block 401	Auxiliary Transfer (CG) Valve Actuator
- 28-26-00, P. Block 501	Fuel Transfer (CG) Control
- 32-12-11, P. Block 301	Main Landing Gear Door

2. Procedure

(Ref. Fig. 401)

A. Job Set-Up

R (1) Defuel the trim tank, the center tank and the two inner tanks (Ref.
R 28-25-00, P. Block 301).

(2) Open access door 144DR.

(3) Position warning notices on refuel/defuel panel 110VU, and in the flight compartment on overhead panel 430VU.

(4) Open, safety and tag the following circuit breakers:

PANEL	SERVICE	IDENT.	LOCATION
22VU	FUEL/TRIM TANK/FWD XFR AUX VALVE	2QL	201/J21
22VU	FUEL/TRIM TANK/FWD XFR PUMP 1/CTL	3QN	201/J22
22VU	FUEL/TRIM TANK/FWD XFR PUMP 1/WARN	5QN	201/J23

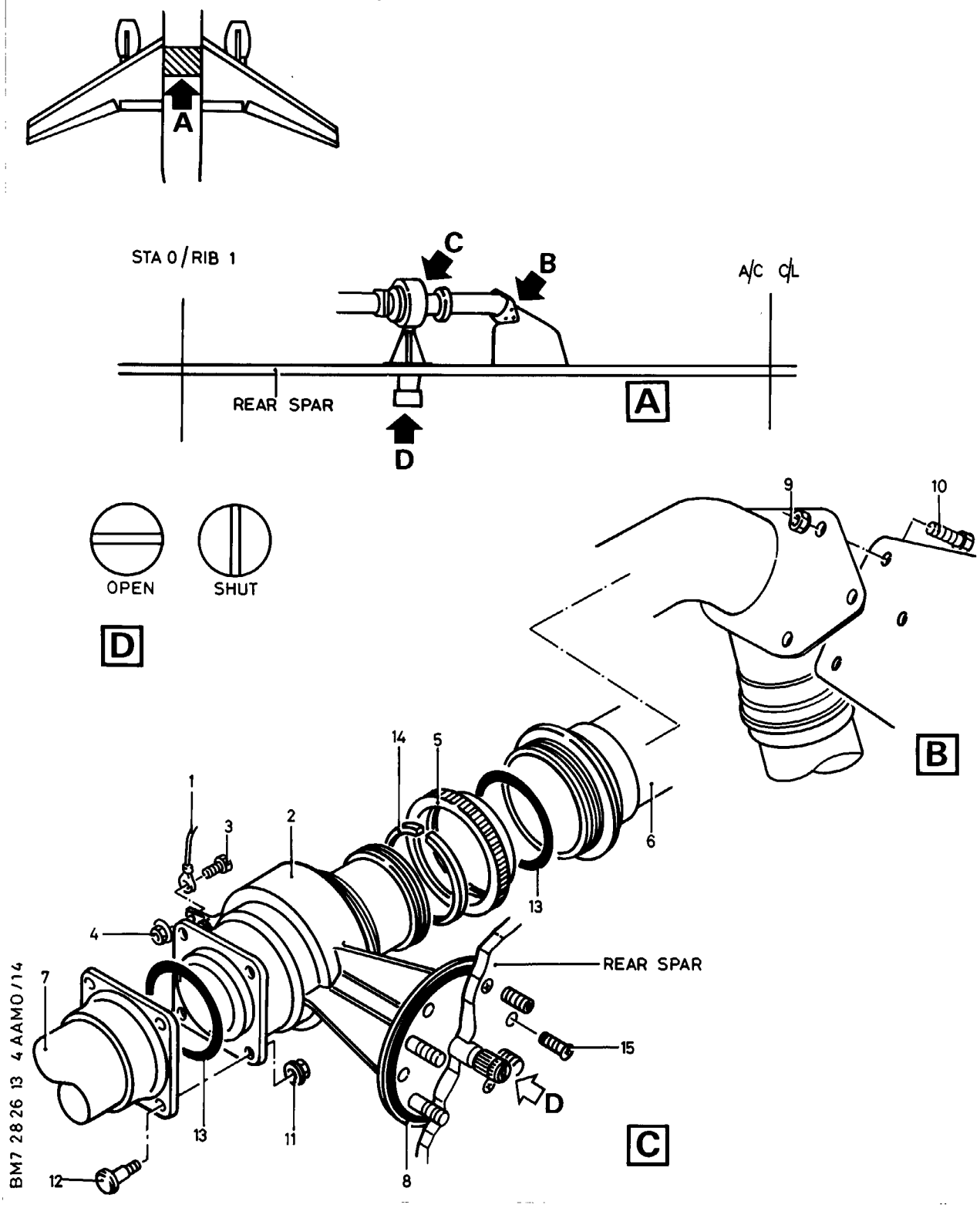
PANEL	SERVICE	IDENT.	LOCATION
22VU	FUEL/TRIM TANK/FWD XFR CGCC	2GU	201/J24
132VU	FUEL/TRIM TANK/CGCC	6GU	325/K51
132VU	FUEL/TRIM TANK/ISOL VALVE	45QB	325/K52
132VU	FUEL/TRIM TANK/FWR XFR MAIN VALVE	1QL	325/K53
132VU	FUEL/TRIM TANK/XFR PUMP 2/WARN	6QN	325/K54
132VU	FUEL/TRIM TANK/XFR PUMP 2/CTL	4QN	325/K55
132VU	FUEL/TRIM TANK/AFT L & R XFR VALVE	4QL	325/K56
132VU	FUEL/FUELLING/CTL & REFUEL VALVE	1QU	321/P56

(5)Open LH main landing gear bay door (Ref. 32-12-11, P. Block 301).
(6)Put access platform in position.
(7)Remove center tank manhole cover 147AZ (Ref. 28-11-29, P. Block 401).
(8)Remove auxiliary transfer (CG) valve actuator (Ref. 28-26-14, P. Block 401).

B. Removal (Ref. Fig. 401)
(1)Remove nut (4) and bolt (3) and disconnect bonding strap (1).
(2)Loosen coupling nut (5).
(3)Remove nuts (11) and bolts (12).
(4)Put container below line couplings. Disconnect and remove elbow (6) and coupling flange (7). Recover and remove residual fuel.
(5)Remove nuts (9) and bolts (10).
(6)Disengage elbow (6) from support bracket and disconnect from valve (2). Temporarily support elbow (6) and flange (7).
(7)Discard O-rings (13) at disconnected elbow and flange.
(8)Remove screws (15) and withdraw valve (2). Discard O-ring (8). If a replacement valve is to be fitted, extract retaining ring (14) and remove coupling nut (5).
(9)Clean and inspect component interface and line end fittings. Seal open line ends and auxiliary transfer valve orifices with caps.

C. Preparation of Replacement Component
(1)Install coupling nut (5) and retaining ring (14) on replacement valve.

D. Installation
(1)Remove caps from line ends and transfer valve orifices.
(2)Apply Fuel (Material No. 01-001) to replacement O-ring (8) and install in groove on mounting flange of valve (2).
(3)Install valve (2) and attach with screws (15).
(4)Apply Fuel (Material No. 01-001) to replacement O-rings (13) and install at coupling flange (7) and elbow (6).
(5)Remove temporary support and connect elbow (6) to valve (2). Tighten coupling nut (5).
(6)Re-engage elbow (6) to support bracket and install bolts (10) and nuts (9).
(7)Remove temporary support from coupling flange (7) and connect to valve (2). Attach coupling flange (7) to valve (2) with bolts (12) and



Auxiliary Transfer Valve - Installation
Figure 401

nuts (11).
(8)Connect bonding strap (1) with bolt (3) and nut (4) (Ref. 20-28-11, P. Block 1).
(9)Replace auxiliary transfer (CG) valve actuator (Ref. 28-26-14, P. Block 401).
(10)Make certain that working area is clean and clear of tools and miscellaneous items of equipment.
(11)Install manhole cover 147AZ (Ref. 28-11-29, P. Block 401).

E. Preparation For Test
(1)Remove safety clips and tags and close circuit breakers 2QL, 3QN, 5QN, 2GU, 6GU, 45QB, 1QL, 6QN, 4QN, 4QL and 1QU.

F. Test
R (1)Do an operational test (Ref. 28-26-00, P. Block 501).

G. Close-Up
(1)Remove access platform.
(2)Close LH main landing gear bay door (Ref. 32-12-11, P. Block 301).
(3)Remove warning notices.
(4)Close the access door 144DR.

AUXILIARY TRANSFER (CG) VALVE (280441) - DEACTIVATION/REACTIVATION

Ref: MMEL Sect. 1-28, Item 35

CAUTION : THIS PROCEDURE TO BE USED IN ACCORDANCE WITH THE REQUIREMENTS OF THE MMEL.

WARNING : LANDING GEAR - MAKE SURE THAT THE GROUND SAFETIES AND CHOCKS ARE IN POSITION.

FLIGHT CONTROLS - MAKE SURE THAT THE GROUND SAFETIES AND NOTICES ARE IN POSITION.

YOU MUST OBEY THE SAFETY PRECAUTIONS IN 28-00-00, P. BLOCK 301.

R MAKE SURE THAT THE FIRE FIGHTING EQUIPMENT IS AVAILABLE AND IS
R ADEQUATE.

MAKE SURE THAT YOU ISOLATE THE ELECTRICAL CIRCUITS UPON WHICH WORK IS IN PROGRESS.

1. Deactivation

A. Reason for the Job

(1)To make sure that the inoperative auxiliary transfer valve is in the shut position.

B. Equipment and Materials

ITEM	DESIGNATION
A.	Access Platform 2.5 m (8 ft).
B.	Warning Placard informing crew, auxiliary transfer valve is locked SHUT mechanically
R C. D97B00-001	Actuator - Mechanical
D.	Circuit Breaker Safety Clip and Tag.
E.	Lockwire, Corrosion Resistant Steel 0.8 mm (0.032 in)
Referenced Procedures	
- 20-28-11, P. Block 1	Electrical Bonding
- 28-00-00, P. Block 301	Fuel - General
- 28-25-00, P. Block 301	Refuel/Defuel System
- 28-26-13, P. Block 401	Auxiliary Transfer (CG) Valve
- 28-26-14, P. Block 401	Auxiliary Transfer (CG) Valve Actuator
- 32-12-11, P. Block 301	Main Gear Main Door

C. Procedure

(1)Job Set-Up

(a)Open LH main landing gear bay door (Ref. 32-12-11, P. Block 301).

(b)Position access platform.

(2)Removal
(Ref. Fig. 901)

CAUTION : BEFORE YOU SHUT THE AUXILIARY TRANSFER VALVE, MAKE SURE THAT THE TRIM TANK IS EMPTY OR THAT FUEL IN THE TRIM TANK IS LIMITED TO 1996 kg (4400 lb)

(a)If necessary, defuel or transfer the fuel from the trim tank (Ref. 28-25-00, P. Block 301).

R (b)Remove the actuator (4) from the auxiliary transfer-valve
R (Ref. 28-26-14, P. Block 401). Stow the electrical connector (5)
R securely.

R CAUTION : WHEN YOU DO THE OPERATIONS THAT FOLLOW, MAKE SURE THAT YOU DO
R NOT DAMAGE THE SPLINES ON THE SHAFT OF THE VALVE.

R (c)Install the mechanical actuator PN D97B00-001 onto the valve with the nuts (3).

R (d)Manually operate the control-lever on the mechanical actuator to turn
R the shaft of the valve to the SHUT position (Ref. Fig. 901).

NOTE : If the valve is jammed in the OPEN position or will not shut fully, the valve must be replaced (Ref. 28-26-13, P. Block 401).

R (e)Safety the control-lever on the mechanical actuator with lockwire.

R (f)Attach the bonding strap to the bonding-tag on the mechanical actuator
R with the bolt (2) and the nut (1) (Ref. 20-28-11, P. Block 1).

(3)Close-Up

(a)Make sure the work area is clean and clear of all tools and all other items of equipment.

(b)Remove the access platform.

(c)Close the LH main landing gear bay door (Ref. 32-12-11, P. Block 301).

(d)Put a temporary warning placard in the flight compartment to tell the flight crew that the auxiliary transfer valve is locked in the shut position.

(e)Make sure this circuit breaker is open, safetied and tagged:

PANEL	SERVICE	IDENT.	LOCATION
22VU	FUEL/TRIM TK FWD XFR/AUX VALVE	2QL	201/J21

(f)Make an entry in the aircraft technical log.

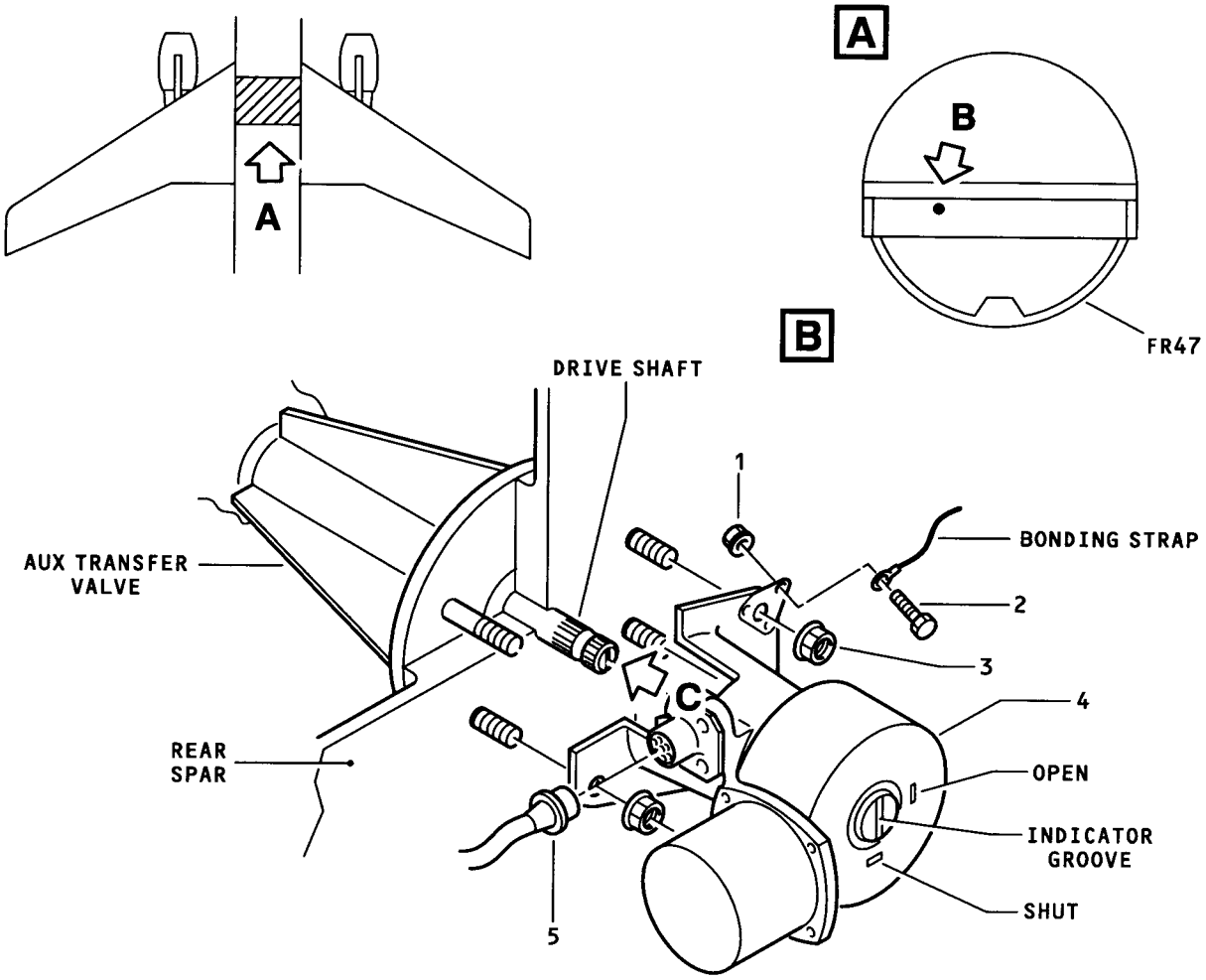
2. Reactivation

A. Make the valve fully operational as follows:

(1)Trouble shoot to identify cause of auxiliary transfer valve malfunction and replace defective component as follows:

(a)Valve fault - replace valve (Ref. 28-26-13, P. Block 401).

(b)Actuator fault - replace actuator (Ref. 28-16-14, P. Block 401).



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R Auxiliary Transfer Valve - Deactivation
Figure 901

(2)Remove warning notice from flight compartment.
(3)Make an appropriate entry in the aircraft technical log.

AUXILIARY TRANSFER (CG) VALVE ACTUATOR - REMOVAL/INSTALLATION

WARNING: LANDING GEAR - MAKE CERTAIN GROUND SAFETIES AND CHOCKS ARE IN POSITION

FLIGHT CONTROLS - MAKE CERTAIN GROUND SAFETIES AND NOTICES ARE IN POSITION.

OBSERVE SAFETY PRECAUTIONS IN 28-00-00, P. BLOCK 301.

MAKE CERTAIN FIRE FIGHTING EQUIPMENT IS AVAILABLE AND ADEQUATE.

BEFORE POWER IS SUPPLIED TO THE AIRCRAFT MAKE CERTAIN THAT ELECTRICAL CIRCUITS UPON WHICH WORK IS IN PROGRESS ARE ISOLATED.

1. Equipment and Materials

ITEM	DESIGNATION
A.	Access Platform 2.5 m (8 ft).
B.	Circuit Breaker Safety Clips and Tags.
C.	Warning Notice Prohibiting Movement of Fuel
D.	Protective Caps
Referenced Procedures:	
- 20-28-11, P. Block 1	Electrical Bonding
- 28-00-00, P. Block 301	Fuel - General
- 28-26-00, P. Block 501	Fuel Transfer (CG) Control
- 32-12-11, P. Block 301	Main Gear Main Door

2. Procedure

A. Job Set-Up

(1)Put warning notice on overhead panel 430VU.

(2)Open, safety and tag the following circuit breaker:

PANEL	SERVICE	IDENT.	LOCATION
22VU	FUEL/TRIM TK/FWR XFR - AUX VALVE	2QL	201/J21

(3)Open LH main landing gear bay door (Ref. 32-12-11, P. Block 301).

(4)Put access platform in position.

B. Removal

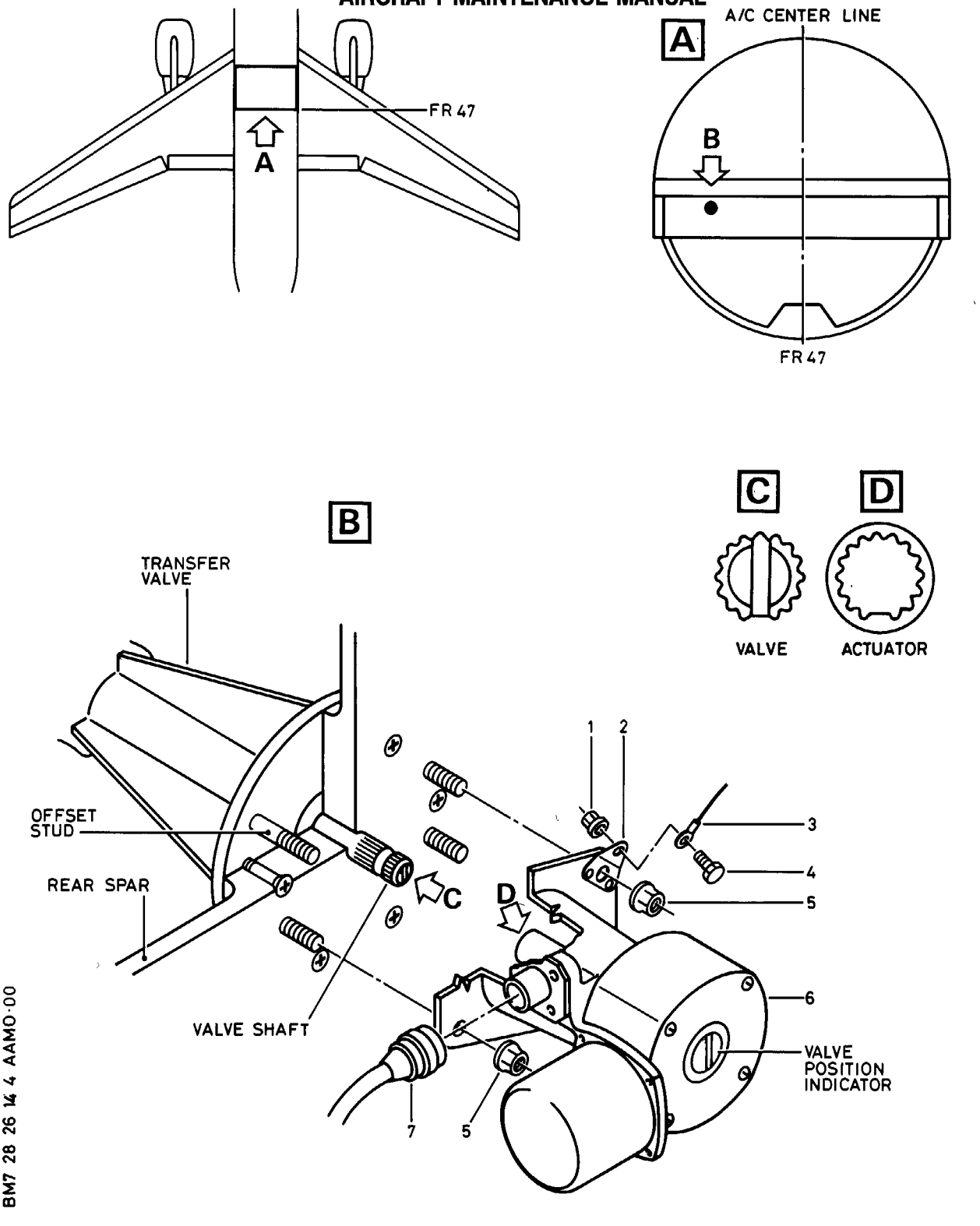
(Ref. Fig. 401)

(1)Disconnect electrical connector (7) from valve actuator (6). Install caps on the electrical connectors.

(2)Remove nut (1) and bolt (4) and disconnect bonding strap (3) from tag (2).

(3)Remove nuts (5) and remove actuator (6) from rear spar.

C. Preparation for Installation



Auxiliary Transfer Valve Actuator - Installation
Figure 401

R (1)Make sure that interfaces of rear spar and actuator are clean and in the
R correct condition.

D. Installation (Ref. Fig. 401)

CAUTION : DURING THE FOLLOWING OPERATIONS, TAKE CARE NOT TO DAMAGE SHAFT SPLINES.

(1)Close the valve by turning the valve shaft until the end groove is vertical.
R (2)Make sure that the valve position indicator on actuator (6) indicates SHUT.
(3)Install actuator (6) onto its attachment studs and engage the valve shaft in the actuator housing.
(4)Install and tighten nuts (5).
(5)Connect bonding strap (3) to tag (2) using bolt (4) and nut (1). (Ref. 20-28-11, P. Block 1).
(6)Remove protective caps and connect electrical connector (7) to actuator (6).

E. Preparation for Test
R (1)Remove the safety clip and tag and close this circuit breaker:

PANEL	SERVICE	IDENT.	LOCATION
22VU	FUEL/TRIM TK/FWD XFR - AUX VALVE	2QL	201/J21

(2)Remove warning notice.

F. Test
R (1)Do the operational test - manual forward transfer control
R (Ref. 28-26-00, P. Block 501).

G. Close-Up
R (1)Make sure that the work area is clean and clear of tools and all other
R items of equipment.
(2)Remove access platform.
(3)Close LH main landing gear bay door (Ref. 32-12-11, P. Block 301).

TRIM TANK FUEL TRANSFER LINE
REMOVAL/INSTALLATION

WARNING : LANDING GEAR - MAKE CERTAIN THAT GROUND SAFETIES AND CHOCKS ARE IN POSITION.
FLIGHT CONTROLS - MAKE CERTAIN THAT GROUND SAFETIES AND NOTICES ARE IN POSITION.
OBSERVE SAFETY PRECAUTIONS IN 28-00-00, P. BLOCK 301.
BEFORE POWER IS SUPPLIED TO THE AIRCRAFT, MAKE CERTAIN THAT ELECTRICAL CIRCUITS UPON WHICH WORK IS IN PROGRESS ARE ISOLATED.
BEFORE PRESSURIZING FUEL SYSTEMS, MAKE CERTAIN THAT FUEL SYSTEM HAS BEEN ISOLATED.
MAKE CERTAIN THAT FIRE FIGHTING EQUIPMENT IS AVAILABLE AND ADEQUATE.

1. Equipment and Materials

ITEM	DESIGNATION
A.	Access Platform, up to 5.5 m (18 ft.)
B.	Blanking Caps
C.	Circuit Breaker Safety Clips
D.	Container 50 l (13 US gal.) Capacity
E.	Torque Wrench, up to 1.0 m.daN (88 lbf.in.)
F.	O-Rings
G.	D-Rings
H.	Preformed Packing
J.	Corrosion-Resistant Steel Lockwire, 0.6 mm (0.025 in.) dia.
K. Material No. 04-012	Common Greases (Ref. 20-31-00)

Referenced Procedures

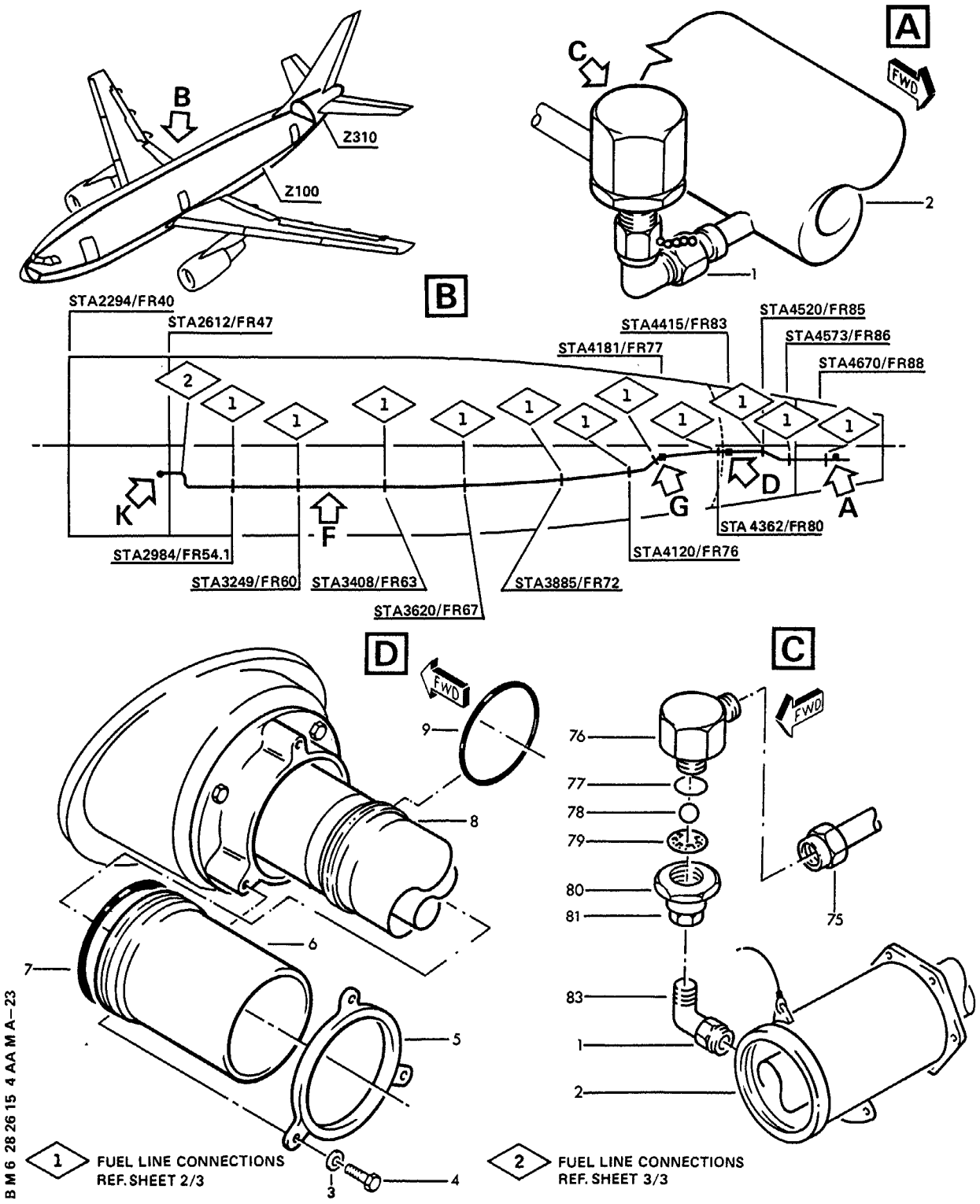
- 12-11-28, P. Block 301	Replenishing of Fuel Tank
- 20-28-11, P. Block 1	Electrical Bonding
- 28-00-00, P. Block 301	General
- 28-13-00, P. Block 501	External Ventilating System
- 28-25-00, P. Block 301	Refuel/Defuel System
- 28-26-15, P. Block 801	Trim Tank and ACT Fuel Transfer Lines
- 28-26-16, P. Block 401	Shrouded Flexible Hose (2 in.)
- 52-30-00, P. Block 301	FWD and AFT Cargo Compartment Doors
- 53-10-25, P. Block 401	Passenger Compartment Floor Panels

2. Procedure

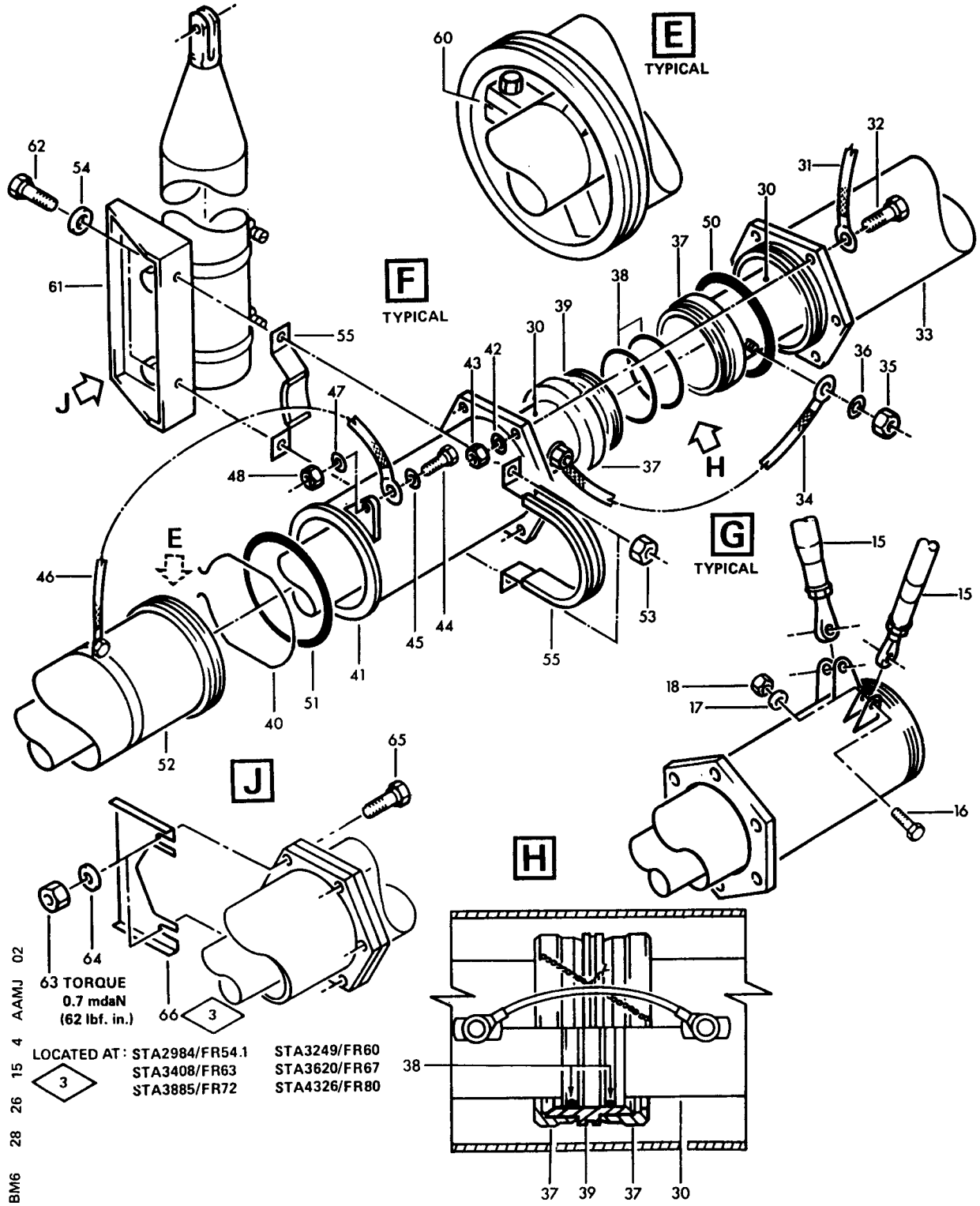
A. Job Set-Up
(1)Position access platform.
(2)Remove floor panel 241GF (Ref. 53-10-25, P. Block 401).
(3)Open AFT cargo compartment door 812, and secure with safety lock (Ref. 52-30-00, P. Block 301).
(4)Open BULK cargo compartment door 813.
(5)Open access doors 312AR and 313AL.
(6)Remove cargo compartment sidewall panels.
(7)Position container.
(8)Defuel trim tank and fuel lines (Ref. 28-25-00, P. Block 301).
(9)Open, safety and tag the following circuit breakers:

PANEL	SERVICE	IDENT.	LOCATION
22VU	FUEL-TRIM TANK-FWD XFR AUX VALVE	2QL	J21
22VU	FUEL-TRIM TANK-FWD XFR PUMP 1 CTL	3QN	J22
22VU	FUEL-TRIM TANK-FWD XFR PUMP 1 WARN	5QN	J23
132VU	FUEL-TRIM TK-FWD XFR MAIN VALVE	1QL	K53
132VU	FUEL-TRIM TK-XFR PUMP 2 WARN	6QN	K54
132VU	FUEL-TRIM TK-XFR PUMP 2 CTL	4QN	K55
132VU	FUEL-TRIM TANK-AFT L&R XFR VALVE	4QL	K56

B. Removal
(Ref. Fig. 401)
(1)Remove shrouded flexible hose, if required (Ref. 28-26-16, P. Block 401).
(2)Cut and remove lockwire and disconnect nut (1) from shrouded fuel line (2).
(3)Install blanking caps to ends of all fuel lines.
(4)Removal of Bulkhead Seals - Typical.
(a)Remove bolts (4), washers (3) and ring (5).
(b)Remove sleeve (6).
(c)Remove and discard O-rings (7, 9).
(5)Remove nuts (18), washers (17), bolts (16) and disconnect tie-rods (15).
(6)Removal of Fuel Lines - Typical.
(a)Remove nuts (53), washers (54), bolts (62) and clamps (55).
(b)Remove nuts (43, 63), washers (42, 64), bolts (32, 65) and bonding strap (31).
R (c)Cut lockwire and remove safety springs (40).
(d)Remove nuts (48), washer (47), bolt (44), washer (45) and bonding strap (46).
(e)Slide coupling sleeves (41) back.
(f)Remove nut (35), washer (36) and disconnect bonding strap (34).
R (g)Cut and remove lockwire from nuts (37).
(h)Release nuts (37) and remove shrouded fuel line (52) with fuel line (30).
R (j)Remove union (39).
R (k)Remove and discard D-rings (38) and O-rings (50, 51).
R (l)Install blanking caps to ends of all fuel lines.

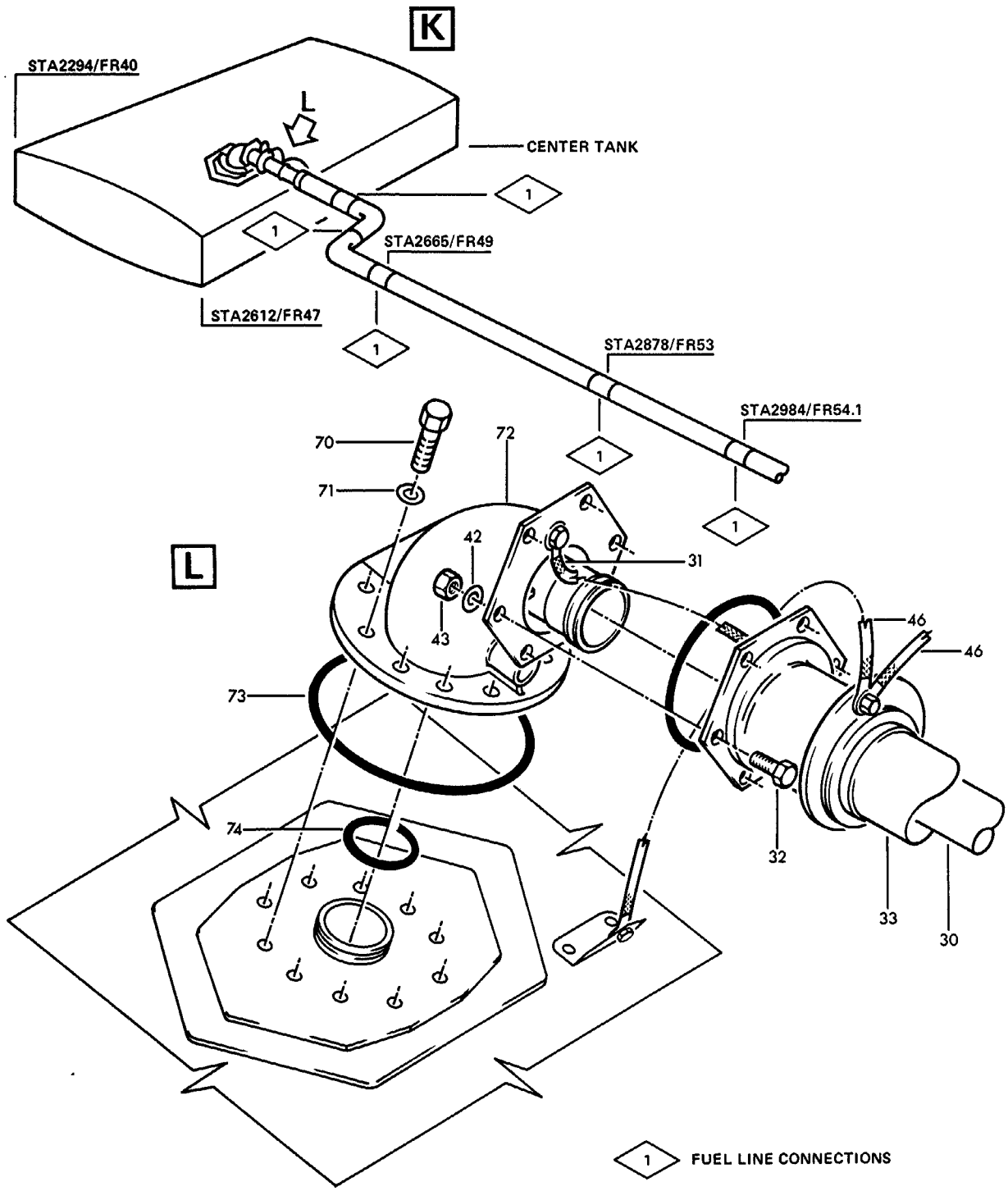


Trim Tank Fuel Transfer Line (Sheet 1/3)
Figure 401



Trim Tank Fuel Transfer Line (Sheet 2/3)
Figure 401

R



Trim Tank Fuel Transfer Line (Sheet 3/3)
Figure 401

(7)Remove elbow pipe (72) from wing center tank.
(a)Remove shrouded fuel line (52) and fuel line (30) (Ref. Para. 2. B. (6)).
(b)Remove bolts (70), washers (71) and elbow pipe (72).
(c)Remove and discard O-rings (73, 74).
(8)Removal of Float Check Valve.
NOTE : Procedure only applicable for replacement of float check valve.
(a)Cut and remove lockwire.
(b)Disconnect tube coupling nut (75).
(c)Install blanking caps to ends of all drain piping.
(d)Remove connector (76).
1 Remove and discard preformed packing (77).
(e)Remove float (78) and perforated plate (79).
(f)Disconnect nut (81) from elbow (83) and remove bush (80).
(g)Disconnect nut (1) from shrouded fuel line (2) and remove elbow (83).

C. Preparation for Installation.
(1)Check fuel lines and bonding straps for damage and renew if necessary.
R (2)Check that D-ring and O-ring sliding surfaces and grooves are free of
R drips and pollution from foreign objects (rough surface).
R Repair if necessary (Ref. 28-26-15 P. Block 801).
R (3)Make certain that spacers (60) are secure.

D. Installation
(Ref. Fig. 401)
(1)Install elbow pipe (72) to wing center tank.
(a)Apply grease (Mat. No. 04-012) to new O-rings (73, 74) and install.
(b)Position elbow pipe (72), washers (71) and install bolts (70).
(c)Install fuel line (30) and shrouded fuel line (52) (Ref. Para. 2. D. (6)).
(2)Apply grease (Mat. No. 04-012) to new O-rings (7, 9).
(3)Install new O-ring (9) to shrouded fuel line (8).
(4)Installation of Fuel Lines - Typical.
(a)Apply grease (Mat. No. 04-004) to new O-rings (50, 51) and to new D-rings (38).
(b)Lightly apply grease (Mat. No. 04-012) to inner gliding surface of union (39).
(c)Remove blanking caps from fuel lines.
(d)Install new D-rings (38) and new O-rings (50, 51).
(e)Position union (39) fuel line (30) and shrouded fuel line (52).
(f)Tighten nuts (37) and safety with lockwire 0.6 mm (0.025 in.) dia.
(g)Position bonding strap (34) and install washer (36) and nut (35). For electrical bonding refer to 20-28-11, P. Block 1.
(h)Slide coupling sleeve (41) into position.
(j)Position bonding strap (46), washers (45) and install bolts (44), washers (47) and nuts (48). For electrical bonding refer to 20-28-11, P. Block 1.
CAUTION : MAKE CERTAIN THAT FUEL LINE IS NOT STRESSED.
(k)Install safety spring (40) and safety with lockwire 0.6 mm (0.025 in.) dia.
(l)Position bonding strap (31), bolts (32, 65), washers (42, 64) and

nuts (43, 63).
(m)Lightly tighten nuts (43).
(n)TORQUE nuts (63) to 0.7 m.daN (62 lbf.in.).
NOTE : Supports (66) are located at STA2984(FR54.1), STA3249(FR60), STA3408(FR63), STA3620(FR67), STA3885(FR72) and STA4362(FR80).
(p)Position clamps (55).
(q)Adjust bracket (61) as required.
(r)Install bolts (62), washers (54) and nuts (53).
(5)Position tie-rods (15) and install bolts (16), washers (17) and nuts (18).
(6)Installation of Bulkhead Seals - Typical.
(a)Install new O-ring (7) to sleeve (6).
(b)Position sleeve (6), ring (5), washers (3) and install bolts (4).
(7)Remove blanking caps from fuel lines.
(8)Position drain line to shrouded fuel line, tighten nut (1), and safety nut (1) with lockwire.
(9)Installation of Float Check Valve.
NOTE : Procedure only applicable for replacement of float check valve.
(a)Remove blanking caps from drain piping.
(b)Install elbow (83) and nut (1) to shrouded fuel line - do not tighten.
(c)Install bush (80) to elbow (83) - do not tighten.
(d)Position perforated plate (79) and float (78) to bush (80).
(e)Position new preformed packing (77) to connector (76).
(f)Install connector (76) to bush (80) and tighten.
(g)Position complete fuel drain line, and install tube coupling nut (75).
(h)Tighten nuts (81, 1).
(j)Safety nuts (1, 81) with lockwire.
(k)Safety connector (76) and bush (80) with lockwire.

CAUTION : MAKE CERTAIN THAT FLEXIBLE HOSE IS NOT TWISTED AND NOT UNDER TENSION, WHEN INSTALLED.
(10)Install shrouded flexible hose (Ref. 28-26-16, P. Block 401).
(11)Remove safety clips and tags and close circuit breakers 2QL, 3QN, 5QN, 1QL, 6QN, 4QN and 4QL.
(12)Transfer fuel to trim tank (Ref. 28-25-00, P. Block 301) or refuel trim tank and fuel lines (Ref. 12-11-28, P. Block 301).

E. Test
R (1)Carry out trim tank and combined vent/drain system leak test. (Ref. 28-13-00, P. Block 501).
(2)Remove container.

F. Close-Up
(1)Make certain that working area is clean and clear of tools and miscellaneous items of equipment.
(2)Install cargo compartment sidewall panels.
(3)Close access doors 312AR and 313AL.
(4)Close BULK cargo compartment door.
(5)Remove safety lock and close AFT cargo compartment door (Ref. 52-30-00, P. Block 301).
(6)Install floor panels (Ref. 53-10-25, P. Block 401).

(7)Remove access platform.

WARNING : APPLY MATERIALS IN ACCORDANCE WITH MANUFACTURERS' INSTRUCTIONS. SOME MATERIALS ARE FLAMMABLE AND/OR TOXIC. AVOID INHALING FUMES. USE IN WELL VENTILATED AREA. FIRE REGULATIONS MUST BE OBSERVED. SOME MATERIALS CONTAIN IRRITANTS. WEAR PROTECTIVE GLOVES AND PROTECT EYES. WASH IMMEDATELY WITH CLEAN WATER, IF SKIN OR EYES ARE AFFECTED.

WARNING : CLEANING AGENT (MAT. NO. 11-003) IS DANGEROUS.

1. Reason for the Job

A. Repair of O-ring and D-ring sliding surfaces and grooves, if drips, pollution from foreign objects (rough surface) are discovered.

B. Application of new dry film lubricant.

2. Equipment and Materials

ITEM	DESIGNATION
A.	Emery Cloth (Grade 320)
B.	Scotch Brite Type A
C.	Lint-free Cloth
D.	Masking Paper
E.	Masking Tap
F.	Spraying Equipment
G.	Spray Gun
H.	Nozzle 1.5 mm (0.06 in.)
J.	Dry, Clean, Compressed Air
K.	DIN Cup, 3 mm
L.	Protective Gloves
M.	Protective Goggles
N.	Chromic Acid Solution (CrO3)
P. Material No. 06-001A	Lubricants (Ref. 20-31-00)
Q. Material No. 11-003	Cleaning Agents (Ref. 20-31-00)
R. Material No. 11-010	Cleaning Agents (Ref. 20-31-00)

3. Procedure

A. Job Set-Up
(1)Remove part.

B. Repair
(1)Cleaning of solid film lubricant.
(a)Remove minor drips and pollution from foreign objects using cleaning agent (Material No. 11-003) and lint-free cloth.
(b)Check that solid film lubricant is free of drips and pollution from foreign objects.
(c)Check integrity of solid film lubricant.
NOTE : Any breakthrough is not permissible.
(d)If no satisfactory result can be achieved, proceed as discribed in step (2).
(2)Polishing of solid film lubricant.
(a)Remove drips and pollution from foreign objects using emery cloth grade 320 or Scotch Brite Type A.
(b)Clean abraided solid film lubricant using cleaning agent (Material No. 11-003) and lint-free cloth.
(c)Check that solid film lubricant is free of drips and pollution from foreign objects.
(d)Check integrity of solid film lubricant.
NOTE : Any breakthrough is not permissible.
(e)If no satisfactory result can be achieved, proceed as discribed in step (3).
(3)Removal of unserviceable solid film lubricant.
NOTE : Before new solid film lubricant is applied the unserviceable solid film lubricant must be removed completely.
(a)Prepare an acid solution bath containing 180 - 200g of CrO3 per liter and a temperature of 65 deg. C (149 deg. F).
(b)Submerge part in acid solution bath for approximately 10 minutes until all lubricant is dissolved.
(c)Rinse of acid solution for 3-5 min by emersion rinsing in pure water (water quality A) and a temperature of 40 to 50 deg. C (104 to 122 deg. F).

CAUTION : HANDLING OF SURFACE AFTER CLEANING WILL IMPAIR APPLICATION OF LUBRICANT.

(d)Dry at room temperature or in a hot air drying tank with a maximum temperature of 50 deg. C (122 deg. F).
NOTE : After temperature has decreased to room temperature, application of new solid film lubricant should be made without delay.

(4)Application of new solid film lubricant.

NOTE : Before new solid film lubricant is applied, the old one must be removed completely.

NOTE : To prevent contamination proceed in an area as dust free as possible.

CAUTION : APPLY SOLID FILM LUBRICANT IN WELL VENTILATED AREA.

CAUTION : HANDLING OF SURFACE AFTER CLEANING WILL IMPAIR APPLICATION OF LUBRICANT.

(a)Protect adjoining area as required using masking tape and masking paper.

(b)Prepare mix for smooth finish of 5 parts by volume of solid film lubricant (Mat. No 06-001A) and 1 part by volume of thinner (Mat. No 11-010) to attain desired viscosity of 35 sec. 3 mm DIN cup.

NOTE : Lubricant in spray can is ready for use.

(c)Apply solid film lubricant (Mat No. 06-001A) in 2 cross coats to achieve required coat thickness of 0.007-0.012 mm (0.00028-0.00047 in) using spraying equipment or spray can.

NOTE : Do not heat up parts prior to spraying. Rapid evaporation of thinner will impair quality of coat.

NOTE : Allow lubricant to dry for at least 20 minutes between layers.

NOTE : To ensure equal solid film thickness and to prevent drips due to gravity, turn part.

(d)Allow lubricant to dry for at least 120 minutes at a temperature of 20 deg. C. (68 deg. F).

(e)Remove masking tape and masking paper.

(f)Check solid film lubricant for drips and pollution from foreign objects (rough surface).

(g)If no satisfactory result is achieved, repeat procedure.

C. Close-Up

(1)Reinstall part.

SHROUDED FLEXIBLE HOSE (2 IN.)
REMOVAL/INSTALLATION

WARNING : LANDING GEAR - MAKE CERTAIN THAT GROUND SAFETIES INCLUDING WHEEL CHOCKS ARE IN POSITION.
FLIGHT CONTROLS - MAKE CERTAIN THAT GROUND SAFETIES AND NOTICES ARE IN POSITION.
OBSERVE SAFETY PRECAUTIONS IN 28-00-00, P. BLOCK 301.
BEFORE POWER IS SUPPLIED TO THE AIRCRAFT, MAKE CERTAIN THAT ELECTRICAL CIRCUITS UPON WHICH WORK IS IN PROGRESS ARE ISOLATED.
BEFORE PRESSURIZING FUEL SYSTEMS, MAKE CERTAIN THAT FUEL SYSTEM HAS BEEN ISOLATED.
MAKE CERTAIN THAT FIRE FIGHTING EQUIPMENT IS AVAILABLE AND ADEQUATE.

1. Equipment and Materials

	ITEM	DESIGNATION
	A.	Access Platform, up to 5.5 m (18 ft.)
	B. 97A27302009000	Locking Tool - Pitch Trim Control Wheel
	C.	Blanking Caps
	D.	Circuit Breaker Safety Clips
	E.	Container, 50 l (13 US gal.) Capacity
	F.	Corrosion-Resistant Steel Lockwire, 0.8 mm (0.032 in.) dia.
	G.	Torque Wrench, up to 1.0 m.daN (88.5 lbf.in.)
	H.	O-Rings
R	J.	D-Rings
R	K. Material No. 04-012	Common Greases (Ref. 20-31-00)

Referenced Procedures

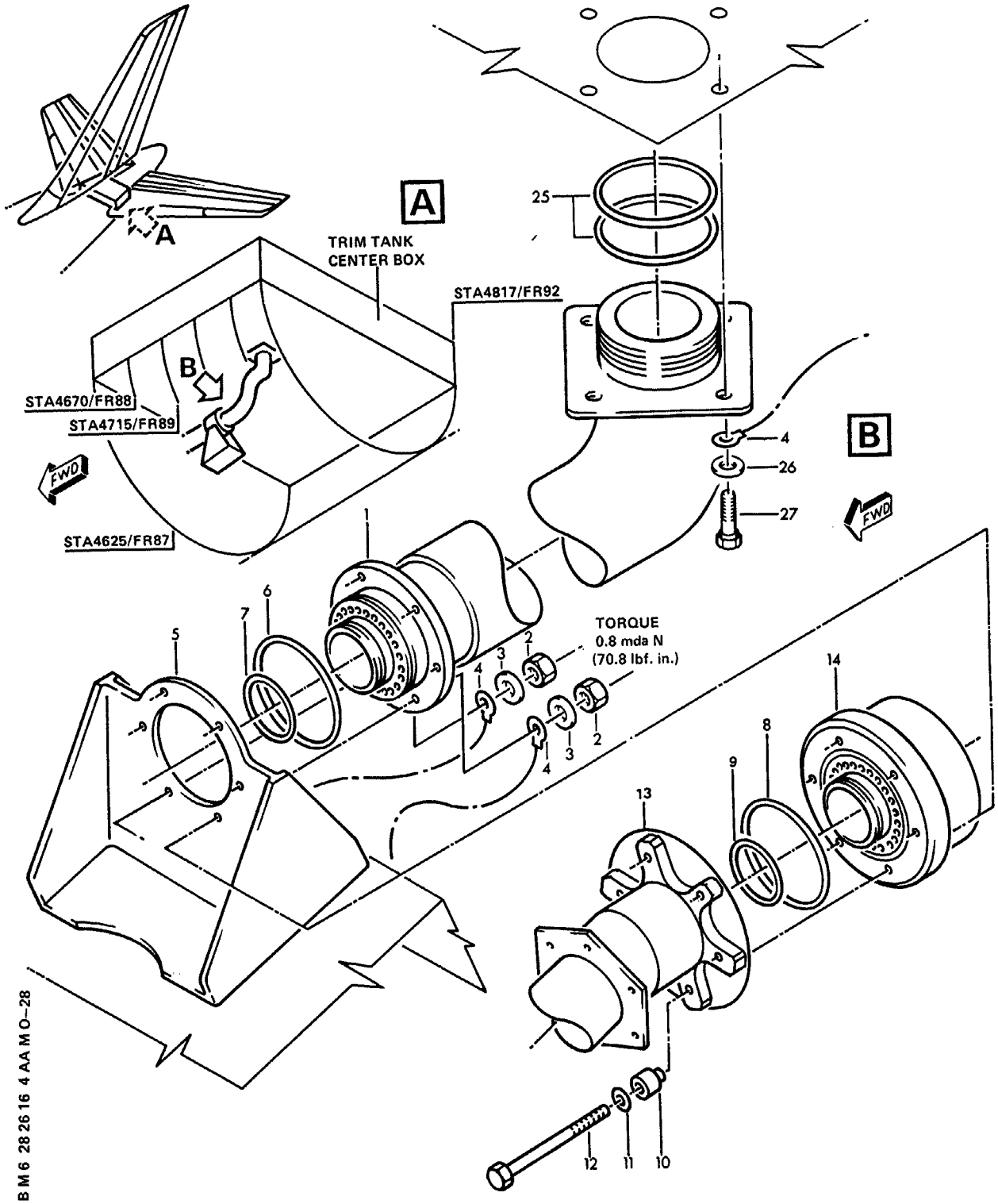
- 12-11-28, P. Block 301	Replenishing of Fuel Tank
- 20-28-11, P. Block 1	Electrical Bonding
- 28-00-00, P. Block 301	General
- 28-13-00, P. Block 501	External Ventilating System
- 28-25-00, P. Block 301	Refuel/Defuel System
- 28-26-15, P. Block 401	Trim Tank Fuel Transfer Line

2. Procedure

A. Job Set-Up
(1)Position access platform.
(2)Move horizontal stabilizer to 3° a/c nose down and install locking tool P/N 97A27302009000 at pitch trim control wheel.
(3)Open access doors 312AR and 313AL.
(4)Position container.
(5)Defuel trim tank and transfer fuel line (Ref. 28-25-00, P. Block 301).
(6)Open, safety and tag the following circuit breakers:

PANEL	SERVICE	IDENT.	LOCATION
22VU	FUEL-TRIM TANK FWD XFR-AUX/VALVE	2QL	J21/201
22VU	FUEL-TRIM TANK FWD XFR-PUMP 1/CTL	3QN	J22/201
22VU	FUEL-TRIM TANK FWD XFR-PUMP 1/WARN	5QN	J23/201
132VU	FUEL-TRIM TANK - FWD XFR/MAIN/VALVE	1QL	K53/325
132VU	FUEL-TRIM TANK - XFR PUMP 2/WARN	6QN	K54/325
132VU	FUEL-TRIM TANK - XFR PUMP 2/CTL	4QN	K55/325
132VU	FUEL-TRIM TANK - AFT/L & R/XFR/VALVE	4QL	K56/325

B. Removal
(Ref. Fig. 401)
(1)Remove flexible hose (1) from transfer fuel line.
(a)Remove nuts (2), washers (3), bonding straps (4) and disconnect flexible hose (1).
NOTE : Flexible hose (1) may contain residual fuel.
(b)Make certain that bolts (12) remain in position.
R (c)Remove and discard O-ring (6) and D-ring (7).
(d)Blank off union (14).
(2)Remove flexible hose (1) from trim tank.
(a)Cut and remove lockwire, remove bolts (27), washers (26) and bonding strap (4), and disconnect flexible hose (1).
(b)Remove and discard O-rings (25).
(3)Remove union (14) from bracket (5).
R NOTE : Step (3) is applicable only for replacement of
R O-ring (8) and D-rings (9).
(a)Disconnect fuel transfer line (13) (Ref. 28-26-15, P. Block 401).
(b)Remove nuts (2), washers (3) and bonding straps (4).
(c)Remove bolts (12), washers (11), bushes (10) and union (14).
R (d)Remove and discard O-ring (8) and D-ring (9).
(e)Blank off fuel pipes.



Flexible Hose
Figure 401

C. Installation
(Ref. Fig. 401)
(1)Install union (14) to bracket (5).
R NOTE : Step (1) is applicable only for replacement of
R O-ring (8) and D-ring (9).
(a)Remove blanks.
R (b)Apply grease (Mat. No. 04-012) to new O-ring (8) and to new
R D-ring (9).
R (c)Lightly apply grease (Mat. No. 04-012) to gliding surface of
R fuel transfer line (13).
R (d)Install new O-ring (8) and new D-ring (9) on union (14).
(e)Position union (14) between bracket (5) and fuel line (13).
(f)Connect fuel transfer line (13) (Ref. 28-26-15, P. Block 401).
(g)Position bushes (10), washers (11), install bolts (12).
(h)Install bonding straps (4), washers (3) and nuts (2). For electrical bonding refer to 20-28-11, P. Block 1.
(j)TORQUE nuts (2) to 0.8 m.daN (70.8 lbf.in.).
CAUTION : MAKE CERTAIN THAT FLEXIBLE HOSE IS NOT TWISTED OR UNDER TENSION, WHEN INSTALLED.
(2)Install flexible hose (1) at trim tank.
(a)Remove blanks.
R (b)Apply grease (Mat. No. 04-012) to new O-rings (25).
R (c)Install new O-rings (25) on flexible hose (1).
(d)Position flexible hose (1), install bonding strap (4), washers (26) and bolts (27).
(e)Safety bolts (27) with lockwire.
(3)Install flexible hose (1) to fuel transfer line.
(a)Remove blanks.
R (b)Apply grease (Mat. No. 04-012) to new O-ring (6) and to new
R D-ring (7).
R (c)Lightly apply grease (Mat. No. 04-012) to gliding surface of
R union (14).
R (d)Install new O-ring (6) and new D-ring (7) on flexible hose (1).
(e)Position flexible hose (1) at bracket (5).
(f)Install bonding straps (4), washers (3) and nuts (2). For electrical bonding refer to 20-28-11, P. Block 1.
(g)TORQUE nuts (2) to 0.8 m.daN (70.8 lbf.in.).
(4)Remove safety clips and tags and close circuit breakers 2QL, 3QN, 5QN, 1QL, 6QN, 4QN and 4QL.
(5)Remove locking tool P/N 97A27302009000.

D. Test
(1)Transfer fuel to trim tank (Ref. 28-25-00, P. Block 301) or refuel trim tank and fuel transfer line (Ref. 12-11-28, P. Block 301).
(2)Carry out functional test of trim tank system (Ref. 28-13-00, P. Block 501).
(3)Carry out pressure test of vent/drain system and vapor seal (Ref 28-13-00, P. Block 501).

E. Close-Up
(1)Make certain that working area is clean and clear of tools and miscel-

laneous items of equipment.
(2)Remove container.
(3)Close access doors 312AR and 313AL.
(4)Remove access platform.

AFT TRANSFER VALVE(S) ACTUATOR (17QL, 18QL) - REMOVAL/INSTALLATION

WARNING : LANDING GEAR - MAKE SURE THAT THE GROUND SAFETIES AND CHOCKS ARE IN POSITION.

FLIGHT CONTROLS - MAKE SURE THAT THE GROUND SAFETIES AND NOTICES ARE IN POSITION.

OBSERVE THE SAFETY PRECAUTIONS IN 28-00-00, P. BLOCK 301.

MAKE SURE THAT THE FIRE FIGHTING EQUIPMENT IS AVAILABLE AND ADEQUATE.

MAKE SURE THAT YOU ISOLATE THE ELECTRICAL CIRCUITS UPON WHICH WORK IS IN PROGRESS.

1. Equipment and Materials

ITEM	DESIGNATION
A.	Access Platform 2.5 m (8 ft)
B.	Circuit Breaker Safety Clip and Tag
C.	Protective Caps
D.	Warning Notices
R E. 99A28204002000	Test Harness
R Referenced Procedures	
- 05-57-11, P. Block 1	Aircraft Stability With Fuel in Trim Tank
- 12-11-28, P. Block 301	Fuel
- 20-28-11, P. Block 1	Electrical Bonding
- 24-41-00, P. Block 301	AC External Power Control
- 27-80-00, P. Block 301	Lift Augmenting (Slats and Krueger Flaps)
- 28-00-00, P. Block 301	Fuel - General
- 28-25-00, P. Block 301	Refuel/Defuel System
- 31-46-11, P. Block 401	Center of Gravity Control Computer (1GU)
- 32-12-11, P. Block 301	Main Gear Main Door

R 2. Procedure

(Ref. Fig. 401)

A. Job Set-Up

(1)Open the LH(RH) main-landing-gear bay door (Ref. 32-12-11, P. Block 301).

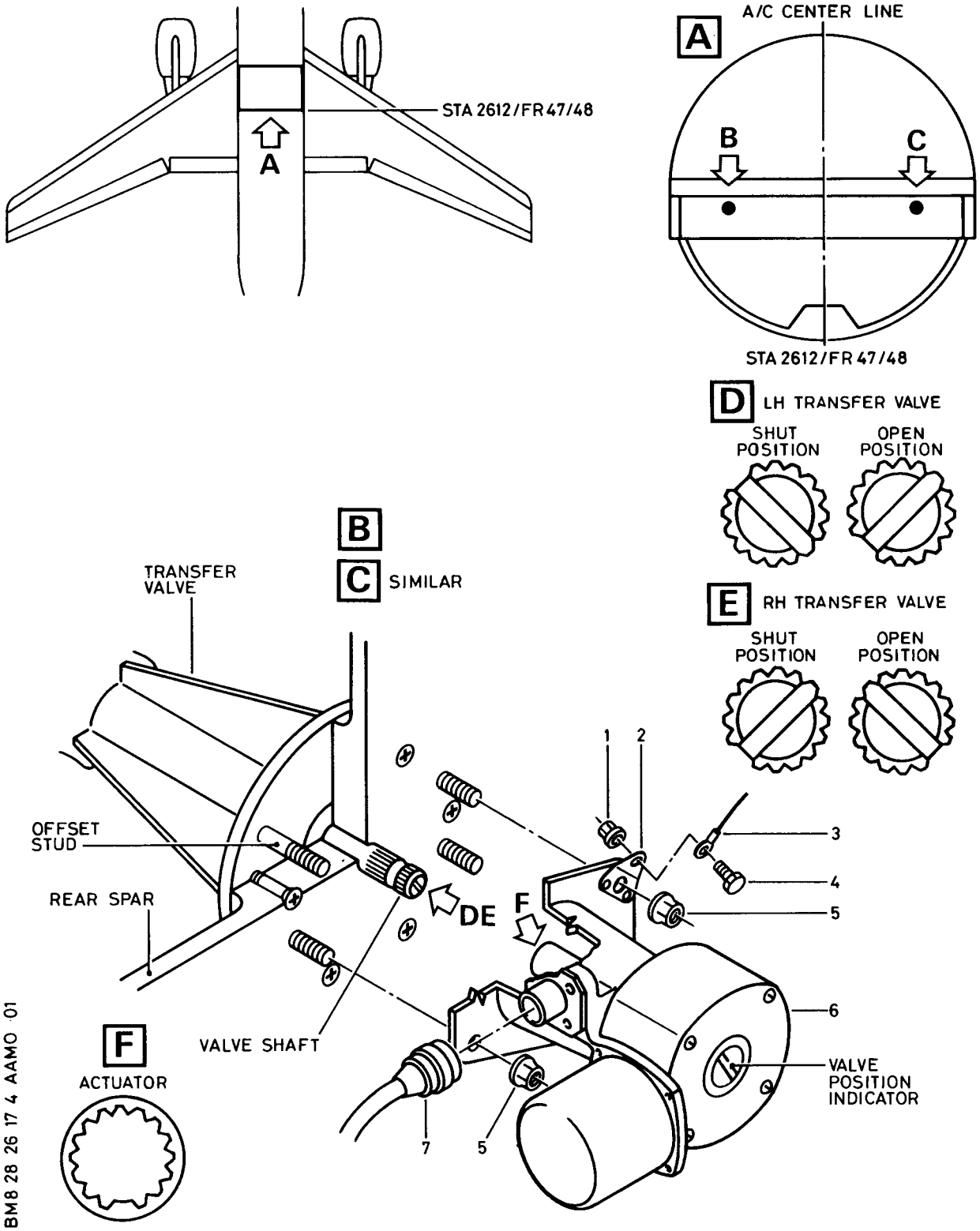
(2)Put the access platform in position.

(3)Open, safety and tag the circuit breaker that follows:

PANEL	SERVICE	IDENT.	LOCATION
132VU	FUEL/TRIM TANK/AFT L&R XFR VALVE	4QL	325/K56

B. Removal (Ref. Fig. 401)

(1)Disconnect the electrical connector (7) from the LH(RH) aft transfer



Aft Transfer Valve Actuator(s)
Figure 401

R

valve actuator (6). Install the protective caps onto the electrical connectors.
(2)Remove the nut (1) and the bolt (4) and disconnect the bonding strap (3) from the tag (2).
(3)Remove the nuts (5) and remove the actuator (6) from the rear spar.

C. Preparation for Installation
(1)Make sure that the interfaces of the rear spar and the actuator are clean and in the correct condition.

D. Installation (Ref. Fig. 401)

CAUTION : DURING THE FOLLOWING OPERATIONS, TAKE CARE NOT TO DAMAGE THE SHAFT SPLINES.

(1)Turn the valve shaft until the transfer valve is in the shut position.
(2)Make sure that the valve position indicator on the actuator (6), indicates shut.
(3)Install the actuator (6) onto the attachment studs and engage the valve shaft in the actuator housing.
(4)Install and tighten the nuts (5).
(5)Attach the bonding strap (3) to the tag (2) with the bolt (4) and the nut (1) (Ref. 20-28-11, P. Block 1).
(6)Remove the protective caps and connect the electrical connector (7) to the actuator (6).

E. Functional test of the aft transfer valve actuators.
(1)Preparation for test.
(a)Energize the aircraft electrical network (Ref. 24-41-00, P. Block 301).
(b)Remove the circuit breaker safety clip and tag and close the circuit breaker 4QL.
(c)Make sure that the slats are in the fully retracted position (Ref. 27-80-00, P. Block 301).
(d)Put the warning notices in position prohibiting the unauthorized operation of the slats.
(e)Activate the ECAM display units as follows:
1 On the flight-compartment center pedestal, push (in) the ECAM SGU 1 and SGU 2 P/BSW's on the ECAM control panel.
2 Turn the LEFT and RIGHT DISPLAY rotary switches clockwise to switch on the display and adjust the brightness to the required level.
3 Push (in) the FUEL P/BSW to call up the fuel page.

WARNING : FOLLOW THE AIRCRAFT STABILITY PRECAUTIONS (REF. 05-57-11, P. BLOCK 1) TO MAKE SURE THAT THE AIRCRAFT REMAINS WITHIN SAFE CG LIMITS WHILE REARWARD FUEL MOVEMENT TO THE TRIM TANK TAKES PLACE.

(f)Make sure that the trim tank is empty. If necessary, defuel or transfer the fuel from the trim tank (Ref. 28-25-00, P. Block 301).
(g)Make sure that the donor tank contains a minimum fuel quantity of 500 kg (1100 lb). If necessary, refuel or transfer fuel as required

(Ref. 12-11-28 or 28-25-00, P. Block 301).

NOTE : To test the LH aft transfer valve the donor tank can be any LH wing tank or the center tank.
To test the RH aft transfer valve the donor tank can be any RH wing tank or the center tank.

(h)On panel 430VU, make sure that:
- the TRIM TK AUTO MODE P/BSW is released out (system in auto)
- the TRIM TK ISOL VALVE P/BSW is pushed in (flowbar is off)

NOTE : The flowbar is off because the refuel/defuel panel is de-energized.

- the wing tank ISOL VALVES P/BSW's are pushed (in) (in-line flowbars are on)
- X FEED valve P/BSW is released out (cross-line flowbar is on)
- all the pump P/BSW's are released out.

(j)Not applicable.
(k)Remove and retain the center of gravity control computer (CGCC) to get access to connector 'AA' on the avionics rack (Ref. 31-46-11, P. Block 401).
(l)Install the test harness PN 99A28204002000 onto the connector 'AA'.
(m)Make sure that the LH and the RH aft-transfer-valve indicator grooves are in the shut position reference para. D. (2).
(n)Open the access door 144DR to energize the refuel/defuel panel 110VU.

NOTE : When the refuel/defuel panel 110VU, is energized and the TRIM TK ISOL VALVE P/BSW on panel 430VU, is pushed (in) then, the trim-tank isolation valve will open.

(p)On panel 110VU:
1 Make sure that the TRANSF. VALVE switch is in the closed position and guarded and the OPEN indicator light is off.
2 Raise the guard and put the TRIM TK REFUEL-DEFUEL-VALVES switch in the OPEN position.

NOTE : The trim-tank refuel/defuel valve in zone 148 and refuel/transfer valve in zone 312, will open if the inner tanks are fully refueled to the high-level cut-off position.

R 3 Put the refuel/defuel mode selector switch, 3QU in the refuel
R position.

R 4 If the inner tanks are not fully refueled to the high-level cut-off
R position, lift the guard and put the CTR TK REFUEL-DEFUEL-VALVES
R switch in the OPEN position.

NOTE : When the center-tank refuel/defuel valve is opened, the system interlocks will be released and the trim-tank refuel/defuel valve in zone 148 and refuel/transfer valve in zone 312, will

open.

(2)Test.

NOTE : During the test some fuel will enter the center tank (if the center-tank refuel/defuel valve is open) via the trim-tank refuel/defuel valve, the refuel gallery and the center-tank refuel/defuel valve. This is to be ignored.

ACTION	RESULT
Test of the LH aft transfer valve	
1. In the flight-compartment on panel 430VU: - push (in) one PUMP P/BSW from the donor tank. NOTE : You can use any LH wing tank pump or the LH center tank pump to test the LH aft transfer valve.	Inside the LH wing and the center tank: - the pump in the donor tank runs - the LH engine fuel feed gallery is pressurized. In the flight compartment on the ECAM fuel page: - the fuel quantity in the trim tank will remain stable because the LH aft transfer valve is in the shut position.
- release (out) the PUMP P/BSW from the donor tank.	- the fuel pump in the donor tank stops.
2. On the test harness at the avionics rack: - put a +28 volt supply on pin 14B - put a ground on pin 1D.	- the relay 7QL will energize. In the main undercarriage bay on frame 47: - the indicator groove on the LH aft transfer valve will move to the OPEN position.
3. In the flight-compartment on panel 430VU: - push (in) one PUMP P/BSW from the donor tank.	- the fuel pump in the donor tank runs. In the flight compartment on the

ACTION	RESULT
	ECAM fuel page: - the fuel quantity in the trim tank will increase because the LH aft transfer valve is in the open position.
4. On the ECAM fuel page and panel 430VU: - as soon as the trim tank shows an increase in fuel quantity, release (out) the PUMP P/BSW from the donor tank.	- the fuel pump in the donor tank stops. On the ECAM fuel page: - the fuel quantity in the trim tank will stabilize.
5. On the test harness at the avionics rack: - remove the +28V supply from pin 14B and the ground from pin 1D.	- the relay 7QL will de-energize. In the main undercarriage bay on frame 47: - the indicator groove on the LH aft transfer valve will move to the SHUT position.
6. In the flight-compartment on panel 430VU: - push (in) one PUMP P/BSW from the donor tank	- the fuel pump in the donor tank runs. In the flight-compartment on the ECAM fuel page: - the fuel quantity in the trim tank will remain stable because the LH aft transfer valve is in the shut position.
- release (out) the PUMP P/BSW from the donor tank.	- the fuel pump in the donor tank stops.
Test of the RH aft transfer valve	
7. In the flight-compartment on panel 430VU: - push (in) one PUMP P/BSW from the donor tank.	Inside the RH wing and the center tank: - the fuel pump in the donor tank runs - the RH engine fuel feed gallery is pressurized.
NOTE : You can use any RH wing tank pump or the RH center tank pump to test the RH	

ACTION	RESULT
aft transfer valve.	
	In the flight compartment on the ECAM fuel page: - the fuel quantity in the trim tank will remain stable because the RH aft transfer valve is in the shut position.
- release (out) the PUMP P/BSW from the donor tank.	- the fuel pump in the donor tank stops.
8. On the test harness at the avionics rack: - put a +28 volt supply on pin 15A - put a ground on pin 1D.	- the relay 6QL will energize.
	In the main undercarriage bay on frame 47: - the indicator groove on the RH aft transfer valve will move to the OPEN position.
9. In the flight-compartment on panel 430VU: - push (in) one PUMP P/BSW from the donor tank.	- the fuel pump in the donor tank runs. In the flight compartment on the ECAM fuel page: - the fuel quantity in the trim tank will increase because the RH aft transfer valve is in the open position.
10. On the ECAM fuel page and panel 430VU: - as soon as the trim tank shows an increase in fuel quantity, release (out) the PUMP P/BSW from the donor tank.	- the fuel pump in the donor tank stops. On the ECAM fuel page: - the fuel quantity in the trim tank will stabilize.
11. On the test harness at the avionics rack: - remove the +28V supply from pin 15A and the ground from pin 1D.	- the relay 6QL will de-energize. In the main undercarriage bay on frame 47: - the indicator groove on the RH aft

ACTION	RESULT
	transfer valve will move to the SHUT position.
12. In the flight-compartment on panel 430VU:	
- push (in) one PUMP P/BSW from the donor tank.	- the fuel pump in the donor tank runs. In the flight-compartment on the ECAM fuel page: - the fuel quantity in the trim tank will remain stable because the RH aft transfer valve is in the shut position.
- release (out) the PUMP P/BSW from the donor tank.	- the fuel pump in the donor tank stops.

F. Close-Up
(1) On panel 110VU:
(a) Put the TRIM TK (and the CTR TK if previously selected open) REFUEL-DEFUEL-VALVES switch(es) in the NORM and guarded position.
(b) Close the access door 144DR.

NOTE : When the refuel/defuel panel 110VU, is de-energized, the trim-tank isolation valve will close.

(2) Remove the test harness PN 99A28204002000 from the connector 'AA' on the avionics rack.
(3) Install the CGCC in the avionics rack (Ref. 31-46-11, P. Block 401).
(4) Make sure that the work area is clean and clear of tools and miscellaneous items of equipment.
(5) Remove the access platform.
(6) Close the LH(RH) main-landing-gear bay door(s) (Ref. 32-12-11, P. Block 301).
(7) Refuel, defuel or transfer fuel to the required fuel load (Ref. 12-11-28 or 28-25-00, P. Block 301).
(8) Remove the warning notices from the flight compartment.
(9) On the flight-compartment center pedestal, turn the ECAM LEFT and RIGHT DISPLAY rotary switches to OFF.
(10) Release (out) the ECAM SGU 1 and 2 P/BSW's.
(11) De-energize the aircraft electrical network (Ref. 24-41-00, P. Block 301).

AFT TRANSFER VALVE(S) (280440, 280443) - REMOVAL/INSTALLATION

WARNING : LANDING GEAR - MAKE SURE THAT THE GROUND SAFETIES AND THE CHOCKS ARE IN POSITION.

FLIGHT CONTROLS - MAKE SURE THAT GROUND SAFETIES AND THE NOTICES ARE IN POSITION.

OBEY THE SAFETY PRECAUTIONS IN 28-00-00, P. BLOCK 301 AND 28-10-00, P. BLOCK 301.

R MAKE SURE THAT THE FIRE FIGHTING EQUIPMENT IS AVAILABLE AND IS
R ADEQUATE.

R MAKE SURE THAT YOU ISOLATE THE ELECTRICAL CIRCUITS UPON WHICH WORK IS
R IN PROGRESS.

1. Equipment and Materials

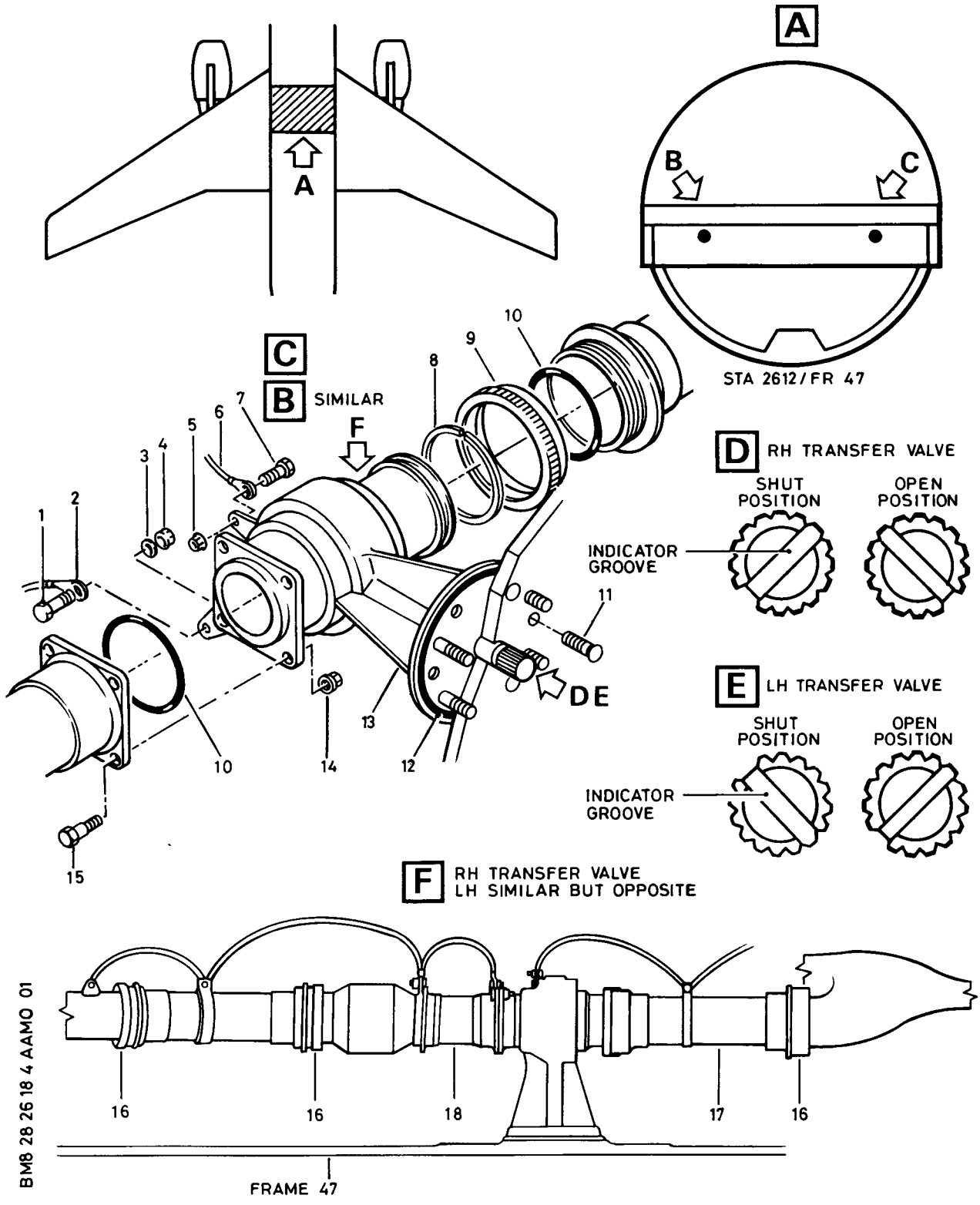
	ITEM	DESIGNATION
R	A.	Access Platform 2.5 m (8 ft)
R	B.	Blanking Caps/Plugs
R	C.	Circuit Breaker Safety Clips and Tags
R	D.	Container
R	E.	Warning Notices Prohibiting Movement of Fuel
R	F.	O-Ring
R	G. Material No. 01-001	Fuels (Ref. 20-31-00)
	Referenced Procedures	
	- 12-11-28, P. Block 301	Replenishing of Fuel Tanks
	- 20-28-11, P. Block 1	Electrical Bonding
	- 20-31-00, P. Block 1	List of Materials Required For Aircraft Service and Maintenance
	- 24-41-00, P. Block 301	AC External Power Control
	- 28-00-00, P. Block 301	Fuel - General
	- 28-10-00, P. Block 301	Storage
	- 28-11-29, P. Block 401	Center Tank Manhole Cover
	- 28-25-00, P. Block 301	Refuel/Defuel System
	- 28-26-17, P. Block 401	Aft Transfer Valve(s) Actuator
	- 32-12-11, P. Block 301	Main Gear Main Door

2. Procedure

(Ref. Fig. 401)

R A. Job Set-Up

R (1)Energize the aircraft electrical network (Ref. 24-41-00, P. Block 301).
R (2)Defuel the trim tank, the center tank and the two inner tanks (Ref.



Transfer Valve (Trim Tank System)
Figure 401

R

28-25-00, P. Block 301). When you defuel the inner tanks do the steps that follow:

(a)In the flight compartment on panel 430VU:

1 Push (in) all four INR TK PUMP p/bsw's and let the pumps operate until the low pressure OFF legends in the p/bsw's have been on for at least one minute.

(3)Make sure that there is a minimum of 1000 kg (2200 lb) of fuel in each of the outer tanks. If necessary, refuel or defuel the tanks (Ref. 12-11-28 or 28-25-00, P. Block 301).

(4)In the flight compartment on panel 430VU:

- release (out) the four wing tank ISOL VALVES p/bsw's. Make sure that the OFF legends come on and the flowbars go off.

NOTE : The inner and outer tank isolation valves are now shut.

- Make sure that the TRIM TK AUTO MODE p/bsw is released (out) and the FWD legend is off.

NOTE : The trim tank transfer control valve (280442) and the auxiliary transfer valve (280441) will be in the shut position.

(5)De-energize the aircraft electrical network (Ref. 24-41-00, P. Block 301).

(6)Open the access door 144DR.

(7)Put the warning notices in position on the refuel/defuel panel 110VU and in the flight compartment, on the overhead panel 430VU.

(8)Open, safety and tag these circuit breakers:

PANEL	SERVICE	IDENT.	LOCATION
22VU	FUEL/TRIM TANK FWD XFR/AUX VALVE	2QL	201/J21
22VU	FUEL/TRIM TANK FWD XFR/PUMP 1/CTL	3QN	201/J22
22VU	FUEL/TRIM TANK FWD XFR/PUMP 1/WARN	5QN	201/J23
22VU	FUEL/TRIM TANK FWD XFR/CGCC	2GU	201/J24
132VU	FUEL/TRIM TANK/CGCC	6GU	325/K51
132VU	FUEL/TRIM TANK/ISOL VALVE	45QB	325/K52
132VU	FUEL/TRIM TANK/FWD XFR MAIN VALVE	1QL	325/K53
132VU	FUEL/TRIM TANK/XFR PUMP 2/WARN	6QN	325/K54
132VU	FUEL/TRIM TANK/XFR PUMP 2/CTL	4QN	325/K55
132VU	FUEL/TRIM TANK/AFT L & R XFR VALVE	4QL	325/K56
132VU	FUEL/ISOL VALVES/L OUTR TK SUPPLY	1QB	324/L53
132VU	FUEL/ISOL VALVES/L INR TK SUPPLY	3QB	324/L55
132VU	FUEL/ISOL VALVES/R INR TK SUPPLY	4QB	324/L56
132VU	FUEL/ISOL VALVES/R OUTR TK SUPPLY	2QB	324/L58
132VU	FUEL/FUELLING/CTL & REFUEL VALVE	1QU	321/P56

R **ON A/C 001-100,

(9)Open the LH(RH) main landing gear bay door (Ref. 32-12-11, P. Block 301.

(10)Put the access platform in position.

(11)Remove the center tank manhole cover 147AZ(148AZ) (Ref. 28-11-29, P. Block 401).

R **ON A/C 101-200,

R (9)Open the LH main landing gear bay door (Ref. 32-12-11, P. Block 301).
R (10)Put the access platform in position.
R (11)Remove the center tank manhole cover 147AZ (Ref. 28-11-29, P. Block 401.

R **ON A/C ALL

(12)Remove the actuator from the aft transfer valve(s) (Ref. 28-26-17, P. Block 401).
(13)Get access to the work area in the center tank and make it safe (Ref. 28-10-00, P. Block 301).

B. Removal
(1)Remove the nut (4), the washer (3), the bolt (1) and remove the bonding strap (2).
(2)Remove the nut (5), the bolt (7) and remove the bonding strap (6).
(3)Remove the coupling nut (9) from the pipe (17).
(4)Remove the nuts (14) and the bolts (15).
(5)Put the container beneath the couplings and disconnect the pipes (17) and (18). Recover and remove the residual fluid.
(6)Discard the O-rings (10).
(7)Move the pipes (17) and (18) away from the valve(s). If necessary loosen the coupling nuts (16).
(8)Remove the screws (11) and remove the valve(s) (13). Discard the O-ring (12).
If a replacement valve is to be installed, remove the stop ring (8) and remove the coupling nut (9).
(9)Clean and inspect the component interfaces and the line-end fittings for the correct condition. Seal the open line ends and the orifices of the transfer valve with the blanking caps/plugs.

C. Preparation of Replacement Component
(1)Install the coupling nut (9) and the stop ring (8) on the replacement valve.
(2)Turn the shaft of the aft transfer valve until the valve is in the open position.

D. Installation
(1)Remove the blanking caps/plugs from the line-ends and the orifices of the transfer valve.
(2)Apply fuel (Material No. 01-001) to the replacement O-ring (12) and install the O-ring in the groove on the mounting flange of the transfer valve (13).
(3)Install the transfer valve (13) and attach with the screws (11).
(4)Apply Fuel (Material No. 01-001) to the O-rings (10) and install the O-rings on the inlet and outlet ports of the transfer valve (13).
(5)Hold the pipe (18) in position on the transfer valve (13) and attach with

the bolts (15) and the nuts (14).
(6)Hold the pipe (17) in position on the valve (13) and attach with the coupling nut (9).
(7)Attach the bonding strap (6) with the bolt (7) and the nut (5) (Ref. 20-28-11, P. Block 1).
(8)Attach the bonding strap (2) with the bolt (1), the washer (3) and the nut (4) (Ref. 20-28-11, P. Block 1).
(9)Make sure that all the disturbed lines with axial float are in their mid-travel positions and the coupling nuts (16) are secure.

E. Preparation for the Test
(1)On circuit breaker panels 22VU and 132VU:
- remove the safety clips and tags and close the circuit breakers 3QN, 5QN, 2GU, 6GU, 45QB, 6QN, 4QN, 1QU, 1QB, 2QB, 3QB and 4QB.
- make sure that the circuit breakers 2QL, 1QL and 4QL stay open, safetied and tagged. This will make sure that the trim tank transfer control valve (280442) and the auxiliary transfer valve (280441) stay shut.

NOTE : These valves must be shut so that when you do the test the fuel feed line between the LH(RH) inner tank and the LH(RH) aft transfer valve(s) can be pressurized.

(2)Energize the aircraft electrical network (Ref. 24-41-00, P. Block 301).

NOTE : You must use the LH inner tank pumps to test the couplings on the LH aft transfer valve for leaks. Use the RH inner tank pumps to test the couplings on the RH aft transfer valve for leaks.

(3)On panel 430VU, push (in) the outer wing tank ISOL VALVES p/bsw(s). Make sure that on the outer wing tank ISOL VALVES p/bsw's:
- the OFF legends go off
- the flowbars come on
In zone 540(640), the outer tank isolation valves open.
(4)Transfer not less than 1000 kg (2200 lb) of fuel from the LH(RH) outer tank to the LH(RH) inner tank (Ref. 28-25-00, P. Block 301).

F. Test
(1)Do the leak test of the valve couplings.

ACTION	RESULT
1. On panel 430VU: - make sure that all the pump p/bsw's are released (out) - make sure the X feed valve p/bsw is released (out)	On panel 430VU: - all the OFF legends in the pump p/bsw's are on - the cross-line flow bar is on In zone 140: - the X feed valve is closed On panel 430VU:

ACTION	RESULT
- make sure that both the inner tank ISOL VALVES p/bsw's are released (out).	- the OFF legends in the inner tank ISOL VALVES p/bsw's are on. In zone 540(640): - the inner tank isolation valves are shut.
2. Make sure that the refuel/defuel access door 144DR is closed.	The refuel/defuel panel will be de-energized In zone 319: - the trim tank isolation valve will be closed.
3. On panel 430VU: - push (in) the LH(RH) INR TK PUMP 1(2) p/bsw's.	On panel 430VU: - the white OFF legends(s) in the p/bsw(s) go off - the amber LO PR legend(s) comes(s) on and then go off as the pump(s) run(s). The fuel feed line between the LH(RH) inner tank and the LH(RH) aft transfer valve is pressurised.
4. At the aft transfer valves in the center tank, examine the couplings for leakage of fuel and air.	No leaks permitted.
5. On panel 430VU: - release (out) the relevant INR TK PUMP p/bsw(s).	On panel 430VU: - the white OFF legend(s) in the p/bsw(s) come(s) on - the pump(s) stop
- push (in) the two inner tank ISOL VALVES p/bsw's.	- the OFF legends on the two inner tank ISOL VALVES p/bsw's go off and the flowbars come on In zone 540(640): - the inner tank isolation valves open.

R **ON A/C 001-100,

(2)De-energize the aircraft electrical network (Ref. 24-41-00, P. Block 301).

(3)Make sure that the work area is clean and clear of all tools and other items of equipment.
(4)Install the center tank manhole cover(s) 147AZ(148AZ) (Ref. 28-11-29, P. Block 401).

R **ON A/C 101-200,

R (2)De-energize the aircraft electrical network (Ref. 24-41-00, P. Block 301).
R (3)Make sure that the work area is clean and clear of all tools and other items of equipment.
R (4)Install the center tank manhole cover 147AZ (Ref. 28-11-29, P. Block 401).

R **ON A/C ALL

G. Close-Up
(1)Install the actuator(s) on the aft transfer valve(s) (Ref. 28-26-17, P. Block 401).
(2)Remove the safety clips and tags and close the circuit breakers 1QL, 2QL and 4QL. Make sure that all the other circuit breakers that were opened in para. 2.A.(8) are still closed.
(3)Make sure that the work area is clean and clear of all tools and other items of equipment.

R **ON A/C 001-100,

(4)Remove the access platform.
(5)Close the LH(RH) main landing gear bay doors (Ref. 32-12-11, P. Block 301).
(6)Remove the warning notices.
(7)Refuel or defuel the aircraft to the required fuel load (Ref. 12-11-28 or 28-25-00, P. Block 301).

R **ON A/C 101-200,

R (4)Remove the access platform.
R (5)Close the LH main landing gear bay door (Ref. 32-12-11, P. Block 301).
R (6)Remove the warning notices.
R (7)Refuel or defuel the aircraft to the required fuel load (Ref. 12-11-28 or 28-25-00, P. Block 301).

R **ON A/C ALL

(8)Make sure that the access door 144DR is closed.

AFT TRANSFER VALVE(S) (280440, 280443) - DEACTIVATION/REACTIVATION

Ref: MMEL Sect. 1-28, Item 36.

CAUTION : THIS PROCEDURE TO BE USED IN ACCORDANCE WITH THE REQUIREMENTS OF MMEL.

R WARNING : LANDING GEAR - MAKE SURE THAT THE GROUND SAFETIES AND CHOCKS ARE IN POSITION.

R FLIGHT CONTROLS - MAKE SURE THAT THE GROUND SAFETIES AND NOTICES ARE
R IN POSITION.

R OBSERVE THE SAFETY PRECAUTIONS IN 28-00-00, P. BLOCK 301.

R MAKE SURE THAT THE FIRE FIGHTING EQUIPMENT IS AVAILABLE AND IS
R ADEQUATE.

R MAKE SURE THAT YOU ISOLATE THE ELECTRICAL CIRCUITS UPON WHICH WORK IS
R IN PROGRESS.

1. Deactivation

A. Reason for the Job

(1)To make certain inoperative valve is in the shut position.

B. Equipment and Materials

ITEM	DESIGNATION
A.	Access Platform 2.5 m (8 ft)
B.	Warning Notice informing crew that aft transfer valve LH/RH is/are locked SHUT mechanically
R C.D97B00-001	Actuator - Mechanical
D.	Circuit Breaker Safety Clip and Tag
E.	Lockwire, Corrosion Resistant Steel 0.8 mm (0.032 in)
Referenced Procedures	
- 20-28-11, P. Block 1	Electrical Bonding
- 28-00-00, P. Block 301	Fuel - General
- 28-26-17, P. Block 401	Aft Transfer Valve(s) Actuator
- 28-26-18, P. Block 401	Aft Transfer Valve(s)
- 32-12-11, P. Block 301	Main Gear Main Door

C. Procedure

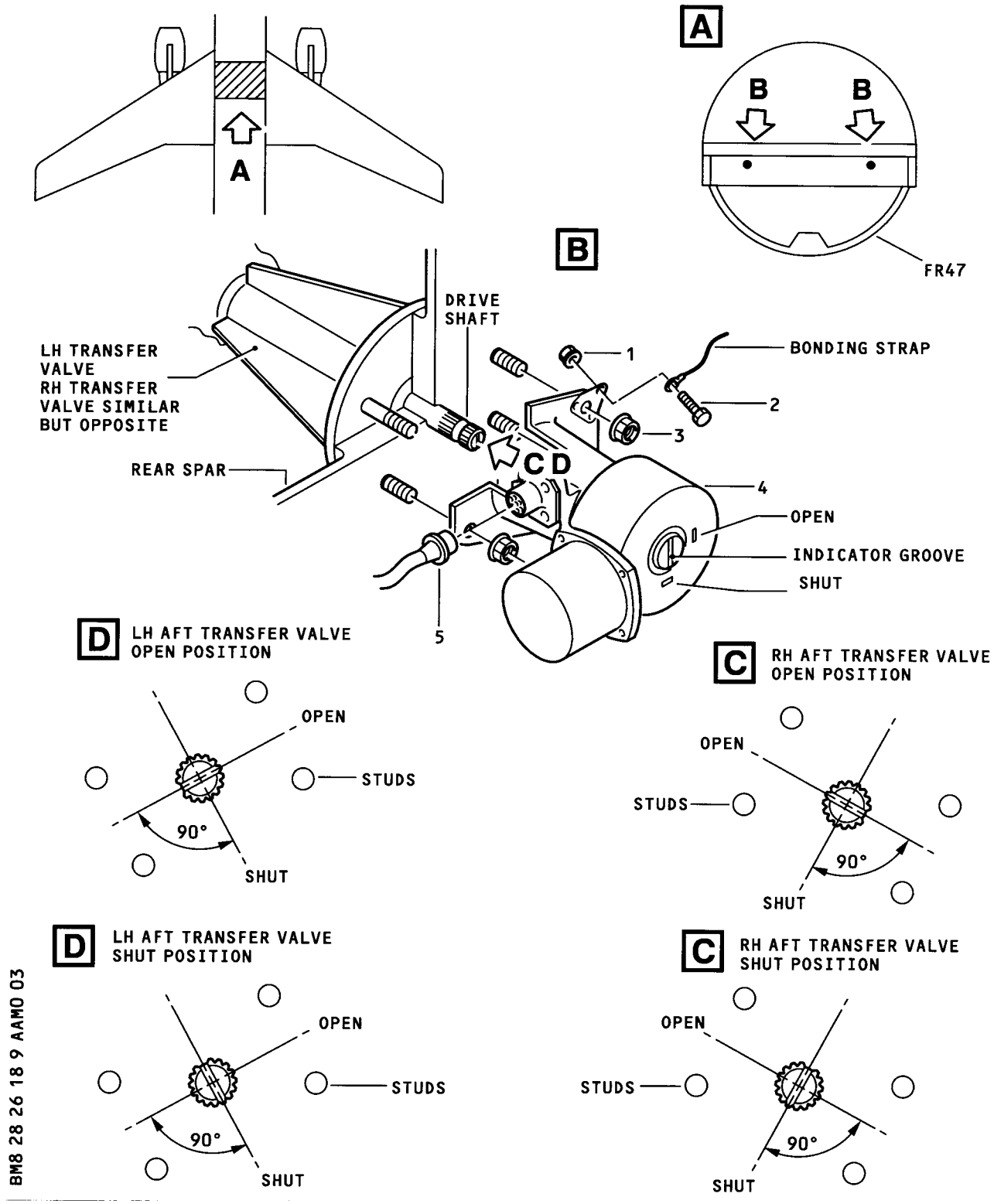
(1)Job Set-Up.

(a)Open LH(RH) main landing gear bay door (Ref. 32-12-11, P. Block 301).

(b)Position access platform.

(2)Removal.

(Ref. Fig. 901)



AFT Transfer Valve - Deactivation
Figure 901

R

(a)Remove the LH (RH) aft transfer-valve actuator (4) (Ref. 28-26-17, P. Block 401). Put the electrical connector (5) in a safe position and make sure that it is correctly attached.

CAUTION : WHEN YOU DO THE OPERATION(S) THAT FOLLOW, MAKE SURE THAT YOU DO NOT DAMAGE THE SPLINES ON THE SHAFT OF THE VALVE.

R (b)Install the mechanical actuator D97B00-001 onto the valve studs with the nuts (3).
(c)Manually operate the mechanical actuator control-lever to turn the valve shaft to the SHUT position (Ref. Fig. 901).

NOTE : If the valve is jammed in the OPEN position, or will not shut fully, the valve must be replaced (Ref. 28-26-18, P. Block 401).

(d)Safety the mechanical actuator control-lever with lockwire.
(e)Attach the bonding strap to the mechanical actuator bonding-tag with the bolt (2) and the nut (1) (Ref. 20-28-11, P. Block 1).

(3)Close-Up.
(a)Make certain working area is clean and clear of tools and miscellaneous equipment.
(b)Remove access platform.
(c)Close LH(RH) main landing gear bay door (Ref. 32-12-11, P. Block 301).
(d)Place temporary warning notice in flight compartment warning flight crew that LH(RH) aft transfer valve is locked in the SHUT position.
(e)Make certain that the following circuit breaker is open, safetied and tagged:

PANEL	SERVICE	IDENT.	LOCATION
132VU	FUEL/TRIM TANK/AFT L AND R XFR VALVE	4QL	325/K56

(f)Make an entry in the aircraft technical log.

2. Reactivation

A. Make the valve(s) fully operational as follows:
(1)Trouble shoot and identify cause of aft transfer valve malfunction, and replace defective component as follows:
(a)Valve fault - replace valve (Ref. 28-26-18, P. Block 401).
(b)Actuator fault - replace actuator (Ref. 28-26-17, P. Block 401).
(2)Remove warning notice from flight compartment.
(3)Make an appropriate entry in aircraft technical log.

CHECK VALVE 2 IN (FUEL TRANSFER) CENTER TANK - REMOVAL/INSTALLATION

WARNING : LANDING GEAR - MAKE CERTAIN GROUND SAFETIES AND CHOCKS ARE IN POSITION.

FLIGHT CONTROLS - MAKE CERTAIN GROUND SAFETIES AND NOTICES ARE IN POSITION.

OBSERVE SAFETY PRECAUTIONS IN 28-00-00, P. BLOCK 301 AND 28-10-00, P. BLOCK 301.

MAKE CERTAIN THAT FIRE FIGHTING EQUIPMENT IS AVAILABLE AND ADEQUATE.

BEFORE POWER IS SUPPLIED TO THE AIRCRAFT MAKE CERTAIN THAT ELECTRICAL CIRCUITS UPON WHICH WORK IS IN PROGRESS ARE ISOLATED.

1. Equipment and Materials

ITEM	DESIGNATION
A.	Spark Proof Lamp
B.	O-Ring
C.	Circuit Breaker Safety Clips and Tags
D.	Warning Notices Prohibiting Movement of Fuel
E. Material No. 01-001	Fuels (Ref. 20-31-00)
F. Material No. 16-006	Structure Paints (Ref. 20-31-00)
Referenced Procedures	
- 12-11-28, P. Block 301	Replenishing of Fuel Tanks
- 20-28-11, P. Block 1	Electrical Bonding
- 24-41-00, P. Block 301	AC External Power Control
- 28-00-00, P. Block 301	Fuel-General
- 28-10-00, P. Block 301	Storage
- 28-11-29, P. Block 401	Center Tank Manhole Cover
- 28-25-00, P. Block 301	Refuel/Defuel System
- 32-12-11, P. Block 301	Main Gear - Main Door

2. Procedure

(Ref. Fig. 401)

A. Job Set-Up

(1) Supply power to the aircraft electrical network and make certain that electronics racks are ventilated, (Ref. 24-41-00, P. Block 301).

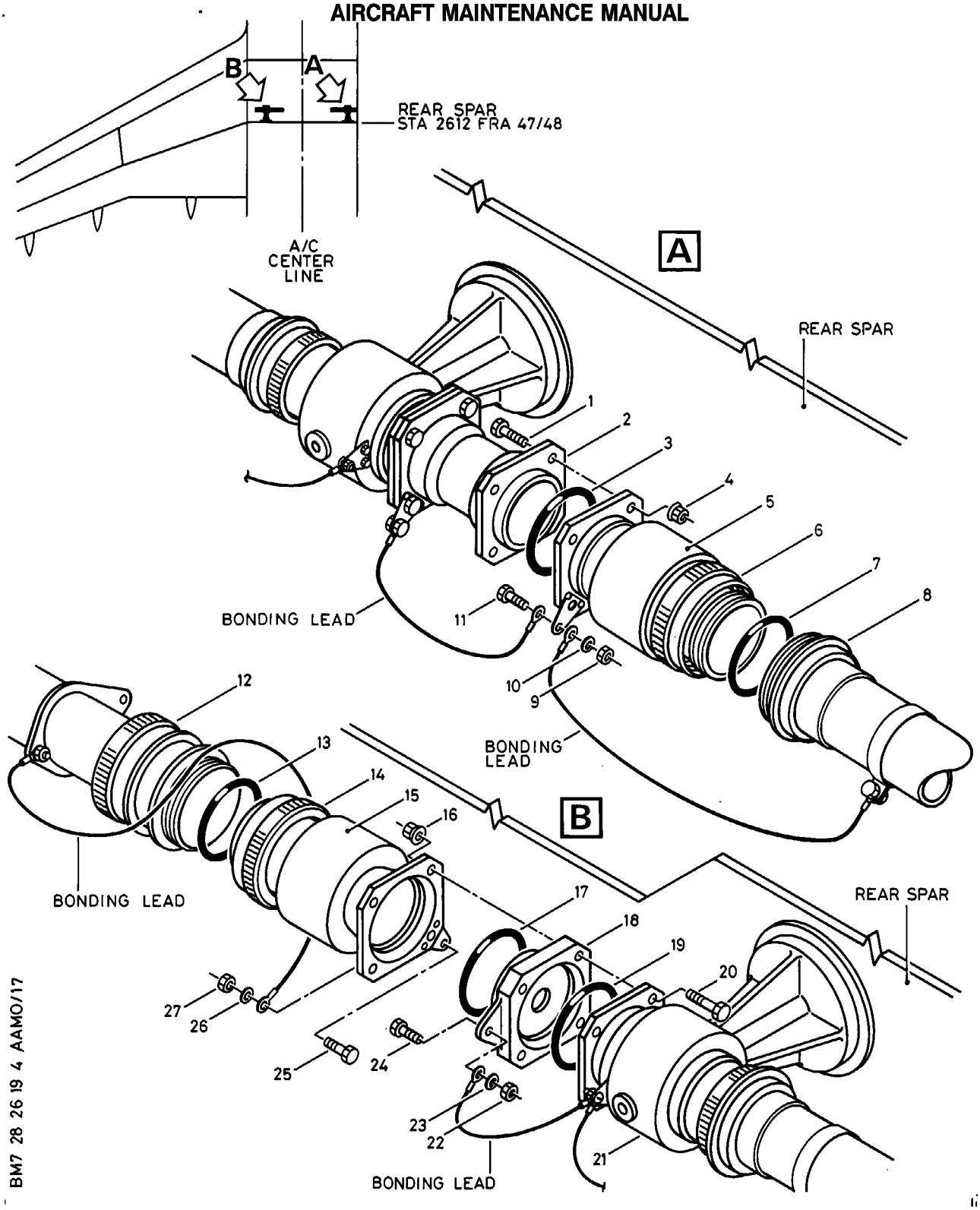
(2) Remove fuel from the center tank or move fuel to the wing tanks (Ref. 28-25-00, P. Block 301).

(3) Remove the power from the aircraft electrical network (Ref. 24-41-00, P. Block 301).

R (4) Open the access door 144DR.

R (5) Put the warning notices on the overhead panel 430VU, and the refuel/defuel panel 110VU.

R (6) Open, safety and tag the circuit breakers that follow:



Check Valve, Trim Tk Transfer - Center Tank
Figure 401

PANEL	SERVICE	IDENT.	LOCATION
132VU	FUEL/TRIM TANK/CGCC	6GU	325/K51
132VU	FUEL/TRIM TANK/ISOL VALVE	45QB	325/K52
132VU	FUEL/TRIM TANK/FWD XFR MAIN VALVE	1QL	325/K53
132VU	FUEL/TRIM TANK/XFR PUMP 2/WARN	6QN	325/K54
132VU	FUEL/TRIM TANK/XFR PUMP 2/CTL	4QN	325/K55
132VU	FUEL/TRIM TANK/AFT L & R XFR VALVE	4QL	325/K56

R (7)Open the LH main-landing-gear doors (Ref. 32-12-11, P. Block 301).
R (8)Remove the LH center-tank manhole cover 147AZ (Ref. 28-11-29, P. Block 401).

R B. Removal
R (1)Check Valve LH.
R (a)Remove the nut (22), the washer (23) and the bolt (24). Disconnect the bonding lead from the restrictor (18).
R (b)Remove the nut (27), the washer (26) and the bolt (25). Disconnect the bonding lead from the check valve (15).
R (c)Remove the coupling nut (14) and slide the pipe (12) clear of the check valve (15). Discard the O-ring (13) and seal the open end of the pipe (12) with a cap.
R (d)Remove the nuts (16) and the bolts (20). Slide the check valve (15) clear of the transfer valve (21) and remove the restrictor (18). Discard the O-rings (17) and (19). Seal the open end of the transfer valve (21) with a cap.

R (2)Check Valve RH.
R (a)Remove the nut (9), the washer (10) and the bolt (11). Disconnect the bonding leads.
R (b)Remove the coupling nut (6) and slide the pipe (8) clear of the check valve (5). Discard the O-ring (7) and seal the open end of the pipe (8) with a cap.
R (c)Remove the nuts (4) and the bolts (1). Move the check valve (5) clear of the elbow (2) and discard the O-ring (3). Seal the open end of the elbow (2) with a cap.

R C. Preparation of Replacement Component

R NOTE : As the valve is not tested after installation, make sure that it is serviceable, has been correctly stored and that all the associated paper work is in order.

R D. Preparation for Installation
R (1)Check Valve LH.
R Make sure that the transfer valve (21) and the pipe (12) are clean and in the correct condition. Remove the blanking caps.
R (2)Check Valve RH.
R Make sure that the pipe (8) and the elbow (2) are clean and in the correct condition. Remove the blanking caps.

R E. Installation
R (1)Check Valve LH.
R (a)Apply fuel (Mat. No. 01-001) to the replacement O-rings (17) and (19) and install the O-rings on the transfer valve (21) and the restrictor (18).
R (b)Install the restrictor (18) on the check valve (15). Install the check valve (15) on the transfer valve (21) with the bolts (20) and the nuts (16).
R (c)Apply fuel (Mat. No. 01-001) to the replacement O-ring (13) and install the O-ring on the check valve (15).
R (d)Move the pipe (12) in position over the check valve (15). Attach the pipe (12) with the coupling nut (14).
R (e)Install the bonding lead on the restrictor (18) with the bolt (24), the washer (23) and the nut (22) (Ref. 20-28-11, P. Block 1). Install the bonding lead on the check valve (15) with the bolt (25), the washer (26) and the nut (27) (Ref. 20-28-11, P. Block 1).
R (f)Apply paint (Mat. No. 16-006) to the bolt/nut heads and the tails.

R (2)Check Valve RH.
R (a)Apply fuel (Mat. No. 01-001) to the replacement O-ring (3) and install the O-ring on the check valve (5).
R (b)Install the check valve (5) on the elbow (2) with the bolts (1) and the nuts (4).
R (c)Apply fuel (Mat. No. 01-001) to the replacement O-ring (7) and install the O-ring the check valve (5).
R (d)Move the pipe (8) in position over the check valve (5). Attach the the pipe (8) with the coupling nut (6).
R (e)Install the bonding leads with the bolt (11), the washer (10) and the nut (9) (Ref. 20-28-11, P. Block 1).
R (f)Apply paint (Mat. No. 16-006) to the bolt/nut heads and the tails.

R F. Tests
R None

R G. Close-Up
R (1)Make sure that the work area is clean and clear of tools and miscellaneous items of equipment.
R (2)Install the manhole cover 147AZ (Ref. 28-11-29, P. Block 401).
R (3)Close the LH main-landing-gear doors (Ref. 32-12-11, P. Block 301).
R (4)Remove the safety clips and tags and close the TRIM TANK circuit breakers: 1QL, 4QL, 4QN, 6GU, 6QN and 45QB.
R (5)Remove the warning notices.
R (6)Refuel the center tank or move the fuel to the center tank from the wing tanks (Ref. 12-11-28 or 28-25-00, P. Block 301).
R (7)Close the access door 144DR.

THERMAL EXPANSION VALVE - TRIM TANK - REMOVAL/INSTALLATION

R WARNING : LANDING GEAR - MAKE SURE THAT THE GROUND SAFETIES AND CHOCKS ARE IN
R POSITION.

R FLIGHT CONTROLS - MAKE SURE THAT THE GROUND SAFETIES AND NOTICES ARE
R IN POSITION.

R OBEY THE SAFETY PRECAUTIONS IN 28-00-00, P. BLOCK 301 AND 28-10-00,
R P. BLOCK 301.

R MAKE SURE THAT THE FIRE FIGHTING EQUIPMENT IS AVAILABLE AND ADEQUATE.

R MAKE SURE THAT YOU ISOLATE THE ELECTRICAL CIRCUITS UPON WHICH WORK IS
R IN PROGRESS.

1. Reason for the Job.

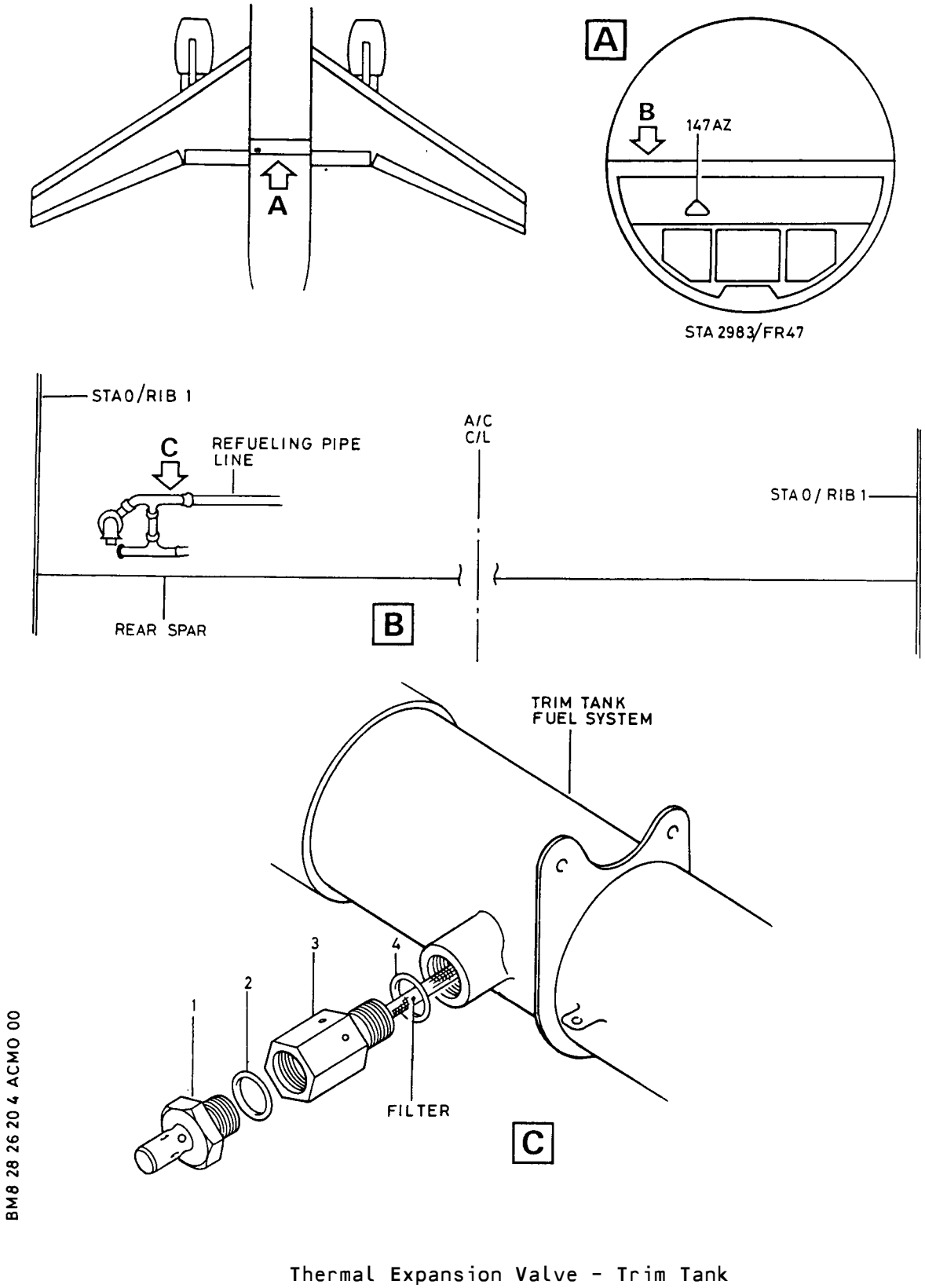
R A. To remove and install the thermal expansion valve and/or the adapter.

2. Equipment and Materials

ITEM	DESIGNATION
A.	Access Platform 2 m (6.5 ft)
B.	Container
C.	O-ring Seal (valve)
D.	O-ring Seal (adapter)
E.	Lint-Free Cloth
F.	Torque Spanner 0.3 to 0.5 m.daN (26.6 to 44.3 lbf.in)
G.	Circuit Breaker Safety Clips and Tags
H. Material No. 01-001	Fuels (Ref. 20-31-00)
R J. Material No. 11-026	Cleaning Agent (Ref. 20-31-00)
Referenced Procedures	
- 28-00-00, P. Block 301	Fuel - General
- 28-10-00, P. Block 301	Storage
- 28-11-29, P. Block 401	Manhole Covers, Center Tank
- 28-25-00, P. Block 301	Refuel/Defuel System
- 32-12-11, P. Block 301	Main Gear Main Door

3. Procedure
(Ref. Fig. 401)

A. Job Set-Up
(1)Defuel the center tank, the two inner tanks and the trim tank
(Ref. 28-25-00, P. Block 301).
(2)Open, safety and tag the following circuit breakers:



Thermal Expansion Valve - Trim Tank
Installation
Figure 401

	PANEL	SERVICE	IDENT.	LOCATION
	22VU	FUEL/TRIM TANK/FWD XFR AUX VALVE	2QL	201/J21
	22VU	FUEL/TRIM TANK/FWD XFR PUMP 1/CTL	3QN	201/J22
	22VU	FUEL/TRIM TANK/FWD XFR PUMP 1/WARN	5QN	201/J23
	22VU	FUEL/TRIM TANK/FWD XFR CGCC	2GU	201/J24
	22VU	FUEL/TK LO LVL/L OUTR & R INR & CTR R	1QJ	208/B26
	22VU	FUEL/TK LO LVL/R OUTR & L INR & CTR L	2QJ	208/B27
	101VU	FUEL/L/INNER TK PUMP 2 SUPPLY	1QA	GEN1/A20
	101VU	FUEL/R/INNER TK PUMP 1 SUPPLY	2QA	GEN1/A20
	101VU	FUEL/L/INNER TK PUMP 1 SUPPLY	7QA	GEN2/A20
	101VU	FUEL/R/INNER TK PUMP 2 SUPPLY	8QA	GEN2/A17
R	101VU	FUEL/CTR TK L PUMP SUPPLY	99QA	ESS/B04
R	101VU	FUEL/CTR TK R PUMP SUPPLY	100QA	GEN2/B17
	101VU	FUEL/TRIM TK PUMP 1 SUPPLY	1QN	GEN1/B1
	101VU	FUEL/TRIM TK PUMP 2 SUPPLY	2QN	GEN2/C2
	132VU	FUEL/FQI SUPPLY & IND	1QT	321/P59
	132VU	FUEL/FQI CHAN SUPPLY 1	3QT	321/P60
	132VU	FUEL/FQI CHAN SUPPLY 2	4QT	321/P61
	132VU	FUEL/XFR VALVE	2QU	321/P55
	132VU	FUEL/FUELLING HI LVL	6QJ	321/P57
	132VU	FUEL/TRIM TANK/CGCC	6GU	325/K51
	132VU	FUEL/TRIM TANK/ISOL VALVE	45QB	325/K52
	132VU	FUEL/TRIM TANK/FWR XFR MAIN VALVE	1QL	325/K53
	132VU	FUEL/TRIM TANK/XFR PUMP 2/WARN	6QN	325/K54
	132VU	FUEL/TRIM TANK/XFR PUMP 2/CTL	4QN	325/K55
	132VU	FUEL/TRIM TANK/AFT L & R XFR VALVE	4QL	325/K56
	132VU	FUEL/L OUTR TK ISOL VALVE	1QB	803/N82
	132VU	FUEL/R OUTR TK ISOL VALVE	2QB	803/N88
	132VU	FUEL/L INR TK ISOL VALVE	3QB	802/P81
	132VU	FUEL/R INR TK ISOL VALVE	4QB	802/P90
	132VU	FUEL/FUELLING/CTL & REFUEL VALVE	1QU	321/P56
	132VU	FUEL/FUELLING OVERFLOW & CALIBRATION	5QJ	321/P58

(3)Open the LH main gear door (Ref. 32-12-11, P. Block 301).
(4)Remove the center-tank manhole cover 147AZ (Ref. 28-11-29, P. Block 401).
(5)Put the access platform in position.

B. Removal
(1)Enter the center tank and put the container under the assembly of the valve (1) to catch any fuel that spills.
(2)Remove the valve (1) from the adapter (3). Remove and discard the O-ring (2).
(3)If applicable, remove the adapter (3) from the fuel refueling line. Remove and discard the O-ring (4).

C. Preparation of Replacement Component

NOTE: If a replacement valve (1) is to be installed, make sure that

it is serviceable, has been correctly stored and that all the applicable paperwork is correct.

(1)Make sure that the filter is clean and free from debris.
R (2)Use a clean lint-free cloth moistened with cleaning agent (Material
R No. 11-026) to clean the component interface. Examine the component
R interface for damage.

D. Installation
(1)If the adapter was removed, then lubricate the O-ring (4) with fuel (Material No. 01-001) and install the O-ring on the adapter (3).
(2)Install the adapter (3) in the fuel refueling line. TORQUE to between 1.8 and 2.0 m.daN (157 and 173 lbf.in).
(3)Lubricate the O-ring (2) with fuel (Material No. 01-001) and install the O-ring on the valve (1).
(4)Install the valve (1) in the adapter (3). TORQUE to between 0.3 and 0.5 m.dan (26.6 and 44.3 lbf.in).

E. Test
None.

F. Close-Up
(1)Remove the container from the center tank.
(2)Make sure that the work area is clean and clear of all tools and other items of equipment.
(3)Install the center-tank manhole cover 147AZ (Ref. 28-11-29, P. Block 401.
(4)Remove the access platform.
(5)Close the LH main gear door (Ref. 32-12-11, P. Block 301).
(6)Remove safety clips and tags and close circuit breakers 2QL, 3QN, 5QN, 2GU, 6GU, 45QB, 1QL, 6QN, 4QN, 4QL, 1QU, 2QU, 1QT, 3QT, 4QT, 1QJ, 2QJ, 5QJ, 6QJ, 1QA , 2QA, 7QA, 8QA, 99QA, 100QA, 1QN, 2QN, 1QB, 2QB, 3QB and 4QB.
(7)On panel 430VU, put all the pump P/BSW's back to there normal operation condition.

FUEL TRANSFER (CG) PUMP SYSTEM - DESCRIPTION AND OPERATION

1. General

Two fuel pumps in the trim tank supply fuel to the center tank through a
R shrouded transfer line. Usually these pumps operate automatically on
R signals from the CGCC (Ref. 31-46-00). A manual override facility is
R available in case of certain system failures.

2. Component Location

(Ref. Fig. 001)

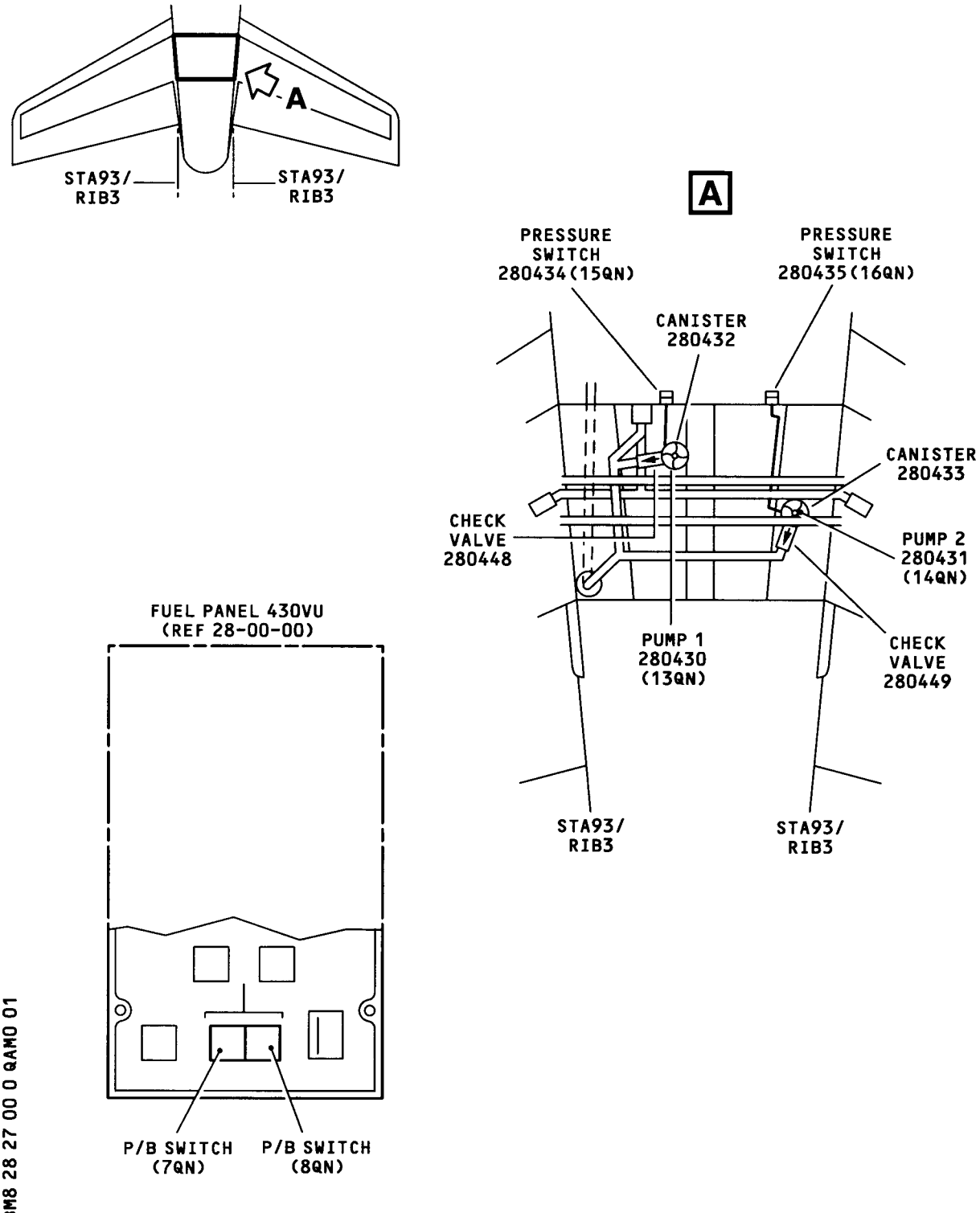
FIN	FUNCTIONAL DESIGNATION	PANEL	ZONE	ACCESS DOOR	ATA REF
280430	PUMP1 - TRANSFER, TRIM TK (13QN)		319		28-27-11
280431	PUMP2 - TRANSFER, TRIM TK (14QN)		319		28-27-11
280432	CANISTER - PUMP 1, TRIM TK		319		28-27-12
280433	CANISTER - PUMP 2, TRIM TK		319		28-27-12
280434	PRESS SW - TRANSFER PUMP1 (15QN)		311		28-27-14
280435	PRESS SW - TRANSFER PUMP2 (16QN)		312		28-27-14
280448	CHECK VALVE - FUEL (2 INCH) CTR TK		141	147AZ	
280449	CHECK VALVE - FUEL (2 INCH) CTR TK		142	148AZ	
1QN	C/B - FUEL/TRIM TK/PUMP 1/SUPPLY	101VU	120	GEN 1/B14	
2QN	C/B - FUEL/TRIM TK/PUMP 2/SUPPLY	101VU	120	GEN 2/C2	
3QN	C/B - FUEL/TRIM TANK FWD XFR/PUMP 1/CTL	22VU	210	201/J22	
4QN	C/B - FUEL/TRIM TANK/XFR PUMP 2/CTL	132VU	212	325/K55	
5QN	C/B - FUEL/TRIM TANK FWD XFR/PUMP 1/WARN	22VU	210	201/J23	
6QN	C/B - FUEL/TRIM TANK/XFR PUMP 2/WARN	132VU	212	325/K54	
7QN	P/B SW - FUEL/TRIM TK PUMP 1	430VU	210		
8QN	P/B SW - FUEL/TRIM TK PUMP 2	430VU	210		
9QN	RELAY - TRANSFER CONTROL PUMP 1	107VU	121		
10QN	RELAY - TRANSFER CONTROL PUMP 2	107VU	121		

3. Description

(Ref. Fig. 002)

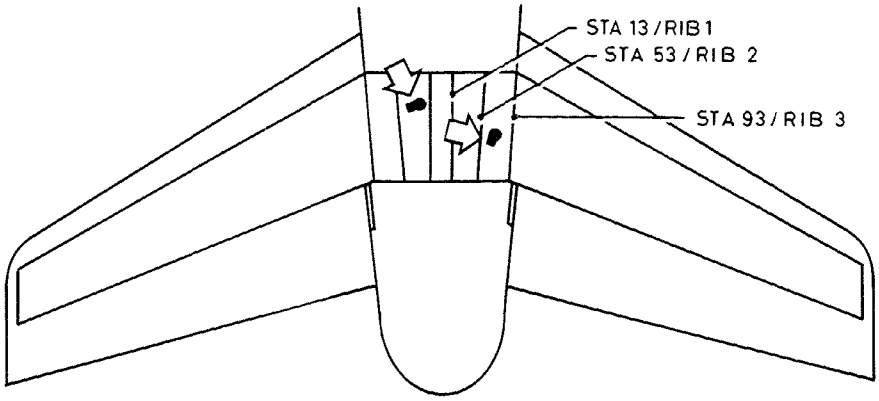
**ON A/C ALL

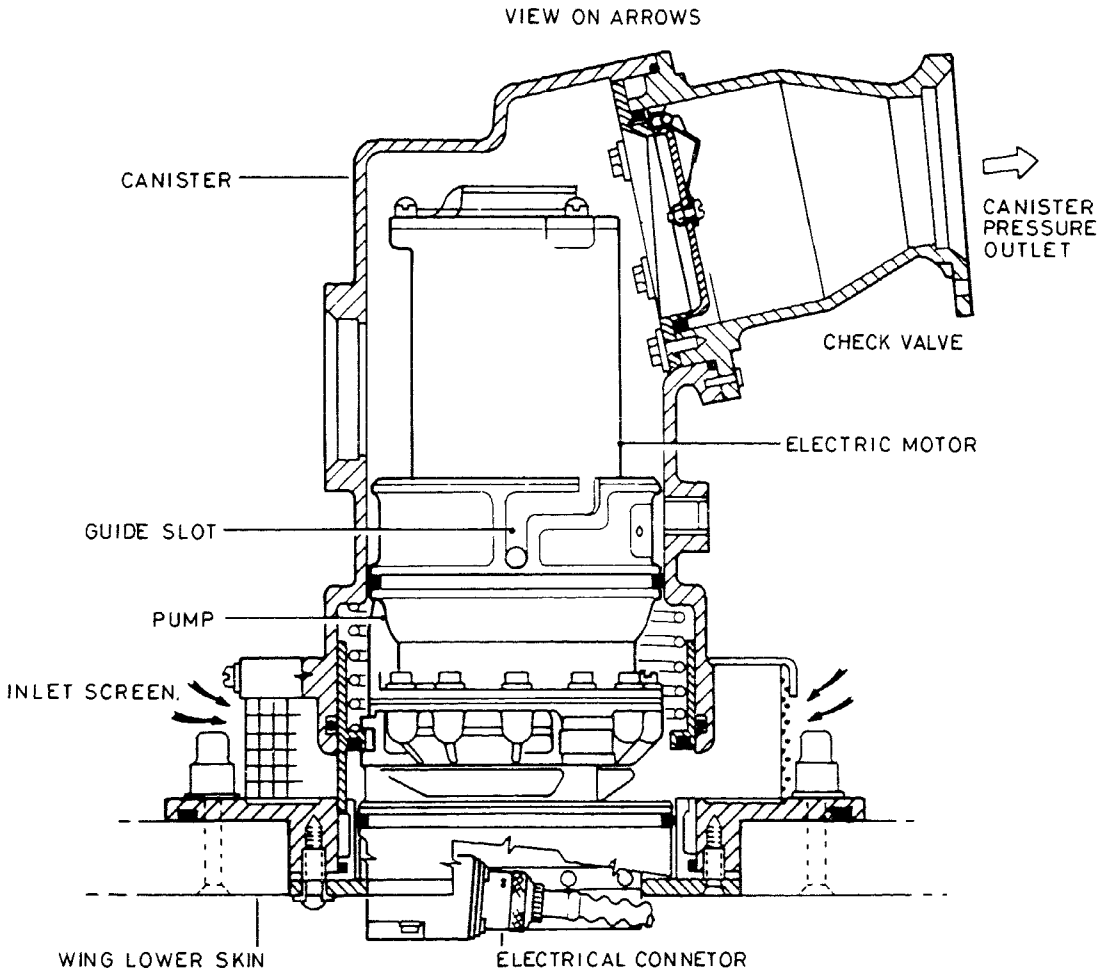
(Ref. Fig. 003)



Transfer Pump System - Component Location
Figure 001

R





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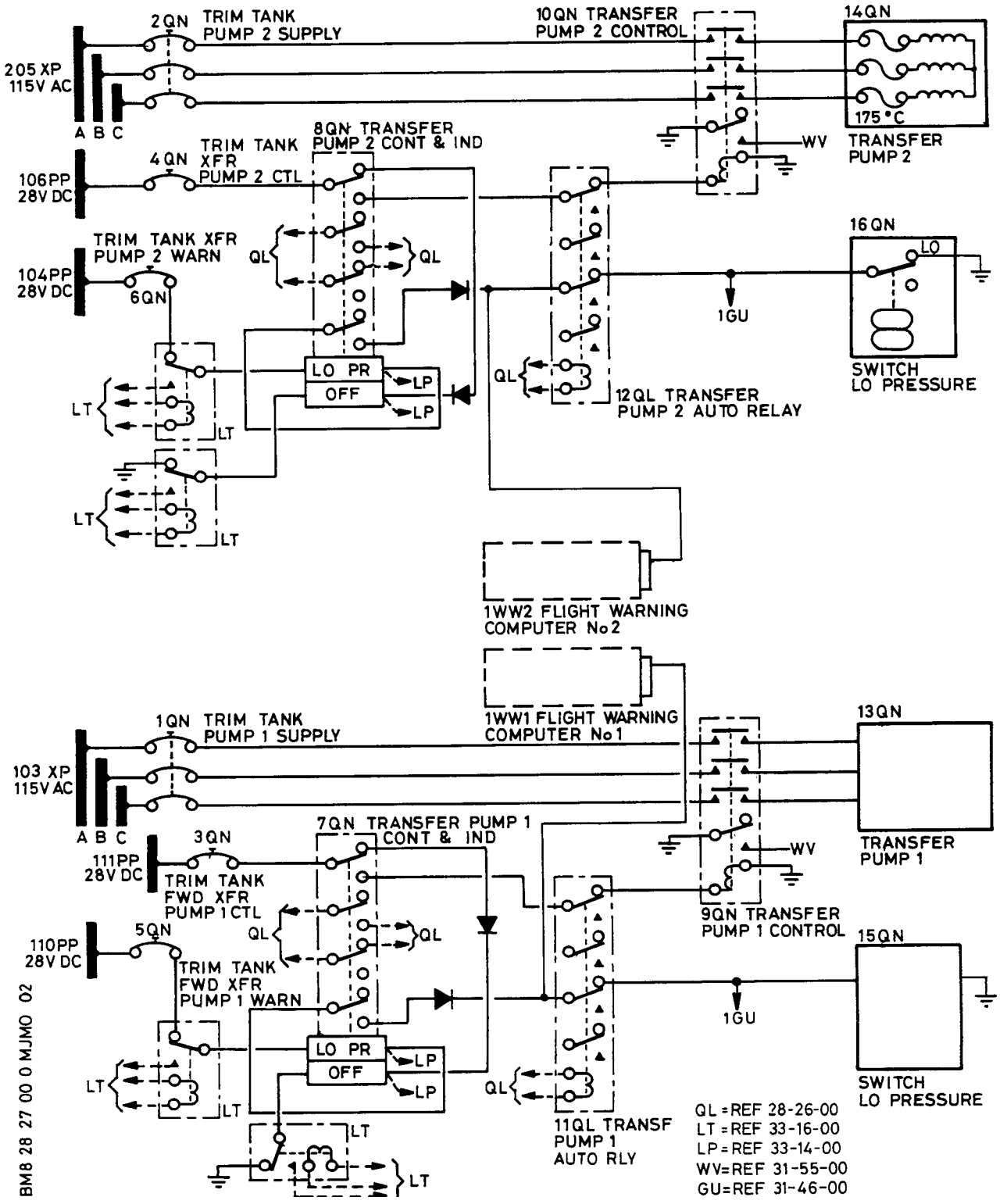
Transfer Pump and Canister
Figure 002



Transfer-Pump Control-Circuit
Figure 003

**ON A/C ALL

A. Fuel Transfer Pumps

The trim tank contains two centrifugal booster pumps driven from different electric power supplies.
Each pump is installed in a canister so that the pump may be removed without emptying the fuel tank. The pump inlet is surrounded by a non-icing inlet screen designed to prevent the passage of any object which could restrict fuel flow or damage any fuel system component. The clear area of the screen is 5.5 times the area of the outlet line.
Each pump has a stall pressure not exceeding 2.76 bar (40 psi) and can deliver 11,430 kg/hr (25,199 lb/hr) of fuel at 1.17 bar (17 psi). An impellor by-pass is provided to reduce suction losses in the event of pump failure. The pumps are driven by 115V AC 3 phase motors.

A check valve, installed in the pump delivery port, prevents back-flow through the pump.

The pumps are equipped with non-resettable thermal fuses. These prevent pump operation when the pump temperature is more than 200 deg C.

B. Fuel Transfer Pump Pressure Switches

A pressure switch on the pump delivery side is actuated when pressure is greater than 0.41 bar (6 psi). Insufficient pressure to operate the switch, when the pump should be running, causes a LO PR amber warning legend on the related pump P/BSW (on the fuel panel 430VU) to come on.

**ON A/C ALL

R

4. Operation

A. Automatic

With the TRIM TANK AUTO MODE P/BSW (3GU) released (out) and the TRIM TK PUMP P/BSW pressed (in), automatic operation of the fuel transfer pumps is controlled by the CGCC, which controls the operation of the transfer-pump auto relays. When the TRIM TK PUMP P/BSWs are pressed (in), the OFF legends go off and the transfer-pump auto relays are energized through the CGCC, which prevents the transfer-pump control relays from energizing.

When a forward transfer is required, the CGCC de-energizes the transfer-pump auto relays which in turn energize the transfer-pump control relays

(pump contactors) and the trim-tank transfer pumps operate. When the related pump contactors close, each provides a discrete input to:
- the SDAC which shows the related pump operating symbol on the ECAM fuel page.

When fuel transfer is complete, the CGCC signals the transfer-pump auto relays to energize which in turn de-energizes the transfer-pump control relays and the transfer pumps stop.

**ON A/C ALL

B. Manual

When the TRIM TANK AUTO MODE p/bsw on panel 430VU is pressed (in), the transfer pump auto relays remain de-energized. When the TRIM TK PUMP p/bsw are pressed (in), the transfer pump control relays will energize and the transfer pumps will run. Releasing (out) the TRIM TK PUMP p/bsw will de-energize the transfer pump control relays and the transfer pumps will stop.

NOTE : If the TRIM TK AUTO MODE p/bsw is pressed (in) to select manual forward transfer, the isolation valve will not open to allow fuel flow if previously closed by the TRIM TK ISOL VALVE p/bsw.

WARNING: MAKE SURE THAT THE GROUND SAFETY-LOCKS ARE CORRECTLY INSTALLED ON THE LANDING GEAR.

MAKE SURE THAT THE WHEEL CHOCKS ARE CORRECTLY POSITIONED. THIS WILL PREVENT UNWANTED MOVEMENT OF THE AIRCRAFT WHICH COULD CAUSE DAMAGE.

MAKE SURE THAT THE FLIGHT CONTROL SAFETY-LOCKS AND THE WARNING NOTICES ARE IN POSITION.

OBEY THE FUEL SAFETY PROCEDURES. THIS WILL PREVENT INJURY OR DAMAGE.

MAKE SURE THAT YOU HAVE THE CORRECT FIRE FIGHTING EQUIPMENT AVAILABLE.

1. Operational Test of the Trim Tank Pumps

A. Reason for the Job

To test the trim tank pumps for operation and low pressure.

B. Equipment and Materials

ITEM	DESIGNATION
Referenced Procedures	
- 12-11-28, P. Block 301	Replenishing of Fuel Tanks
- 24-41-00, P. Block 301	AC External Power Control
- 28-25-00, P. Block 301	Refuel/Defuel System

C. Procedure

(1) Job Set-Up

(a) Energize the aircraft electrical network (Ref. 24-41-00, P. Block 301).

(b) On panel 430VU, make sure that all pump pushbutton switches (P/BSW's) are released (out) and the OFF legends are on.

(c) Make sure that the trim tank contains at least 500 kg of fuel. Refuel/defuel or transfer fuel if necessary (Ref. 12-11-28, or 28-25-00, P. Block 301).

(2) Test

ACTION	RESULT
1. On panel 430VU: - raise guard and release (out) the TRIM TK ISOL VALVE P/BSW	On panel 430VU: - the TRIM TK ISOL VALVE OFF legend comes on - the flowbar flashes as the valve moves and goes off when the valve is shut

ACTION	RESULT
- press (in) the **TRIM TK AUTO MODE P/BSW**	- the **TRIM TK AUTO MODE FWD** legend comes on
- press (in) the **TRIM TK PUMP 1 and 2 P/BSW.**	- the **TRIM TK PUMP 1 and 2 OFF** legends go off - the **LP PR** legends comes on momentarily and then goes off as the pumps run.
2. On panel 430VU: - monitor the **TRIM TK LO PR** legends for 20 seconds.	On panel 430VU: - the **LP PR** legends should not come on.
3. On panel 430VU: - release (out) the **TRIM TK PUMP 1 and 2 P/BSW**	On panel 430VU: - the **TRIM TK PUMP 1 and 2 OFF** legends come on - the pumps stop
- release (out) the **TRIM TK AUTO MODE P/BSW**	- the **TRIM TK AUTO MODE FWD** legend goes off
- raise guard and press (in) the **TRIM TK ISOL VALVE P/BSW.**	- the **TRIM TK ISOL VALVE OFF** legend goes off - the flowbar flashes as the valve moves and stays on when the valve is fully open.

(3)Close-Up
(a)If necessary, refuel/defuel the trim tank (Ref. 28-25-00, P. Block 301).
(b)De-energize the aircraft electrical network (Ref. 24-41-00, P. Block 301).

R TRANSFER PUMP (TRIM TANK) (280430, 280431)
REMOVAL/INSTALLATION

R WARNING : LANDING GEAR - MAKE SURE THAT THE GROUND SAFETIES AND CHOCKS ARE IN POSITION.

R FLIGHT CONTROLS - MAKE SURE THAT THE GROUND SAFETIES AND NOTICES ARE
R IN POSITION.

R OBEY THE SAFETY PRECAUTIONS IN 28-00-00, P. BLOCK 301.

R MAKE SURE THAT THE FIRE FIGHTING EQUIPMENT IS AVAILABLE AND ADEQUATE.

R MAKE SURE THAT YOU ISOLATE THE ELECTRICAL CIRCUITS UPON WHICH WORK IS
R IN PROGRESS.

R 1. Equipment and Materials

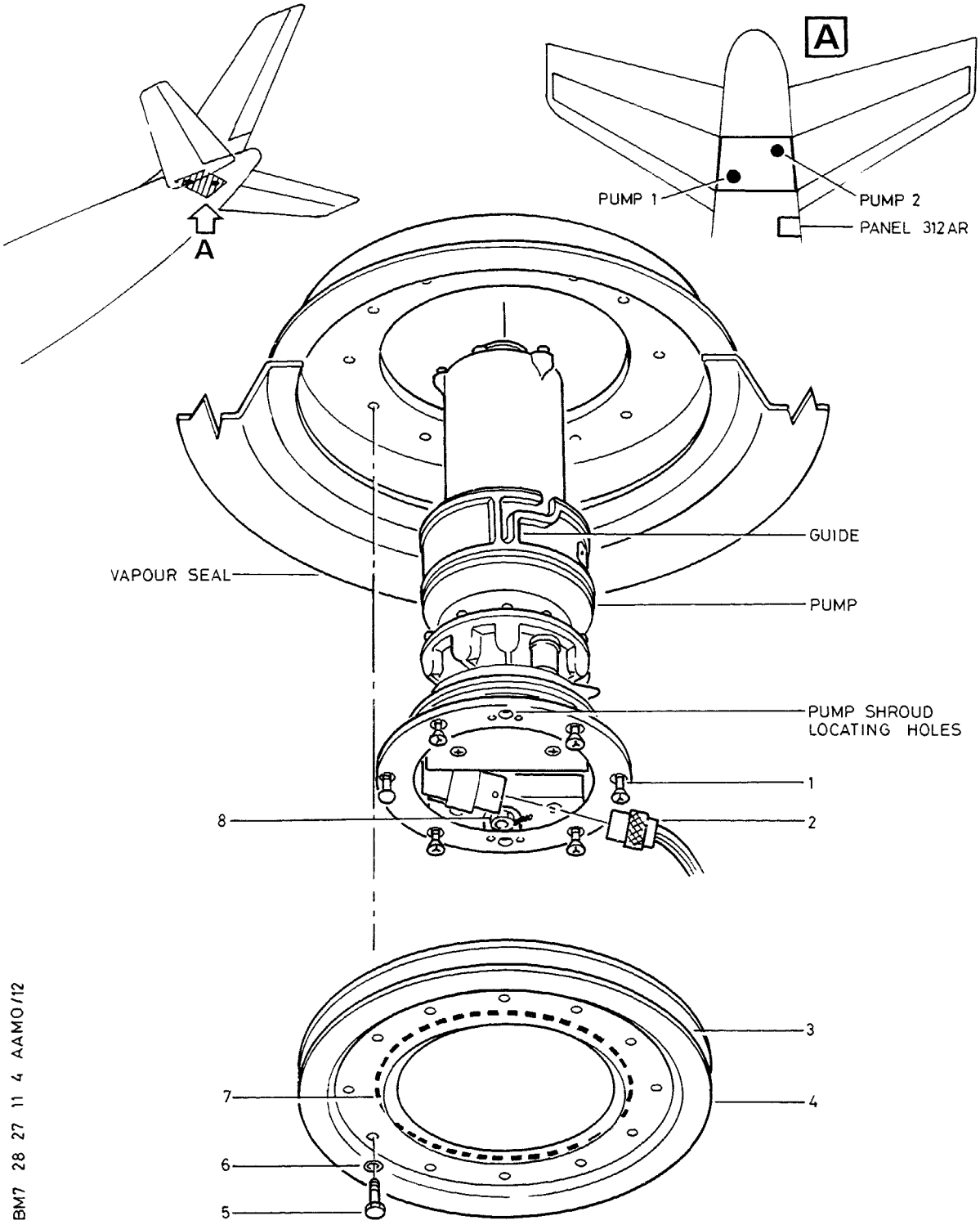
ITEM	DESIGNATION
A. 98A28201003000	Tool - Fuel Pump Shroud
B.	Container
C. Material No. 01-001	Fuels (Ref. 20-31-00)
D.	Lockwire-Corrosion Resistant Steel Dia. 0.8 mm (0.032 in.)
E.	Access Platform 6 m (19 ft)
F.	Blanking Plug Canister
G.	Circuit Breaker Safety Clips
H.	Seal
J.	Seal
Referenced Procedures	
- 12-11-28, P. Block 301	Replenishing of Fuel Tanks
- 24-41-00, P. Block 301	AC External Power Control
- 28-00-00, P. Block 301	Fuel - General
- 28-27-00, P. Block 501	Fuel Transfer (CG) Pump System
- 55-00-00, P. Block 301	Stabilizers - Standard Warnings and Procedures

R 2. Procedure
(Ref. Fig. 401)
(Ref. Fig. 402)

A. Job Set-Up

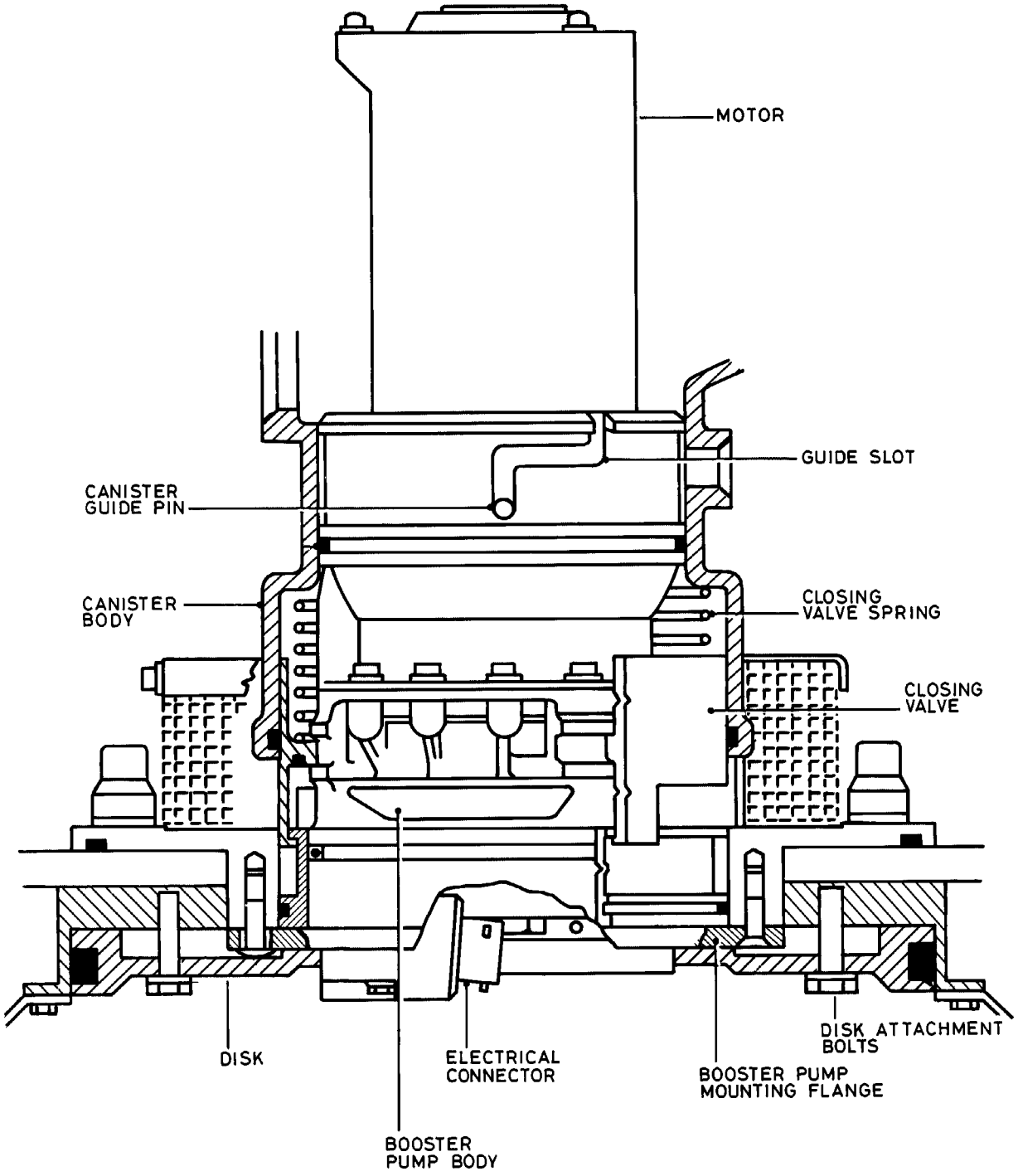
CAUTION : HORIZONTAL STABILIZER DEFLECTION SPEED MUST NOT EXCEED 0.5 DEG/S.

(1)Rotate trimmable horizontal stabilizer (THS) pitch trim manual control wheels to aircraft NOSE DOWN.
(2)Make THS and vertical stabilizers safe (Ref. 55-00-00, P. Block 301).
(3)Open, safety and tag the following circuit breakers:



Transfer Pump (Trim Tank) - Installation
Figure 401

R



Transfer Pump Disc - Installation
Figure 402

R

PANEL	SERVICE	IDENT.	LOCATION
22VU	FUEL/TRIM TK FWD XFR/PUMP 1/CTL	3QN	201/J22
101VU	FUEL/TRIM TK/PUMP 1/SUPPLY	1QN	GEN1/B14
101VU	FUEL/TRIM TK/PUMP 2/SUPPLY	2QN	GEN2/C2
132VU	FUEL/TRIM TK/XFR PUMP2/CTL	4QN	325/K55
132VU	FUEL/FUELLING/FWD XFR MAIN VALVE	1QL	325/K53

(4)Position access platform.
(5)Open access panel 312AR.
(6)Remove bolts (5), washers (6) and disk (4) from the pumps base in vapor seal. Discard O-ring seals (3) and (7).

B. Removal (Ref. Fig. 401)
(1)Disconnect the electrical connector (2).
(2)Install the fuel-pump shroud tool PN 98A28201003000.
(3)Release the bolts (1) that secure the pump to the canister.
(4)Loosen the plug (8) and pull the pump down to the guide stop.
(5)Put the container in position under the pump, remove the plug (8) to drain residual fuel.

R **ON A/C 001-100,

NOTE : Fuel in excess of 1 liter (0.26 US gals) indicates a faulty canister seal.

R **ON A/C 101-200,

R NOTE : Fuel in excess of 0.26 US gals (1 liter) indicates a faulty
R canister seal.

R **ON A/C ALL

(6)Rotate the pump counter-clockwise and withdraw it.
(7)Use the fuel-pump shroud tool PN 98A28201003000 and remove the pump shroud.
(8)Install the plug (8).
(9)Install the canister blanking plug.

C. Preparation of Replacement Component
(1)Check pump seal condition and wet with Fuel (Material No. 01-001).
(2)Install the fuel-pump shroud tool PN 98A28201003000.

D. Installation (Ref. Fig. 401)
(1)Remove the blanking plug from the canister, install the pump to align the electrical connectors (2) when rotated.
(2)Rotate the pump clockwise, push fully in and secure with the bolts (1).

(3)Remove the fuel-pump shroud tool PN 98A28201003000.
(4)Connect the electrical connector (2) and safety with lockwire.

E. Test
(1)Remove safety clips and tags and close circuit breakers:

PANEL	SERVICE	IDENT.	LOCATION
22VU	FUEL/TRIM TK FWD XFR/PUMP 1/CTL	3QN	201/J22
101VU	FUEL/TRIM TK/PUMP 1/SUPPLY	1QN	GEN1/B14
101VU	FUEL/TRIM TK/PUMP 2/SUPPLY	2QN	GEN2/C2
132VU	FUEL/TRIM TK/XFR PUMP 2/CTL	4QN	325/K55
132VU	FUEL/FUELLING/FWD XFR/MAIN VALVE	1QL	325/K53

(2)Do the operational test of the trim tank pumps (Ref. 28-27-00, P. Block 501) and make sure that the replacement pump does not leak.

F. Close-Up
(1)Lubricate new O-ring seals (3) and (7) with Fuel (Material No. 01-001) and install in the disk (4).
(2)Make sure that the disk (4) is positioned to maintain a clearance with the dome-headed bolt on the pump base and secure with the bolts (5) and the washers (6).
(3)Make sure that the working area is clean and clear of all tools and other items of equipment.
(4)Close the access panel 312AR and remove the access platform.
(5)Return the THS and the vertical stabilizer to the operating condition (Ref. 55-00-00, P. Block 301).
(6)Make sure that the ground safeties and/or notices are removed.
(7)De-energize aircraft electrical network (Ref. 24-41-00, P. Block 301).

CANISTER-TRANSFER PUMP (TRIM TANK)
REMOVAL/INSTALLATION

R WARNING : THIS PROCEDURE USES A FUEL SYSTEM ITEM THAT IS IN A CATEGORY
R KNOWN AS A CRITICAL DESIGN CONFIGURATION CONTROL LIMITATION
R (CDCCL). CDCCL IDENTIFIES AN ITEM THAT CAN BE THE SOURCE OF A
R POSSIBLE FUEL TANK IGNITION. YOU MUST KEEP ALL CDCCL ITEMS IN THE
R APPROVED CONFIGURATION. DAMAGE, WEAR OR CHANGES TO A CDCCL ITEM CAN
R CAUSE A POSSIBLE FUEL TANK EXPLOSION.

LANDING GEAR - MAKE SURE THAT THE GROUND SAFETIES AND CHOCKS ARE IN POSITION.

FLIGHT CONTROLS - MAKE SURE THAT THE GROUND SAFETIES AND NOTICES ARE IN POSITION.

FLIGHT CONTROLS - MAKE SURE THAT THE TRAVEL RANGES OF THE CONTROL SURFACES ARE CLEAR.

MAKE SURE THAT THE FIRE FIGHTING EQUIPMENT IS AVAILABLE AND ADEQUATE.

OBSERVE THE SAFETY PRECAUTIONS IN 28-00-00, P. BLOCK 301 AND 28-10-00, P. BLOCK 301.

MAKE SURE THAT YOU ISOLATE THE ELECTRICAL CIRCUITS UPON WHICH WORK IS IN PROGRESS.

1. Equipment and Materials

ITEM	DESIGNATION
A.	Access Platform 7 m (24 ft)
B.	Circuit Breaker Safety Clips and Tags
C. 97A27302009000	Locking Equipment - Pitch Trim Control Wheel
D. Material No. 01-001	Fuels (Ref. 20-31-00)
E.	O-Rings
Referenced Procedures	
- 12-11-28, P. Block 301	Replenishing of Fuel Tanks
- 20-28-11, P. Block 1	Electrical Bonding
- 24-41-00, P. Block 301	AC External Power Control
- 28-00-00, P. Block 301	Fuel - General
- 28-10-00, P. Block 301	Storage
- 28-11-33, P. Block 401	Covers - Manhole, Trim Tank
- 28-25-00, P. Block 301	Refuel/Defuel System
- 28-27-11, P. Block 401	Pump Transfer
- 55-00-00, P. Block 301	Stabilizers - General

2. Procedures
(Ref. Fig. 401)

A. Job Set-Up

CAUTION: THS DEFLECTION SPEED MUST NOT EXCEED 0.5 DEG/S.

(1)Turn the trimmable horizontal stabilizers (THS) pitch-trim manual control-wheel to NOSE DOWN. Immobilize the Captain's pitch-trim control-wheel with the locking equipment PN 97A27302009000.
(2)Make the THS and the vertical stabilisers safe (Ref. 55-00-00, P. Block 301).
(3)Put the access platform in position.
(4)Remove the access panel 312AR.
(5)For the transfer pump 1 canister:
(a)Remove the manhole cover access panel 319BB in the vapor seal.
(b)Remove the manhole cover 319AZ (Ref. 28-11-33, P. Block 401).
(6)For the transfer pump 2 canister:
(a)Remove the manhole cover access panel 319AB in the vapor seal.
(b)Remove the manhole cover 319BZ (Ref. 28-11-33, P. Block 401).
(7)Open, safety and tag the following circuit breakers:

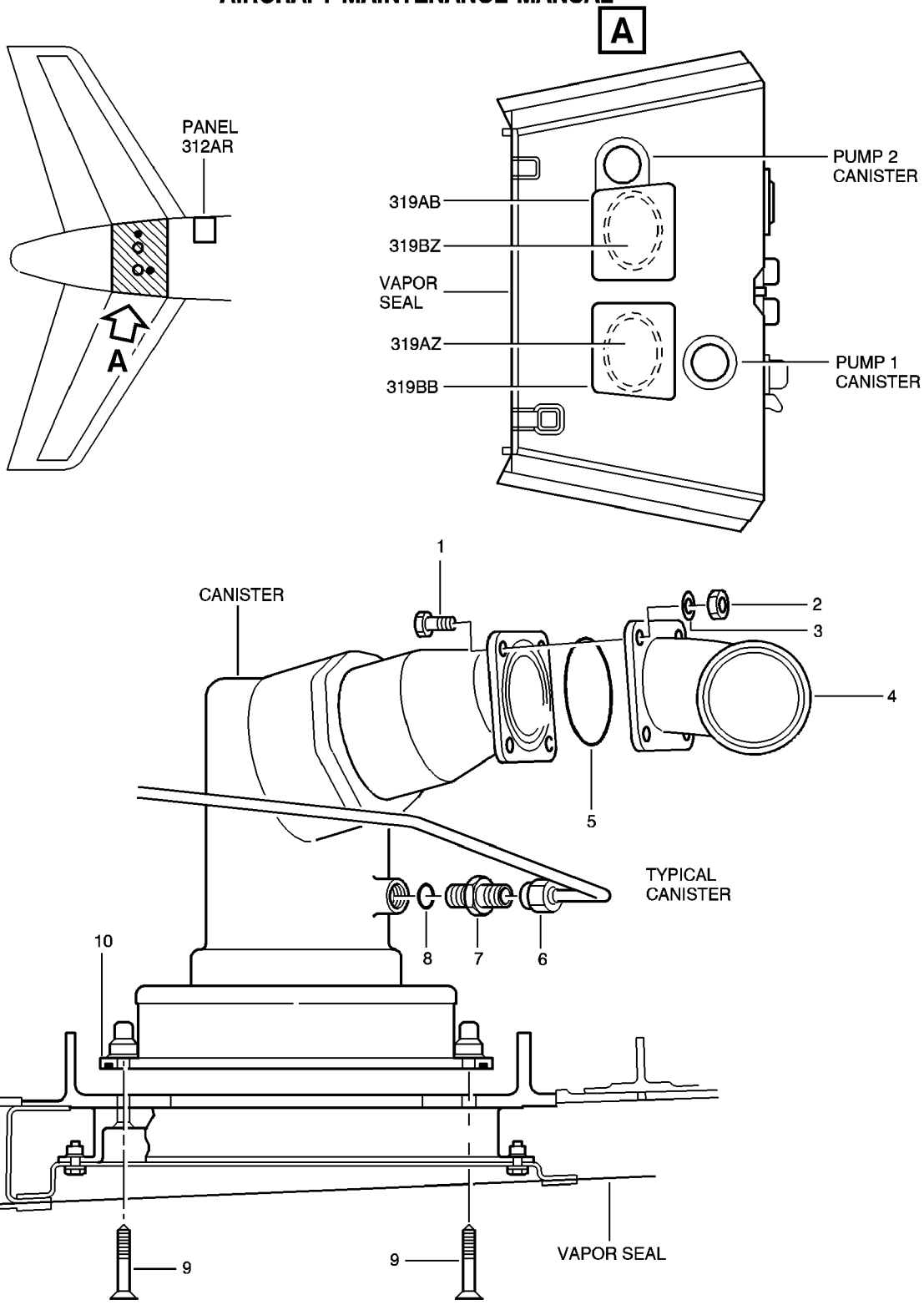
PANEL	SERVICE	IDENT.	LOCATION
22VU	FUEL/TRIM TK FWD XFR/PUMP 1/CTL	3QN	201/J22
101VU	FUEL/TRIM TK/PUMP 1/SUPPLY	1QN	GEN 1/B14
101VU	FUEL/TRIM TK/PUMP 2/SUPPLY	2QN	GEN 2/C2
132VU	FUEL/TRIM TK FWD XFR/PUMP 2/CTL	4QN	325/K55
132VU	FUEL/FUELLING/FWD XFR MAIN VALVE	1QL	325/K53

(8)Remove the fuel transfer pump 1 or 2 as applicable (Ref. 28-27-11, P. Block 401).

B. Removal
(1)Disconnect the pipe connector (6), remove the adapter (7) and discard the O-ring (8).
(2)Remove the bolts (1), the washers (3) and the nuts (2).
(3)Remove the bolts (9), withdraw the canister and discard the O-rings (5) and (10).

C. Preparation of Replacement Component
(1)Make sure that the work area is clean.
(2)Apply fuel (Material. No. 01-001) to the new O-ring (8) and install the O-ring (8) on the adaptor (7).
(3)Install the adaptor (7) in the canister.
(4)Apply fuel (Material. No. 01-001) to the new O-rings (5) and (10) and put them in position on the canister.

D. Installation
(1)Align the canister with the pipe (4) and the pipe connector (6). Loosely connect the connector (6).



Fuel Pump Canister (Trim Tank) Installation
Figure 401

(2)Install the bolts (9) and tighten in a diametrically opposite sequence.
(3)Make sure that the O-ring (5) is correctly positioned.

R WARNING : THIS INSTRUCTION IS APPLICABLE TO A CRITICAL DESIGN
R CONFIGURATION CONTROL LIMITATION (CDCCL) ITEM. CAREFULLY OBEY
R ALL GIVEN INSTRUCTIONS WHEN YOU DO THIS STEP. IF YOU DO NOT
R OBEY THESE INSTRUCTIONS, A DANGEROUS CONDITION CAN OCCUR THAT
R CAN CAUSE A POSSIBLE FUEL TANK EXPLOSION.

(4)Carefully align the pipe (4) with the canister and secure with the bolts (1), the washers (3) and the nuts (2) (Ref. 20-28-11, P. Block 1).
(5)Tighten the pipe connector (6).
(6)Make sure that the work area is clean and clear of tools and other items of equipment.
(7)Install the manhole cover 319AZ(BZ) (Ref. 28-11-33, P. Block 401).

E. Preparation for Test
(1)Install the fuel transfer pump in the canister. Do not secure the pump with bolts (1) (Ref. 28-27-11, P. Block 401).
(2)Refuel the trim tank (Ref. 12-11-28, P. Block 301).

F. Test
(1)Pull the partially installed fuel transfer pump down to the guide stop and drain the residual fuel (Ref. 28-27-11, P. Block 401).

NOTE: Drained residual fuel in excess of 1 liter (0.26 US gals) indicates faulty canister sealing.

(2)Make sure that the manhole cover does not leak.

G. Close-Up
(1)Install the fuel transfer pump and test (Ref. 28-27-11, P. Block 401).
(2)Install the manhole-cover access panel 319AB(BB) in the vapor seal.
(3)Make sure that the work area is clean and clear of tools and other items of equipment.
(4)Remove the access platform.
(5)Return the THS and vertical stabilizers to the normal operating condition (Ref. 55-00-00, P. Block 301).
(6)Remove the safety clips and tags and close the circuit breakers 3QN, 1QN, 2QN, 4QN and 1QL.
(7)Remove the locking equipment PN 97A27302009000 from the Captain's pitch -trim control wheel.
(8)Return the control wheel to the 0 position.
(9)Defuel the trim tank (Ref. 28-25-00, P. Block 301).
(10)Make sure that all the ground safeties and/or notices are removed.

WARNING : LANDING GEAR - MAKE SURE THAT THE GROUND SAFETIES AND CHOCKS ARE IN POSITION.

FLIGHT CONTROLS - MAKE SURE THAT THE GROUND SAFETIES AND NOTICES ARE IN POSITION.

OBEY THE SAFETY PRECAUTIONS IN 28-00-00, P. BLOCK 301.

MAKE SURE THAT THE FIRE FIGHTING EQUIPMENT IS AVAILABLE AND ADEQUATE.

MAKE SURE THAT YOU ISOLATE THE ELECTRICAL CIRCUITS UPON WHICH WORK IS IN PROGRESS.

1. Purge the Pressure Switch Feed Line

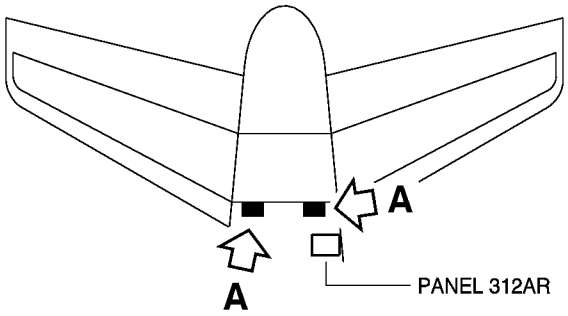
A. Reason for the Job
(1)To make sure there is no water or unwanted material in the feed line of the fuel pump pressure switch.

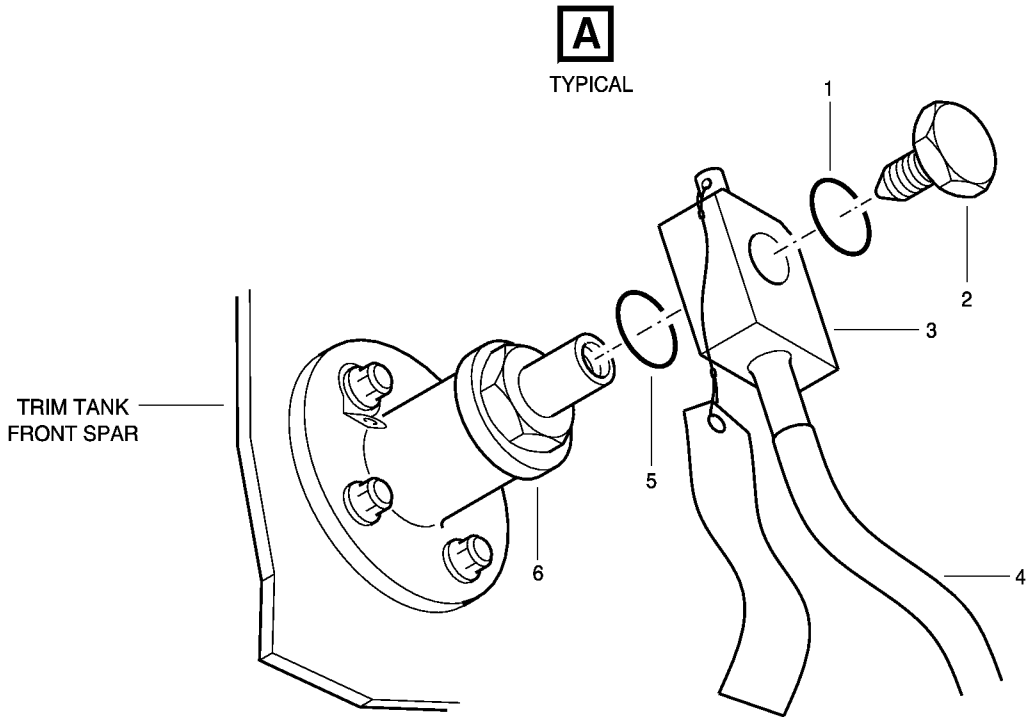
B. Equipment and Materials

	ITEM	DESIGNATION
	A.	Access Platform 4.5 m (15 ft)
	B.	Circuit Breaker Safety Clips and Tags
R	C.	Container 5 liters (1.3 US gal)
R	D.	Torque Wrench 10 to 20 lbf.ft
R		(1.35 to 2.71 m.daN)
R	E.	Hose - Fuel Resistant 9.65 mm (0.38 in.) ID
R	F. 98A28104030000	Adaptor-banjo
R	G.	O-rings
	Referenced Procedures	
	- 12-11-28, P. block 301	Replenishing of Fuel Tanks
	- 24-41-00, P. Block 301	AC External Power Control
	- 28-00-00, P. Block 301	Fuel - General
	- 28-25-00, P. Block 301	Refuel/Defuel System
	- 28-27-14, P. Block 401	Pressure Switch (Trim Tank)
	- 55-00-00, P. Block 301	Stabilizers - Standard Warnings and Procedures

C. Procedure
(Ref. Fig. 201)

(1)Job Set-up
(a)Energize the aircraft electrical network (Ref. 24-41-00, P. Block 301).
(b)On panel 20VU, make sure the trim tank contains a minimum of 500 kg (1100 lb) of fuel.
(c)If necessary, refuel or transfer fuel to make sure there is the required minimum amount of fuel in the trim tank (Ref. 12-11-28 or 28-25-00, P. Block 301).





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R

Adaptor-banjo PN 98A28104030000 - Installation
Figure 201

(d)De-energize the aircraft electrical network (Ref. 24-41-00, P. Block 301).
(e)Open, safety and tag the circuit breakers that follow:

PANEL	SERVICE	IDENT.	LOCATION
For the feed line of trim tank pump 1:			
22VU	FUEL/TRIM TK/FWD XFR/PUMP 1/CTL	3QN	201/J22
22VU	FUEL/TRIM TK/FWD XFR/PUMP 1/WARN	5QN	201/J23
For the feed line of trim tank pump 2:			
22VU	FUEL/TRIM TK/XFR PUMP 2/CTL	4QN	325/K54
22VU	FUEL/TRIM TK/XFR PUMP 2/WARN	6QN	325/K53

(f)Make the horizontal and vertical stabilizers safe (Ref. 55-00-00, P. Block 301).
(g)Position the access platform.
(h)Open the access door 312AR.
(j)Remove the related pressure switch from the feed line (Ref. 28-27-14, P. Block 401).

R NOTE : Retain the O-rings (1) and (5) and the plug (2) from the pressure switch. They are used to install the adaptor-banjo (3) for the purge procedure.

(k)Connect the fuel resistant hose (4) to the adaptor-banjo (3).

(2)Purge the feed line

NOTE : Two persons are necessary for this procedure.

(a)Put the container below the valve (6) of the feed line.
(b)Install the adaptor-banjo PN 98A28104030000:
1 Put the free end of the fuel resistant hose (4) into the container.
R 2 Attach the adaptor-banjo (3) to the valve (6) with the O-rings (1) and
R (5) and the plug (2) retained in step 1. C. (1) (j).
R 3 TORQUE the plug (2) to between 12.9 - 14.74 lbf.ft
R (1.75 - 2.0 m.daN).

R NOTE : When you tighten the plug (2), fuel will flow into the container.

(c)Energize the aircraft electrical network (Ref. 24-41-00, P. Block 301).
(d)Remove the safety clips and tags and close the circuit breakers 3QN and 5QN or 4QN and 6QN.
(e)On the panel 430VU, push (in) the P/BSW of the related PUMP. Let a
R maximum of 2 liters (0.5 US gal) of fuel flow into the container, then release (out) the P/BSW of the related PUMP.
R (f)Loosen the plug (2) to stop the flow of fuel through the valve (6).
(g)De-energize the aircraft electrical network (Ref. 24-41-00, P. Block 301).

(3)Close-up

R (a)Remove the plug (2), the adaptor-banjo (3) and the O-rings (1) and (5)
R from the valve (6). Discard the O-rings (1) and (5).

(b)Remove the container and the adaptor-banjo (3) from the aircraft.

(c)Install the related pressure switch on the feed line with new O-rings
R (1) and (5) and the plug (2) (Ref. 28-21-52, P. Block 401).

(d)Make sure that the work area is clean and clear of tools and all other items of equipment.

(e)Close the access door 312AR.

(f)Remove the access platform.

(g)Return the stabilizers to their normal operating condition (Ref. 55-00-00, P. Block 301).

PRESSURE SWITCH (TRIM TANK) (280434,280435)
REMOVAL/INSTALLATION

WARNING : LANDING GEAR - MAKE CERTAIN GROUND SAFETIES AND CHOCKS ARE IN POSITION.

FLIGHT CONTROLS - MAKE CERTAIN GROUND SAFETIES AND NOTICES ARE IN POSITION.

OBSERVE THE SAFETY PRECAUTIONS IN 28-00-00, P. BLOCK 301.

MAKE CERTAIN THAT FIRE FIGHTING EQUIPMENT IS AVAILABLE AND ADEQUATE.

BEFORE POWER IS SUPPLIED TO THE AIRCRAFT MAKE CERTAIN THAT ELECTRICAL CIRCUITS UPON WHICH WORK IS IN PROGRESS ARE ISOLATED.

1. Equipment and Materials

	ITEM	DESIGNATION
	A.	Access Platform (4.5 m) (15 ft)
R	B.	Circuit Breaker Safety Clips and Tags
R	C.	Container 5 liters (1.3 US gal)
R	D.	Torque Wrench 10 to 20 lbf.ft
R		(1.35 to 2.71 m.daN)
R	E.	Protective Caps
R	F.	Lockwire, Corrosion Resistant Steel, 0.8 mm (0.032 in) dia.
R	G.	Clean Lint-Free Cloth
R	H.	O-rings
R	J. Material No. 01-001	Fuels (Ref. 20-31-00)
	Referenced Procedures	
	- 24-41-00, P. Block 301	AC External Power Control
	- 28-00-00, P. Block 301	Fuel - General
	- 28-25-00, P. Block 301	Refuel/Defuel System
	- 55-00-00, P. Block 301	Stabilizers - Standard Warnings and Procedures

2. Procedure

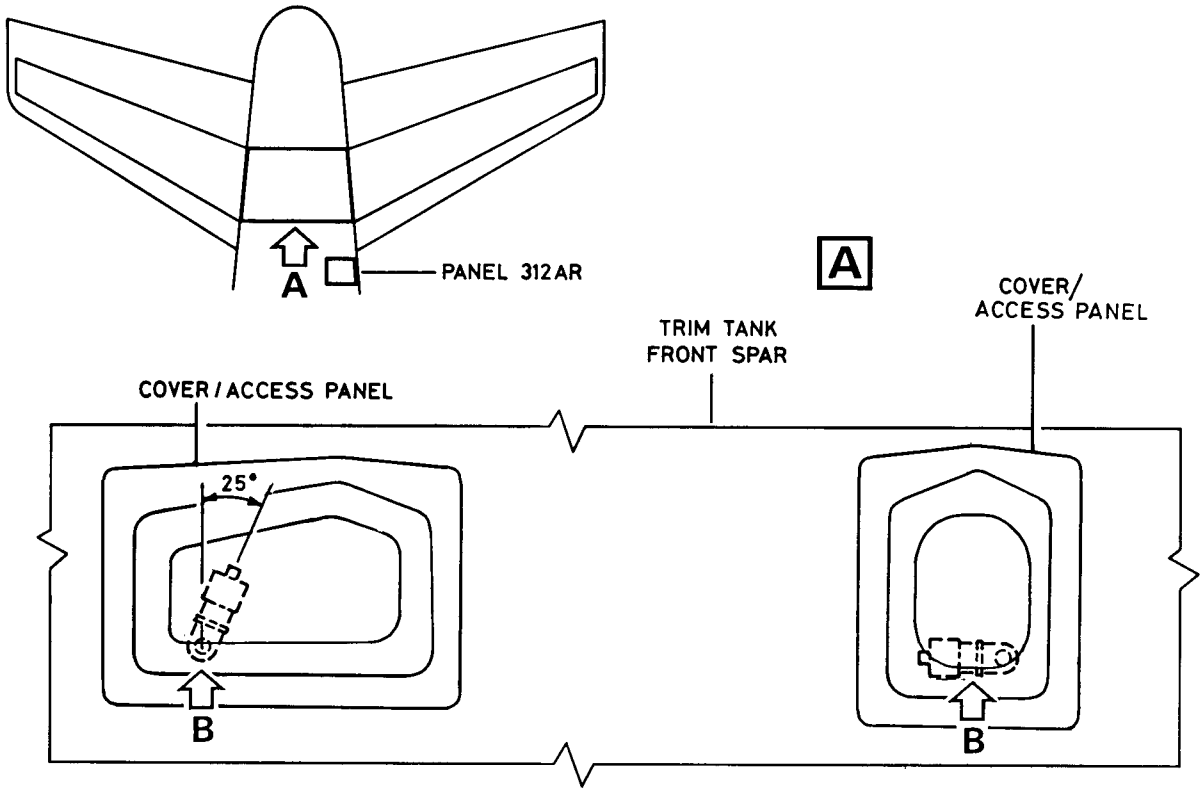
(Ref. Fig. 401)

A. Job Set-Up

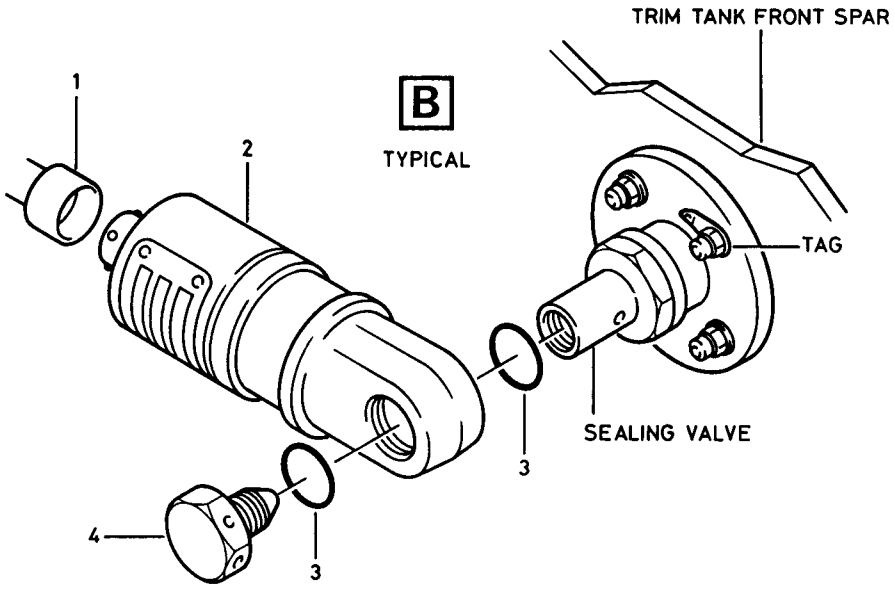
(1)Open, safety and tag the following circuit breakers:

PANEL	SERVICE	IDENT.	LOCATION
22VU	FUEL/TRIM TK/FWD XFR/PUMP 1/CTL	3QN	201/J22
22VU	FUEL/TRIM TK/FWD XFR/PUMP 1/WARN	5QN	201/J23
132VU	FUEL/TRIM TK/XFR PUMP 2/WARN	6QN	325/K53
132VU	FUEL/TRIM TK/XFR PUMP 2/CTL	4QN	325/K54

R (2)Make the horizontal and vertical stabilizers safe (Ref. 55-00-00,
R P. Block 301).



NOTE: PRESSURE SWITCH (PUMP 1) INSTALLED HORIZONTALLY
PRESSURE SWITCH (PUMP 2) INSTALLED 25° FROM VERTICAL



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Pressure Switch (Trim Tank) - Installation
Figure 401

R

R (3)Position the access platform.
R (4)Remove the panel 312AR.
R (5)Remove the access panel in the pressure switch cover on the trim tank
R front spar.

B. Removal
R (1)Disconnect the electrical connector (1).
R (2)Cut and remove the lockwire securing the plug (4).
R (3)Place a container below the plug (4).
R (4)Unscrew the plug (4) quickly to minimize fuel loss.
R (5)Remove the pressure switch (2) and discard the O-rings (3).
R (6)Cap the sealing valve, the pressure switch aperture and the electrical
R connectors.

C. Preparation for Installation
R (1)Remove the protective caps from the sealing valve, the pressure switch
R aperture and the electrical connectors.
R (2)Make sure that the electrical connectors are in the correct condition.
R (3)Use Fuel (Material No. 01-001) to wet the new O-rings (3).

D. Installation
R (1)Install one new O-ring (3) on the sealing valve.
R (2)Put the pressure switch (2) in position on the sealing valve and locate
R the other new O-ring (3) in the groove on the body of the pressure
R switch.
R (3)Hold the pressure switch (2) in the correct position and quickly install
R the plug (4).
R (4)TORQUE the plug (4) to between 12.9 - 14.74 lbf.ft
R (1.75 - 2.0 m.daN). Do not safety the plug with lockwire at this step.
R (5)Use a clean lint-free cloth to remove all residual fuel.
R (6)Connect the electrical connector (1) to the pressure switch (2).

E. Preparation for Test
(1)Remove safety clips and tags and close circuit breakers 3QN, 4QN, 5QN
and 6QN.

F. Test
(1)Do the operational test of the trim tank pumps (Ref. 28-27-00,
P. Block 501) and check the pressure switch for fuel leaks.

G. Close-Up
(1)If required defuel trim tank (Ref. 28-25-00, P. Block 301)
and return aircraft to normal operating condition.
(2)De-energize the aircraft electrical network (Ref. 24-41-00,
P. Block 301).
(3)Safety plug (4), with lockwire, to tag on sealing valve.
(4)Remove container.
(5)Install access panel in pressure switch cover.
(6)Close panel 312AR and remove access platform.
(7)Make certain ground safeties and/or notices are removed.
(8)Make certain that working area is clean and clear of tools and

miscellaneous items of equipment.

ADDITIONAL CENTER TANK TRANSFER SYSTEM
DESCRIPTION AND OPERATION

1. General
(Ref. Fig. 001)

**ON A/C 101-200,

Post SB 28-2108 For A/C 101-200,

(Ref. Fig. 002)

**ON A/C 101-200,

An Additional Center Tank (ACT) holding approximately 12,100 lb (5500 kg) of useable fuel can be installed in the aft cargo compartment. The tank is the same size and shape as an LD6 standard cargo container and utilizes the cargo loading system for loading and initial installation. A suction pump, transfer valve and refuel/defuel valve are installed in the center tank. The necessary wiring and relays are installed for the control of the tank pressurization system.

**ON A/C 101-200,

Post SB 28-2108 For A/C 101-200,

One or two Additional Center Tanks (ACT(s)) each holding approximately 5500 kg (12,000 lb) of useable fuel can be installed in the aft cargo compartment. Each tank is the same size and shape as an LD6 standard cargo container and utilizes the cargo loading system for loading and initial installation. A suction pump, transfer valve and refuel/defuel valve are installed in the center tank. The necessary wiring and relays are installed for the control of the tanks pressurization system.

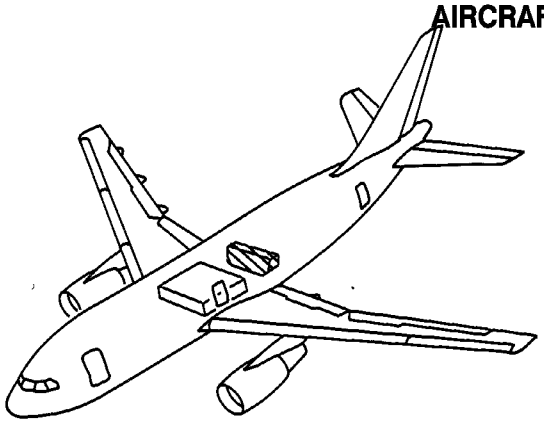
**ON A/C 102-200,

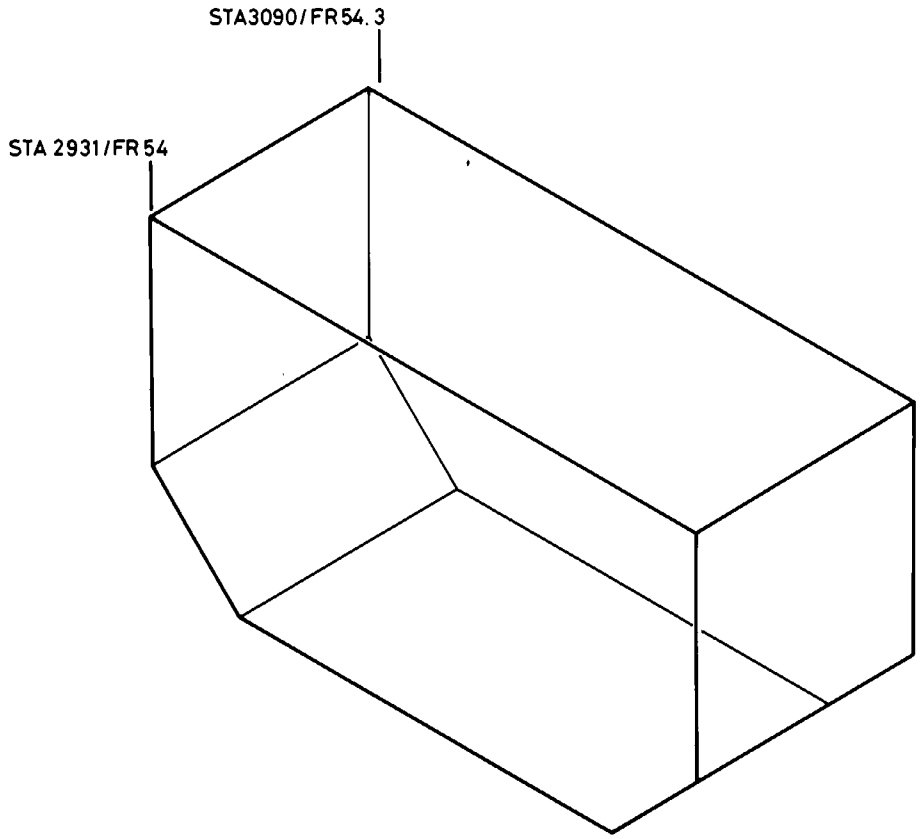
The system includes the necessary wiring and relays for the control of an inlet valve that is installed in the ACT.

**ON A/C 102-200,

Post SB 28-2105 For A/C 102-200,

Post SB 28-2108 For A/C 102-200,





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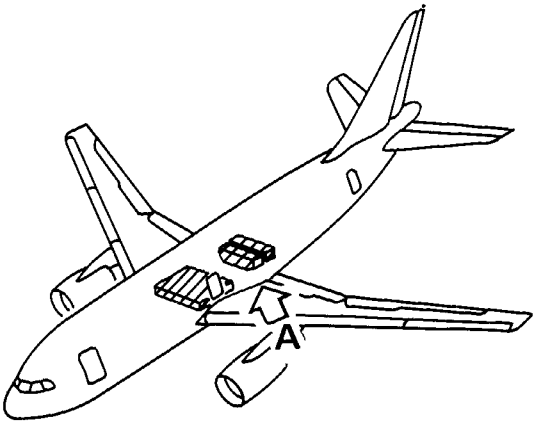
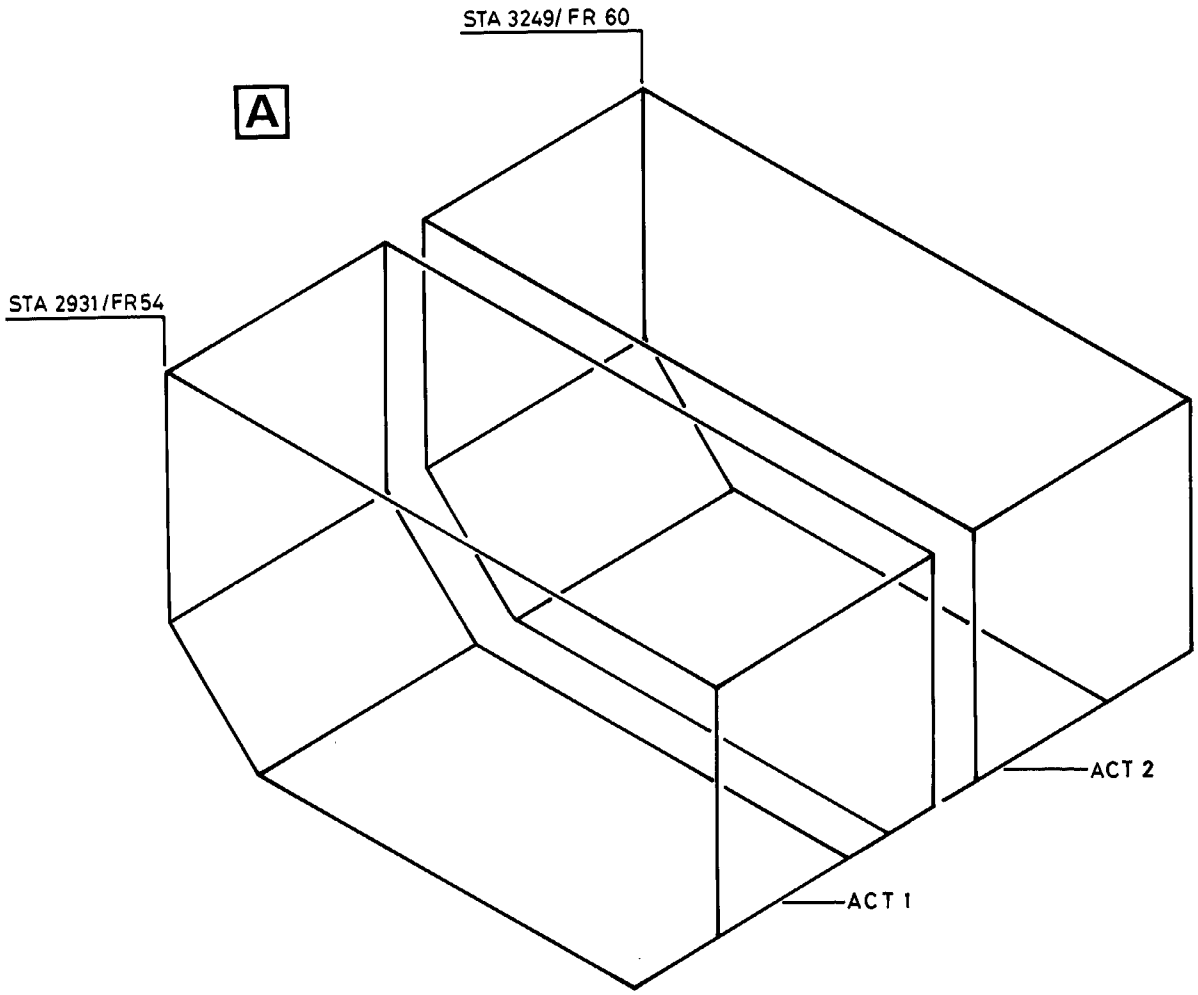
Additional Center Tank (ACT) - Location
Figure 001





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Additional Center Tanks (ACTs) - Location
Figure 002

R Post SB 28-2126 For A/C 104-104,

The system includes the necessary wiring and relays for the control of an inlet valve that is installed in each ACT.

**ON A/C 101-200,

The system includes the necessary wiring, relays and controls for the operation of an inlet valve that is installed in the ACT. When necessary the inlet valve:
- stays shut to isolate the ACT from the refuel/defuel line
- opens to let the ACT be refueled or to supply fuel to the center tank.

**ON A/C 101-200,

Post SB 28-2105 For A/C 101-200,

R Post SB 28-2126 For A/C 104-104,

The system includes the necessary wiring, relays and controls for the operation of an inlet valve that is installed in each ACT. When necessary the inlet valves:
- stay shut to isolate the ACT(S) from the refuel/defuel line
- open to let each ACT be refueled or to supply fuel to the center tank.

**ON A/C 101-200,

The ACT control system uses discrete outputs that come from the fuel level amplifier (Ref. 28-46-00). The amplifier makes the outputs from the inputs that come from the fuel level sensors (Ref. 28-42-00). These outputs make sure that the ACT control system operates correctly during refuel, defuel and forward fuel transfers.

2. Component Location

(Ref. Fig. 003)

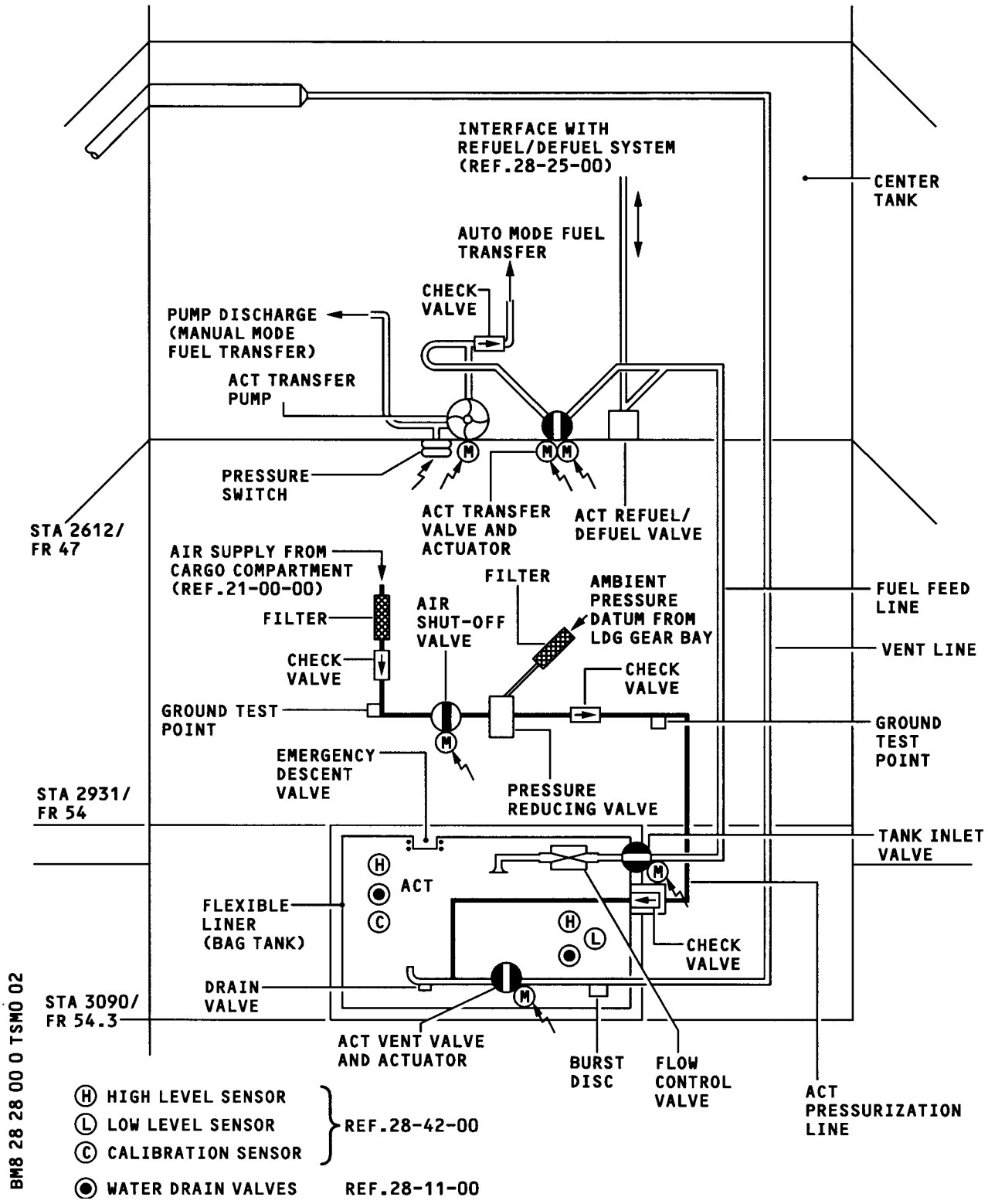
**ON A/C 101-200,

Post SB 28-2105 For A/C 101-200,

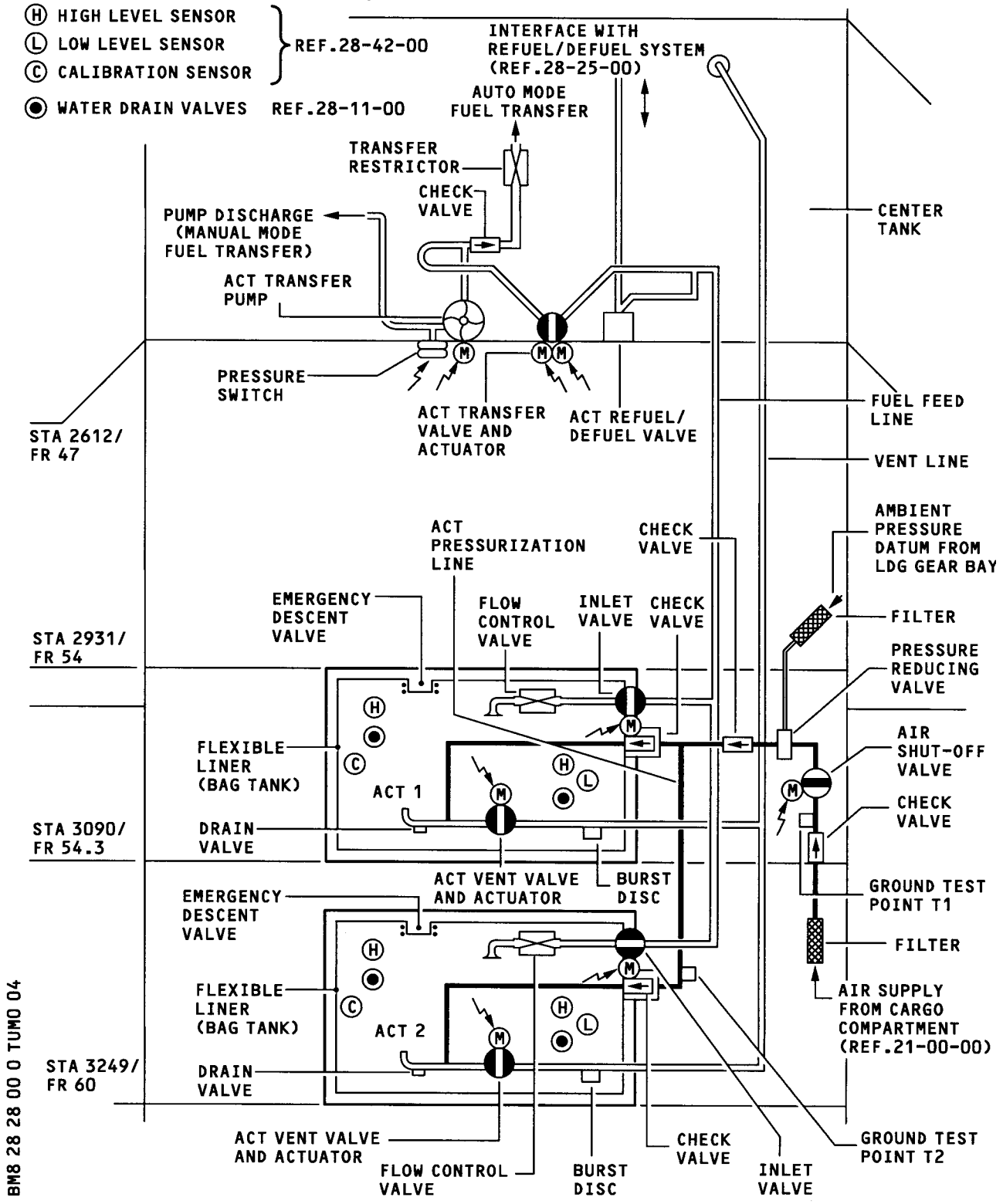
Post SB 28-2108 For A/C 101-200,

R Post SB 28-2126 For A/C 104-104,

(Ref. Fig. 004)



ACT - Component Location
Figure 003



ACT - Component Location
Figure 004

**ON A/C 101-200,

FIN	FUNCTIONAL DESIGNATION	PANEL	ZONE	ACCESS DOOR	ATA REF
280232	PLATE - MOUNTING, ACT PUMP		142	148AZ	28-28-14
280236	VALVE - ACT REFUEL/DEFUEL (78QU)				28-25-12
280238	VALVE - ACT TRANSFER		142	734	28-28-16
280239	ACTUATOR - TRANSFER VALVE (21QH)		148		28-28-17
280251	VALVE - EMERGENCY DESCENT				28-11-36
280260	VALVE - AIR SHUT-OFF				28-28-19
280261	VALVE - PRESSURE REDUCING				28-28-18
280262	TANK - FLEXIBLE BLADDER		152		28-11-38
280266	VALVE - CHECK ACT				28-11-36
280268	VALVE - ACT VENT		152		28-12-42
280272	ACTUATOR - SHUT-OFF VALVE (30QH)		152		28-28-19
280273	ACTUATOR - ACT VENT VALVE (32QH)		152		28-12-42
280276	VALVE - CHECK				28-11-36
280277	VALVE - CHECK				28-11-36
280285	VALVE - CHECK				
280286	FILTER				28-28-24
280288	VALVE - TANK INLET				28-28-25
280290	ACTUATOR - ACT INLET VALVE (43QH)		152		28-28-25
280291	VALVE - FLOW CONTROL				28-28-25
280292	BURST DISC				
1QH	C/B - FUEL/CARGO TK/PUMP SUPPLY	101VU	120	GEN1/A2	
3QH	C/B - FUEL/AUX TK/VENT AND PRESS VALVE	132VU	212	325/K57	
4QH	C/B - FUEL/AUX TK/XFR VALVE MOTOR 1	132VU	212	325/K58	
5QH	C/B - FUEL/AUX TK/PUMP CTL/XFR VALVE MOTOR 2	132VU	212	325/K59	
11QH	CONTACTOR - PUMP CONTROL	107VU	121	132AZ	
13QH	PUMP - ACT		148	734	28-28-13
15QH	PRESS SW - ACT PUMP		148		28-28-15
19QH	SW - ACT PUMP CONTROL	430VU	210		
20QH	RELAY - TRANSFER VALVE/CONTROL	104VU	120		
22QH	RELAY - OVERRIDE CONTROL	104VU	120		
28QH	RELAY - ACT VALVE VENT CONTROL	104VU	120		
31QH	RELAY - ACT VENT VALVE POSITION	104VU	120		
34QH	RELAY - AIR SHUT-OFF VALVE POSITION	104VU	120		
35QH	RELAY - ACT EMPTY	104VU	120		
38QH	RELAY - AIR SHUT-OFF VALVE CONTROL	104VU	120		
41QH	RELAY - CENTER TANK HI LEVEL	104VU	120		
42QH	RELAY - ACT FAULT TEST	104VU	120		
47QH	RELAY - INLET VALVE CONTROL	104VU	120		

**ON A/C 101-200,

Post SB 28-2105 For A/C 101-200,

Post SB 28-2108 For A/C 101-200,

R Post SB 28-2126 For A/C 104-104,

FIN	FUNCTIONAL DESIGNATION	PANEL	ZONE	ACCESS DOOR	ATA REF
280232	PLATE - MOUNTING, ACT(s) PUMP		142	148AZ	28-28-14
280236	VALVE - ACT REFUEL/DEFUEL (78QU)				28-25-12
280238	VALVE - ACT(s) TRANSFER		142	734	28-28-16
280239	ACTUATOR - TRANSFER VALVE (21QH)		148		28-28-17
280251	VALVE - EMERGENCY DESCENT - ACT 1				28-11-36
280252	VALVE - EMERGENCY DESCENT - ACT 2				28-11-36
280260	VALVE - AIR SHUT-OFF				28-28-19
280261	VALVE - PRESSURE REDUCING				28-28-18
280262	TANK - FLEXIBLE BLADDER - ACT 1		152		28-11-38
280263	TANK - FLEXIBLE BLADDER - ACT 2		152		28-11-38
280266	VALVE - CHECK - ACT 1				28-11-36
280267	VALVE - CHECK - ACT 2				28-11-36
280268	VALVE - VENT - ACT 1		152		28-12-42
280269	VALVE - VENT - ACT 2		152		28-12-42
280272	ACTUATOR - AIR SHUT-OFF VALVE (30QH)		152		28-28-19
280273	ACTUATOR - ACT 1 VENT VALVE (32QH1)		152		28-12-42
280274	ACTUATOR - ACT 2 VENT VALVE (32QH2)		152		28-12-42
280276	VALVE - CHECK				28-11-36
280277	VALVE - CHECK				28-11-36
280285	VALVE - CHECK				
280286	FILTER				28-28-24
280288	VALVE - TANK INLET - ACT 1				28-28-25
280290	ACTUATOR - ACT 1 INLET VALVE (43QH1)		152		28-28-25
280291	VALVE - FLOW CONTROL - ACT 1				
280292	BURST DISC - ACT 1				
280295	BURST DISC - ACT 2				
280296	VALVE - TANK INLET - ACT 2				28-28-25
280298	ACTUATOR - ACT 2 INLET VALVE (43QH2)		152		28-28-25
280299	VALVE - FLOW CONTROL - ACT 2				
1QH	C/B - FUEL/CARGO TK/PUMP SUPPLY	101VU	120	GEN1/A2	
3QH	C/B - FUEL/ACT/VENT AND PRESS VALVE	132VU	212	325/K57	
4QH	C/B - FUEL/ACT/XFR VALVE MOTOR 1	132VU	212	325/K58	
5QH	C/B - FUEL/ACT/PUMP CTL/XFR VALVE MOTOR 2	132VU	212	325/K59	
11QH	CONTACTOR - PUMP CONTROL	107VU	121	132AZ	
13QH	PUMP - ACT		148	734	28-28-13

FIN	FUNCTIONAL DESIGNATION	PANEL	ZONE	ACCESS DOOR	ATA REF
15QH	PRESS SW - ACT PUMP		148		28-28-15
19QH	SW - ACT PUMP CTL	430VU	210		
20QH	RELAY - TRANSFER VALVE/CONTROL	104VU	120		
22QH	RELAY - OVERRIDE CONTROL	104VU	120		
23QH	RELAY - OVERRIDE CONTROL NO.2	104VU	120		
24QH	RELAY - INLET VALVE CONTROL - ACT 2	104VU	120		
28QH	RELAY - ACT VENT VALVE CONTROL	104VU	120		
31QH	RELAY - ACT 1/VENT VALVE POSITION	104VU	120		
33QH	RELAY - ACT 2/VENT VALVE POSITION	104VU	120		
34QH	RELAY - AIR SHUT-OFF VALVE POSITION	104VU	120		
35QH	RELAY - ACT EMPTY	104VU	120		
38QH	RELAY - AIR SHUT-OFF VALVE CONTROL	104VU	120		
41QH	RELAY - CENTER TANK HI LEVEL	104VU	120		
42QH	RELAY - ACT FAULT TEST	104VU	120		
44QH	RELAY - INLET VALVE POSITION - ACT 2	104VU	120		
47QH	RELAY - INLET VALVE CONTROL - ACT 1	104VU	120		

**ON A/C 101-200,

3. Description

The pressurization system causes the fuel in the ACT(s) to transfer to the center tank. This normally occurs automatically (auto mode) when the aircraft is above the necessary altitude and the necessary conditions occur in the center tank. Automatic transfer is inhibited when the TRIM TK AUTO MODE P/BSW (on 430VU) is pressed in (manual mode transfer) and remains until the P/BSW is released (out).

The ACT transfer pump can be used to transfer fuel (manual mode) when:
- the pressurization system has a fault
- the aircraft is on the ground
- the aircraft is below the altitude necessary for the pressurization system to have the correct effect.

**ON A/C 101-200,

R Post SB 28-2126 For A/C 104-104,

The pressurization system causes the fuel in the ACT(s) to transfer to the center tank. This normally occurs automatically (auto mode) when the aircraft is above the necessary altitude and the necessary conditions occur in the center tank. Automatic transfer is inhibited when the **TRIM TK AUTO MODE P/BSW** (on 430VU) is pressed in (manual mode transfer) and remains until:
- the **P/BSW** is released (out) or
- the trim tank fuel is at low level.

The **ACT** transfer pump can be used to transfer fuel (manual mode) when:
- the pressurization system has a fault
- the aircraft is on the ground
- the aircraft is below the altitude necessary for the pressurization system to have the correct effect.

**ON A/C 101-200,

A. Normal Operation (Auto Mode)
The **ACT** will pressurize five minutes after take off (weight off wheels). If the **ACT** low-level sensor (Ref. 28-42-00) is wet the **ACT** air shut-off valve will open and the vent valve will close to start pressurization of the **ACT**.

With slats in, if the center-tank high-level sensor becomes dry for ten minutes, the **ACT** transfer valve and the inlet valve will open and fuel will be transferred into the center tank by pressurized air. If the center-tank high-level sensor becomes wet, the **ACT** transfer valve will close to stop fuel transfer. Fuel transfer is inhibited until the center-tank high-level sensor becomes dry again for ten minutes.

NOTE : Below 10,000 ft the pressurization system does not have the correct effect and the transfer pump must be used to transfer fuel (Manual Mode).

Fuel transfer from the **ACT** through the inlet valve will be controlled by the **ACT** low-level sensor. When the **ACT** 1 low-level sensor becomes dry for one minute the **ACT** transfer valve will close, the **ACT** air shut-off valve will close and the **ACT** vent valve will open.

R **ON A/C 101-200,

R Post SB 28-2105 For A/C 101-200,

R Post SB 28-2126 For A/C 104-104,

A. Normal Operation (Auto Mode)
R If the low-level sensor (Ref. 28-42-00) of one of the two ACT's is wet the

R ACT(s) will pressurize five minutes after take-off (weight off wheels).
R At this time the ACT air shut-off valve will open and the vent valves will
R close to start pressurization of the ACT(s).

R NOTE : Below 10,000 ft the pressurization system does not have the correct effect and the transfer pump must be used to transfer fuel (Manual Mode).

R With slats in, if the center-tank high-level sensor has been dry for ten minutes, the ACT transfer valve and the applicable inlet valve will open and fuel will be transferred into the center tank by pressurized air. If
R the center-tank high-level sensor becomes wet, the ACT transfer valve will close. Transfer will be inhibited until the center-tank high-level sensor becomes dry again for ten minutes.

R Fuel transfer from the ACT(s) through the inlet valves will be controlled
R by the ACT(s) low-level sensors. Provided there is fuel in the two tanks, fuel transfer will be from ACT 2 until the ACT 2 low-level sensor is
R exposed to air continously for one minute, then:
R - The ACT 2 inlet valve will move to the closed position.
R - The ACT 1 inlet valve will move to the open position.

When the ACT 1 low-level sensor becomes dry for one minute the ACT transfer valve and the ACT 1 inlet valve will close. At the same time the air shut-off valve will close and the vent valves will open.

R **ON A/C 104-104,

B. Abnormal Operation
If the CGCC enters FAULT MODE or if there is an aft CG warning from the independent monitor, when the TRIM TK AUTO MODE P/BSW is pressed (in), fuel will be transferred from the trim tank to the center tank. When the TRIM TANK AUTO MODE P/BSW has been pressed (in) auto fuel transfer from the ACT(s) will be inhibited until the P/BSW is released (out).

A failure in the auto transfer system will cause the ACT/AUX TK, AUTO P/BSW FAULT legend on panel 430VU, to come on. Selecting the P/BSW in will cause the ACT transfer valve to open through motor No. 2 and the ACT(s) transfer pump to run.

NOTE : To make sure of adequate pump performance it may be necessary to descend to or below 27000 ft.

It will be necessary to monitor the ECAM fuel page to ensure transfer is taking place and the center tank is not overfilled.

R **ON A/C 101-103, 105-200,

B. Abnormal Operation
If the CGCC enters FAULT MODE or if there is an aft CG warning from the independent monitor, when the TRIM TK AUTO MODE P/BSW is pressed (in), fuel will be transferred from the trim tank to the center tank. When the TRIM TANK AUTO MODE P/BSW has been pressed (in) auto fuel transfer from the ACT(s) will be inhibited until, the trim tank is empty or the P/BSW is released (out).

A failure in the auto transfer system will cause the ACT/AUX TK, AUTO P/BSW FAULT legend on panel 430VU, to come on. Selecting the P/BSW in will cause the ACT transfer valve to open through motor No 2 and the ACT(s) transfer pump to run.

NOTE : To make sure of adequate pump performance it may be necessary to descend to or below 27000 ft.

It will be necessary to monitor the ECAM fuel page to ensure transfer is taking place and the center tank is not overfilled.

**ON A/C 101-200,

4. Component Description

A. Additional Center Tank
The ACT is located between STA 2931/FR54 and STA 3090/FR54.3 in the cargo compartment. The tank consists of a structural container, the same size as a standard LD6 cargo container, and a flexible bladder tank attached on every internal surface. Components inside the tank are as follows:
- an inlet valve
- an inward relief valve
- a flow control valve
- 2 water drain valves (Ref. 28-11-00, P. Block 1)
- a vent line (Ref. 28-12-00, P. Block 1)
- a vent valve with a burst disc relief
- 2 high level sensors, 1 low level sensor and 1 calibration sensor (Ref. 28-42-00, P. Block 1).

The ACT is connected to the center tank by a vent line and refuel/transfer line running through the landing gear bay to the cargo compartment.

**ON A/C 101-200,

Post SB 28-2105 For A/C 101-200,

R Post SB 28-2126 For A/C 104-104,

4. Component Description

A. Additional Center Tank(s)
One or two ACT(s) can be installed; one ACT located between STA2931/FR54 and STA 3090/FR54.3 and the second ACT between STA3090/FR54.3 and STA3249/FR60 in the cargo compartment. Each tank consists of a structural container, the same size as a standard LD6 cargo container, and a flexible bladder tank attached on every internal surface. Components inside each tank are as follows:
- an inlet valve
- an inward relief valve
- a flow control valve
- 2 water drain valves (Ref. 28-11-00, P. Block 1)
- a vent line (Ref. 28-12-00, P. Block 1)
- a vent valve with a burst disc relief
- 2 high level sensors, 1 low level sensor and 1 calibration sensor (Ref. 28-42-00 P. Block 1).

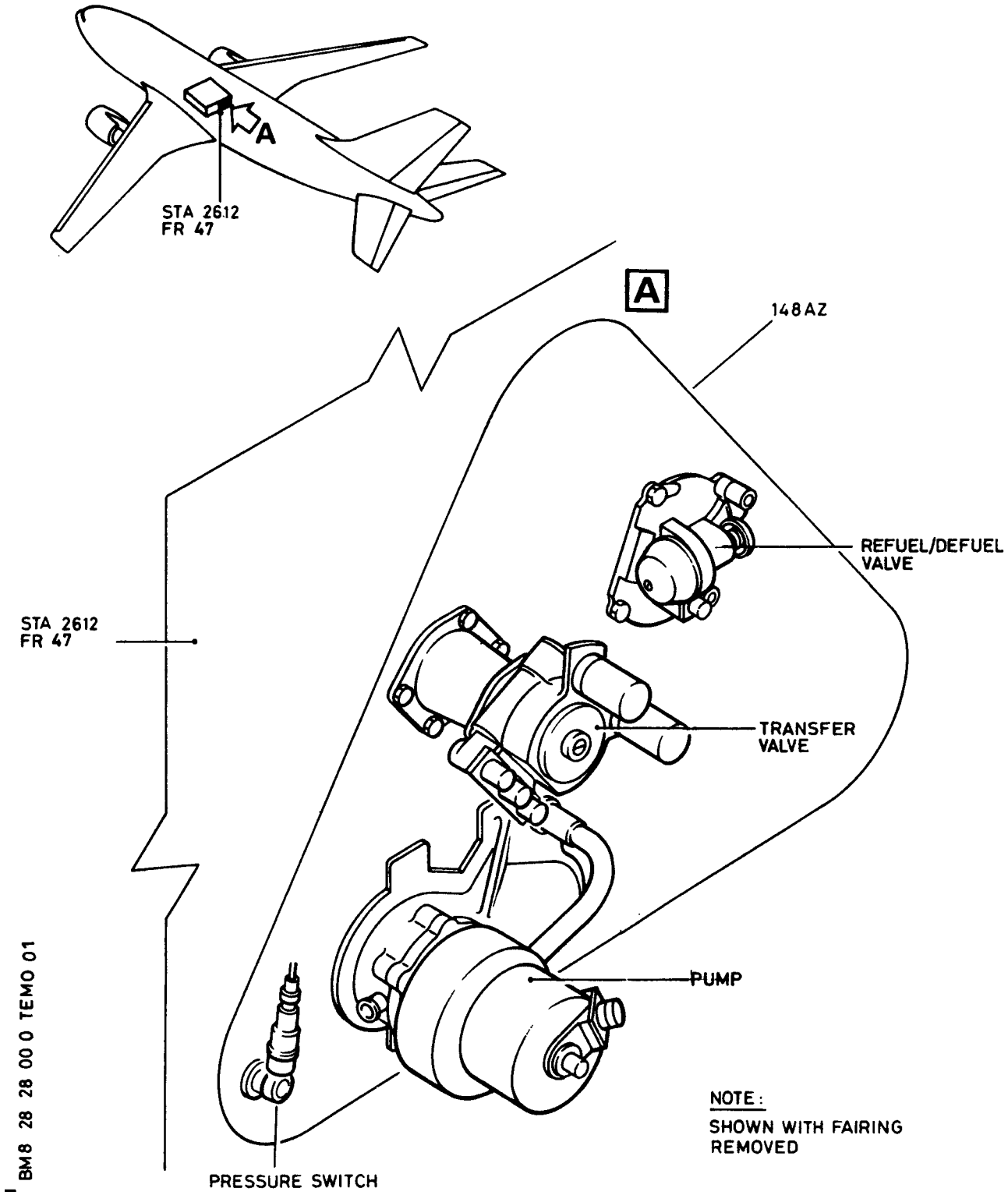
The ACT(s) are connected to the center tank by a vent line and a refuel/transfer line running through the landing gear bay to the cargo compartment.

**ON A/C 101-200,

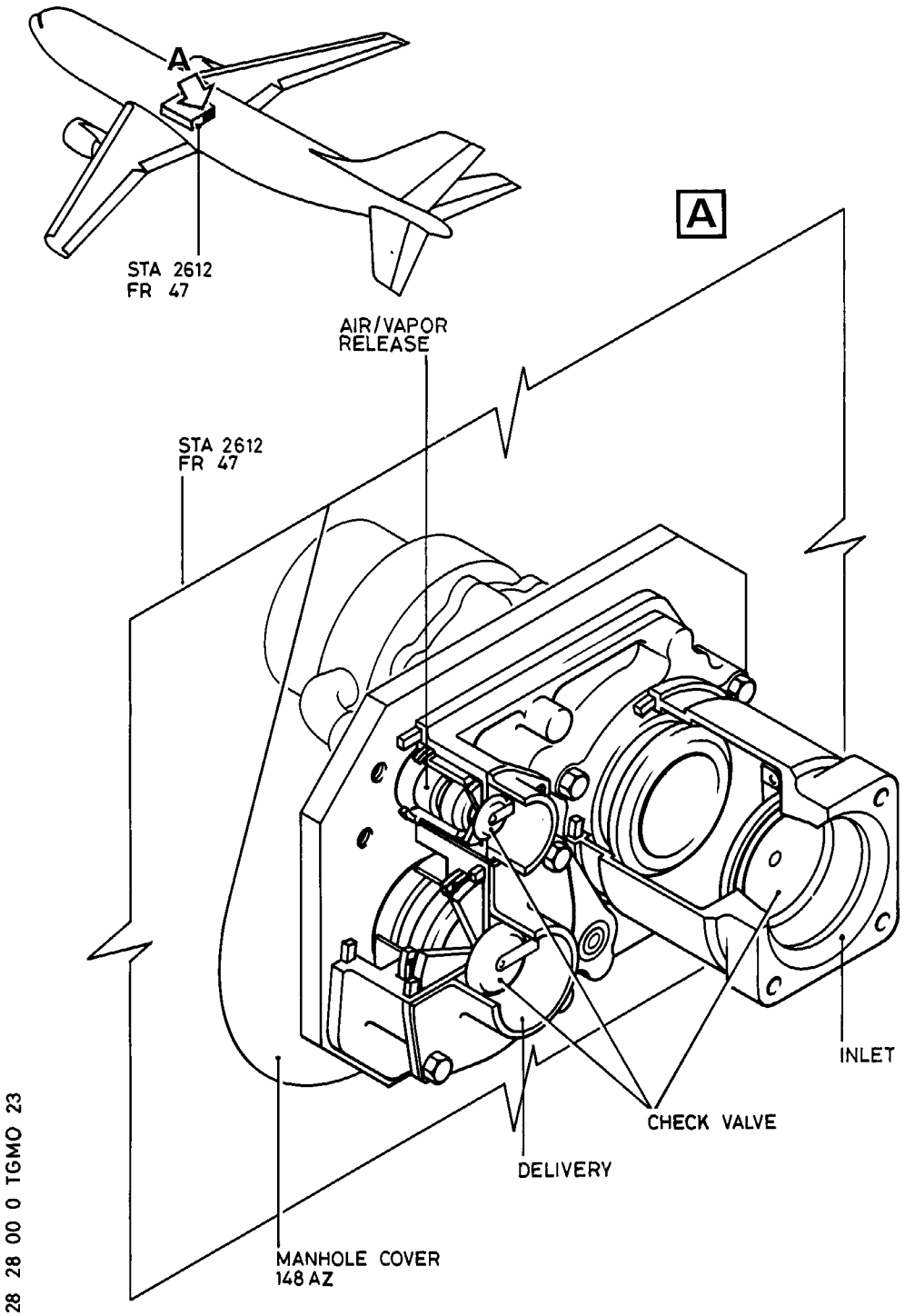
B. ACT(s) Pump (Ref. Fig. 005, 006)
The transfer system has a self-priming electrically-driven suction pump located on the center-tank manhole cover 148AZ STA2612/FR47. A thermal fuse that is non-resettable is installed in the pump. This stops pump operation when its temperature is more than 200 deg C. The pump is installed on a mounting plate embodying a check valve. The valve closes when the pump is removed so that the pump may be removed without emptying the tank. A check valve is installed in the pump outlet to prevent backflow through the pump.

C. ACT(s) Pump Pressure Switch (Ref. Fig. 005)
A pressure switch on the pump delivery side is operated when the fuel pressure is more than 0.41 bar (6 psi). If the fuel pressure is not sufficient to operate the switch (during pump operation with the fuel level below low level) for ten minutes, an amber warning light (the pump P/BSW FAULT legend) will come on. The ten minute delay, before the warning light comes on, does not occur when the aircraft is on the ground.

D. ACT(s) Transfer Valve (Ref. Fig. 005)
The valve is mounted inside the center tank on manhole cover 148AZ. The



ACT(s) Fuel Pump, Transfer Valve, Refuel/Defuel Valve
and Pressure Switch - Installation
Figure 005



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ACT(s) Pump Mounting Plate - Details
Figure 006

valve is an electrically-actuated spherical-plug type with line attachment and a control spindle which protrudes through the manhole cover. The actuator is mounted outside the tank and drives the control spindle. The actuator comprises two electrical motors driving a common gearbox to provide 90 deg. spherical plug travel. Microswitches stop the related motor at the end of travel and provide position indicator inputs to the SDAC.

The electric motors drive the epicyclic reduction gear which allows either motor to drive the valve. One motor turns the valve when the ACT fuel transfer system operates in the auto mode. The other motor turns the valve when the ACT transfer system operates in the manual mode. Final drive is through a locking mechanism (autoloc) which disengages the output shaft from the reduction gear when the related motor is signalled to stop by the limit microswitches.

E. Burst Disc
A burst disc is installed in the vent line of the ACT. If the tank pressure gets abnormally high during the refueling procedure, due to a closed vent valve, the disc will burst and allow tank depressurization to occur through the vent line, downstream of the vent valve. The nominal value for the rupture pressure of the burst disc is 0.76 bar (11 psi).

F. Inward Relief Valve

**ON A/C 101-200,

Post SB 28-2105 For A/C 101-200,

R Post SB 28-2126 For A/C 104-104,

E. Burst Disc(s)
A burst disc is installed in the vent line of both ACT 1 and ACT 2. If the tank pressure gets abnormally high during the refueling procedure, due to a closed vent valve, the disc will burst and allow tank depressurization to occur through the vent line, downstream of the vent valve. The nominal value for the rupture pressure of the burst disc is 0.76 bar (11 psi).

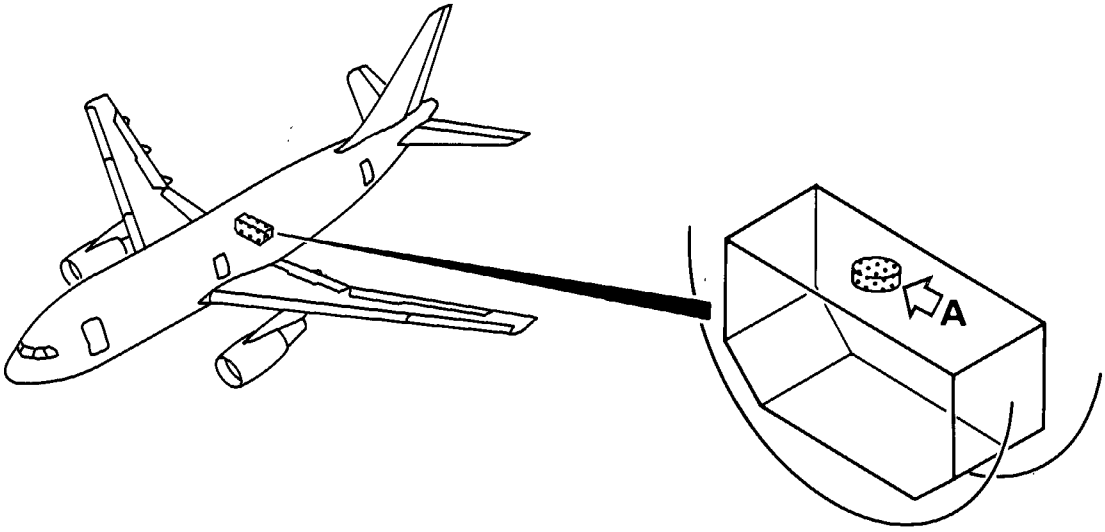
F. Inward Relief Valve(s)

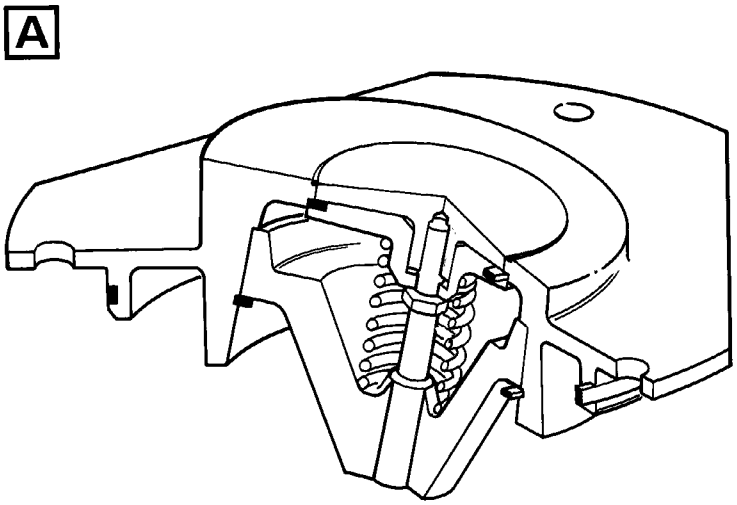
**ON A/C 101-200,

(Ref. Fig. 007)

**ON A/C 101-200,

Post SB 28-2105 For A/C 101-200,





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Inward Relief Valve - Installation
Figure 007

R Post SB 28-2126 For A/C 104-104,

(Ref. Fig. 008)

**ON A/C 101-200,

The inward relief valve is installed in the ACT top surface. The valve relieves negative pressures occuring in the ACT due to a high rate of descent or blocked vent line.

G. Strainer/Diffuser
The refuel/transfer line terminates in a downturned outlet in the tank, a strainer/diffuser is installed at the outlet to:
- prevent the fuel foaming during refuel
- make sure that any internal debris that could occur, does not block or go out of the fuel line.

H. Air Shut-Off Valve
The valve is mounted in the ACT pressurization line between STA3354/FR54 and STA3090/FR54.3. The valve is an electrically actuated spherical-plug type which allows air from the pressurized cabin to pressurize the ACT, depending on flight conditions.

J. ACT Vent Valve
The valve is mounted in the ACT vent line inside the ACT. The valve is an electrically actuated spherical-plug type which closes to enable pressurization depending on flight conditions. The vent valve is open during refueling operations. If the vent valve is shut during refueling, the operation of the ACT refuel/defuel valve will be inhibited. The vent valve is fitted with a thermal relief valve which limits the pressure within the ACT to between 0.27 and 0.48 bar (4 and 7 psi).

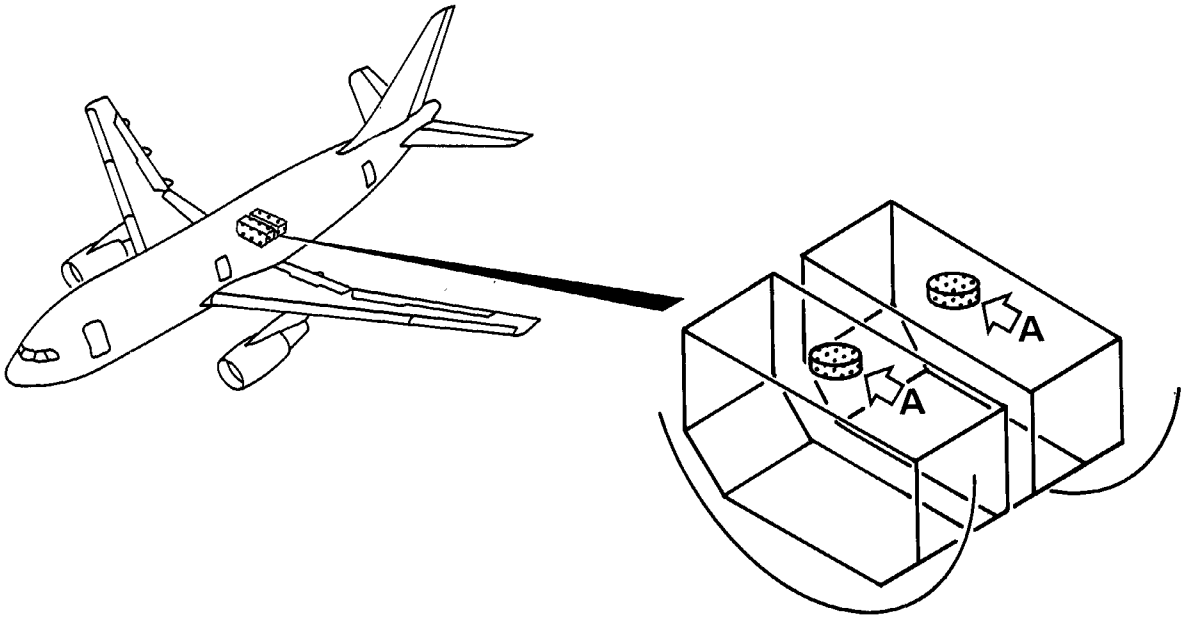
**ON A/C 101-200,

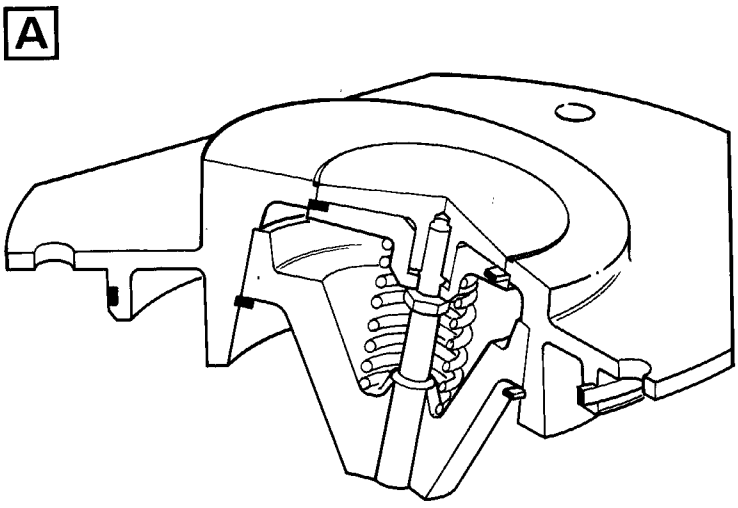
Post SB 28-2105 For A/C 101-200,

R Post SB 28-2126 For A/C 104-104,

An inward relief valve is installed in each ACT top surface. The valve(s) relieve negative pressures occurring in the ACT(s) due to a high rate of descent or a blocked vent line.

G. Strainer(s)/Diffuser(s)
The refuel/transfer line terminates in a downturned outlet in each tank, a strainer/diffuser is installed at the outlet to:
- prevent the fuel foaming during refuel
- make sure that any internal debris that could occur, does not block or go out of the fuel line.





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Inward Relief Valve(s) - Installation
Figure 008

H. Air Shut-Off Valve
The valve is mounted in the ACT(s) pressurization line between STA3354/FR54 and STA3090/FR54.3. The valve is an electrically actuated spherical-plug type, which allows air from the pressurized cabin to pressurize the ACT(s), depending on flight conditions.

J. ACT(s) Vent Valve(s)
The valve(s) are mounted in each ACT vent line inside the ACT(s). The valve is an electrically actuated spherical-plug type which closes to enable pressurization depending on flight conditions. Each vent valve is open during refueling operations. If the vent valve(s) is (are) shut during refueling, the operation of the ACT(s) refuel/defuel valve will be inhibited. Each vent valve is fitted with a thermal relief valve which limits the pressure within the ACT(s) to between 0.27 and 0.48 bar (4 and 7 psi).

**ON A/C 101-200,

K. Check Valves
The check valves are in-line non-return valves mounted in the pressurization line adjacent to the ACT(s). The check valves prevent any vapor from the ACT(s) entering the cabin via the pressurization line. Two of the check valves are mounted to enable pressurization of the system from the ground test points.

L. Pressure Reducing Valve
The pressure reducing valve is in the ACT(s) pressurization line between STA3037/FR54.2 and STA3090/FR54.3. The valve controls the pressure of the air downstream from it, so that the pressure in the ACT is kept 0.34 bar (5 psi) above the ambient pressure.

M. ACT(s) Pressurization System Filter
The filter is mounted in the pressurized cabin and is designed to prevent the ingress of debris and foreign objects into the pressurization system.

N. ACT Shorting Plug
When the ACT is not fitted, the low level and calibration sensor wiring is connected to earth via a shorting plug at the ACT/aircraft plug break. This ensures that the low level and calibration sensors indicate a dry state to the CGCC to satisfy the "ACT not fitted" logic.

P. Tank Inlet Valve
A tank inlet valve is installed in the fuel feed line inside the ACT. The valve isolates the ACT when fuel flow to or from the tank is not required.

When refueling or defueling the inlet valve opens in conjunction with the ACT refuel/defuel valve.

When performing forward transfers, the inlet valve opens in conjunction with the ACT transfer valve.

Q. Flow Control Valve
A flow control valve is installed in the fuel feed line inside the ACT. Its design ensures the refuel rate is restricted within safe limits without adversely affecting the fuel transfer rate.

**ON A/C 101-200,

Post SB 28-2105 For A/C 101-200,

R Post SB 28-2126 For A/C 104-104,

P. Tank Inlet Valve(s)
A tank inlet valve is installed in the fuel feed line inside ACT 1 and ACT 2. This enables both tanks to be refueled simultaneously (dependent on fuel quantity requirements) and feed fuel to the center tank independently. During Flight, ACT 2 will be emptied before fuel is transferred from ACT 1.

When refueling or defueling, the inlet valve(s) open in conjunction with the ACT refuel/defuel valve.

When performing forward transfers, the inlet valve(s) open in conjunction with the ACT transfer valve.

Q. Flow Control Valve(s)
A flow control valve is installed in the fuel feed line inside ACT 1 and ACT 2. Their design ensures the refuel rate is restricted within safe limits without adversely affecting the fuel transfer rate.

**ON A/C 101-200,

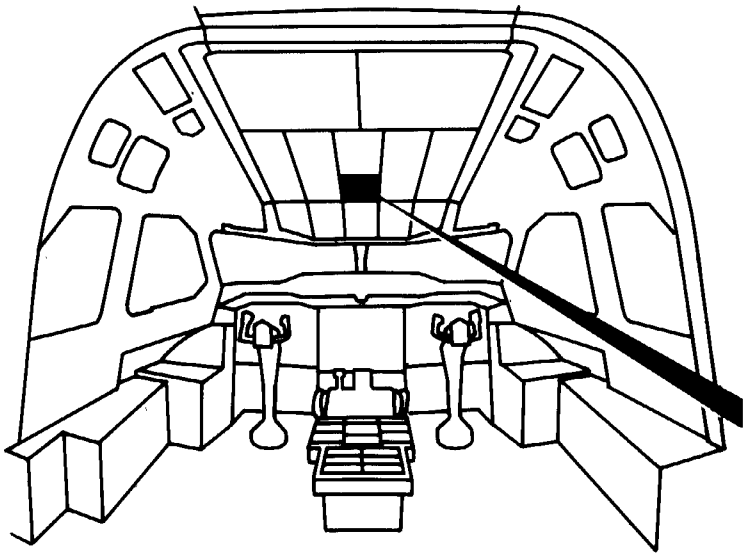
5. Operation
(Ref. Fig. 009)

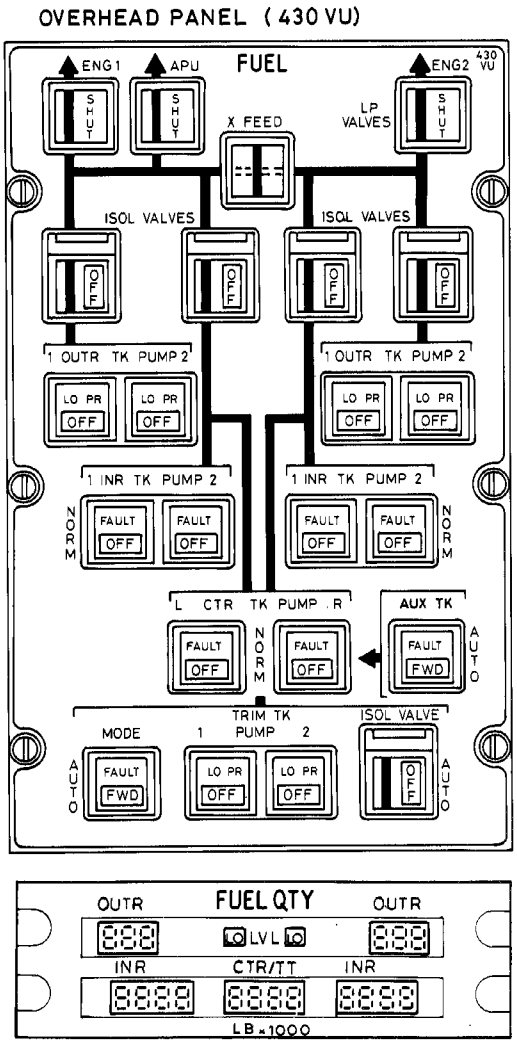
**ON A/C 101-200,

Post SB 28-2105 For A/C 101-200,

R Post SB 28-2126 For A/C 104-104,

(Ref. Fig. 010)





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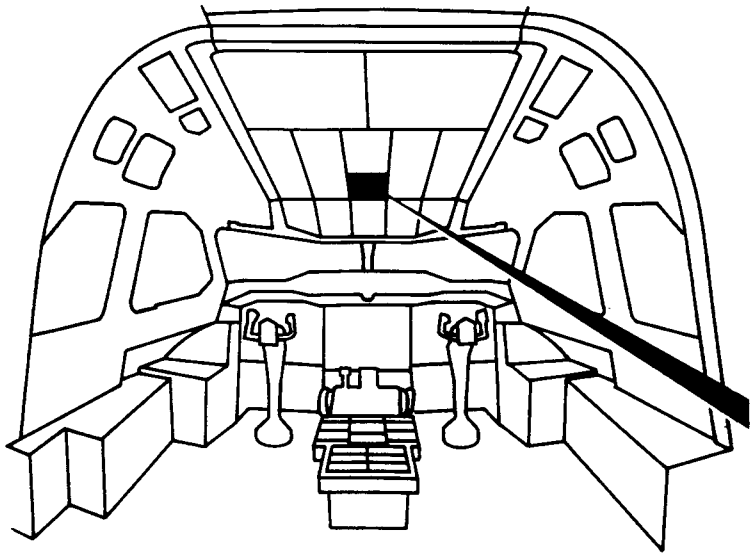
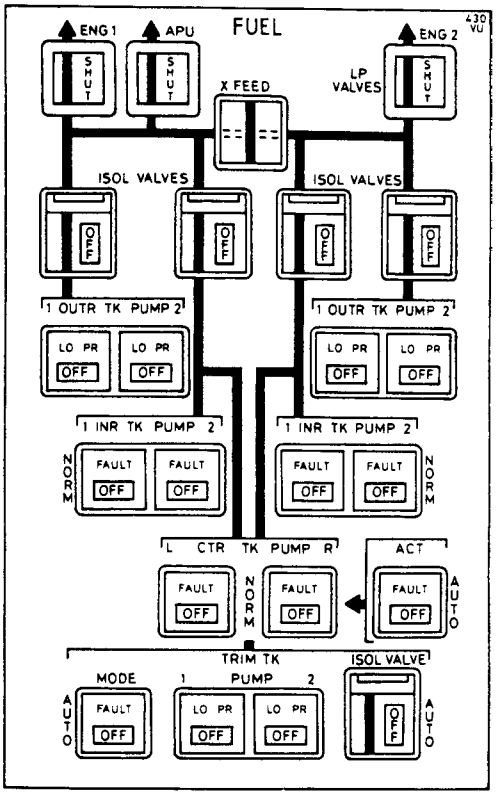
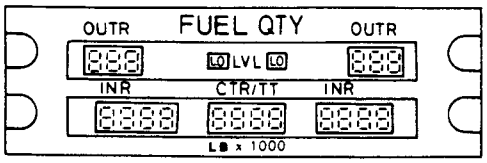
Fuel Control Panel 430VU
Figure 009



OVERHEAD PANEL (430 VU)





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Fuel Control Panel 430VU
Figure 010

**ON A/C 101-200,

(Ref. Fig. 011) (Sheet 1/4)

**ON A/C 101-200,

Post SB 28-2105 For A/C 101-200,

(Ref. Fig. 012) (Sheet 1/4)

**ON A/C 101-200,

(Ref. Fig. 011) (Sheet 2/4)

**ON A/C 101-200,

Post SB 28-2105 For A/C 101-200,

Post SB 28-2122 For A/C 101-200,

(Ref. Fig. 012) (Sheet 2/4)

**ON A/C 101-200,

(Ref. Fig. 011) (Sheet 3/4)

**ON A/C 101-200,

Post SB 28-2105 For A/C 101-200,

Post SB 28-2122 For A/C 101-200,

(Ref. Fig. 012) (Sheet 3/4)

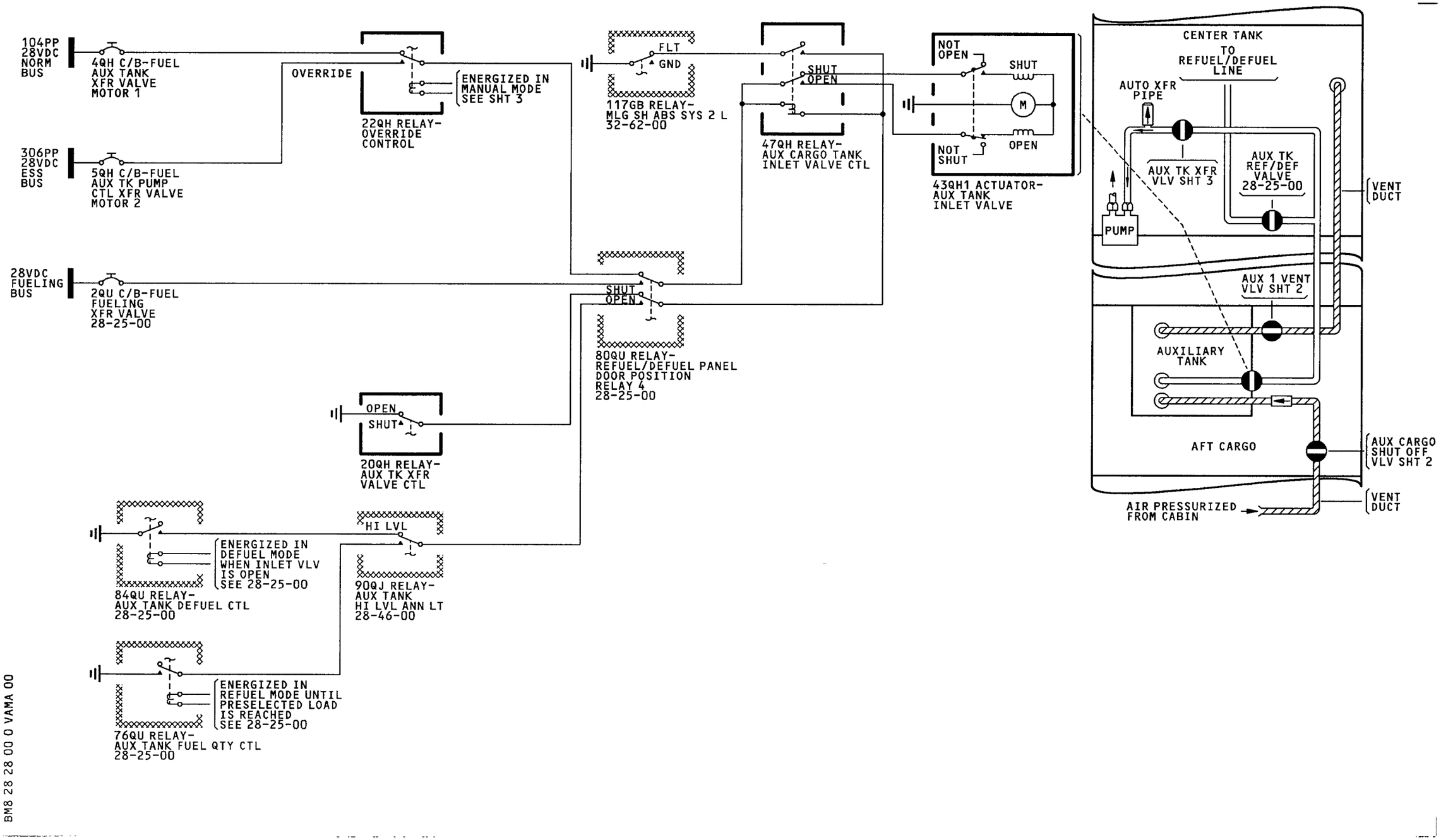
**ON A/C 101-200,

(Ref. Fig. 011) (Sheet 4/4)

**ON A/C 101-200,

Post SB 28-2105 For A/C 101-200,

(Ref. Fig. 012) (Sheet 4/4)



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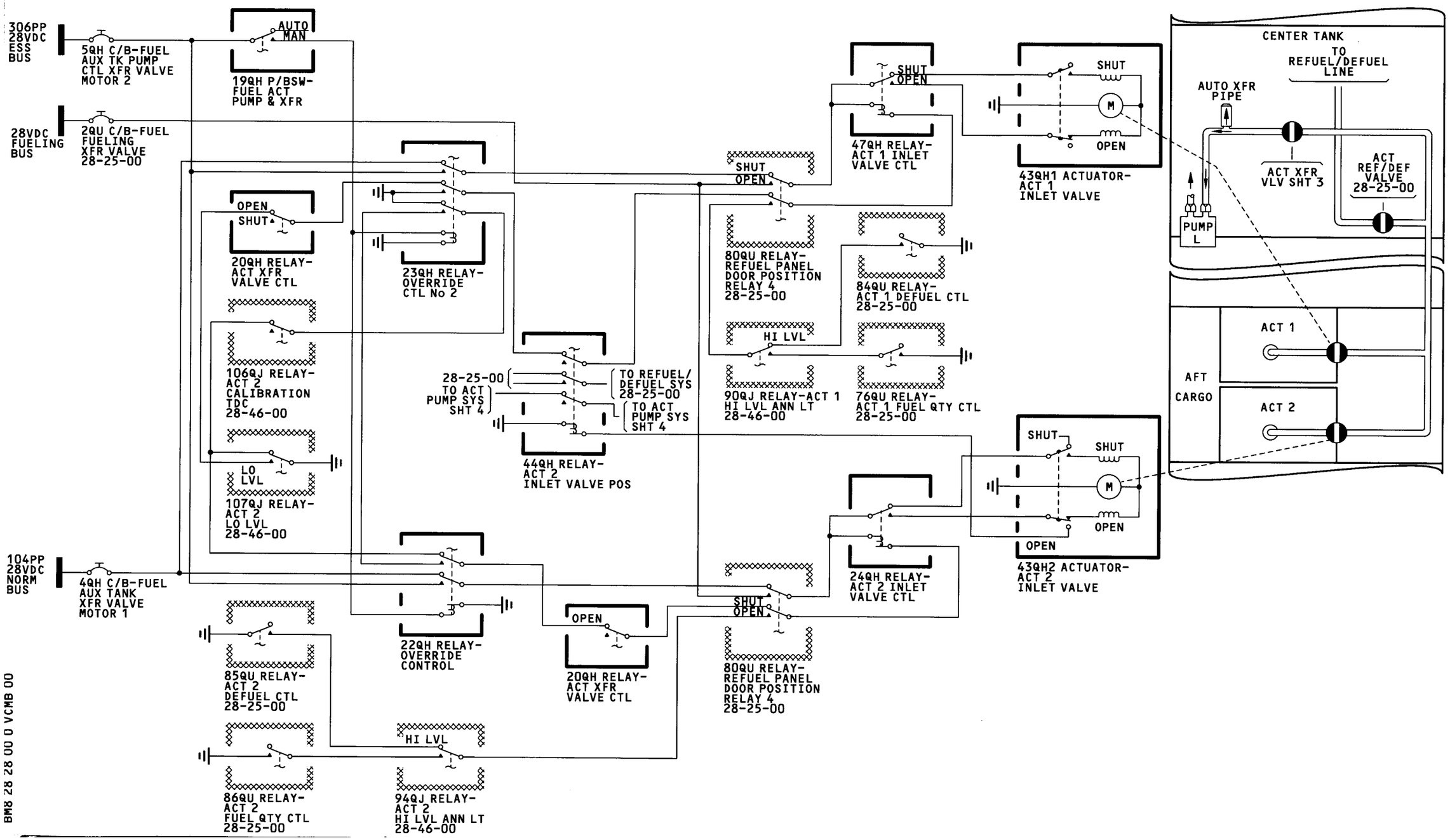
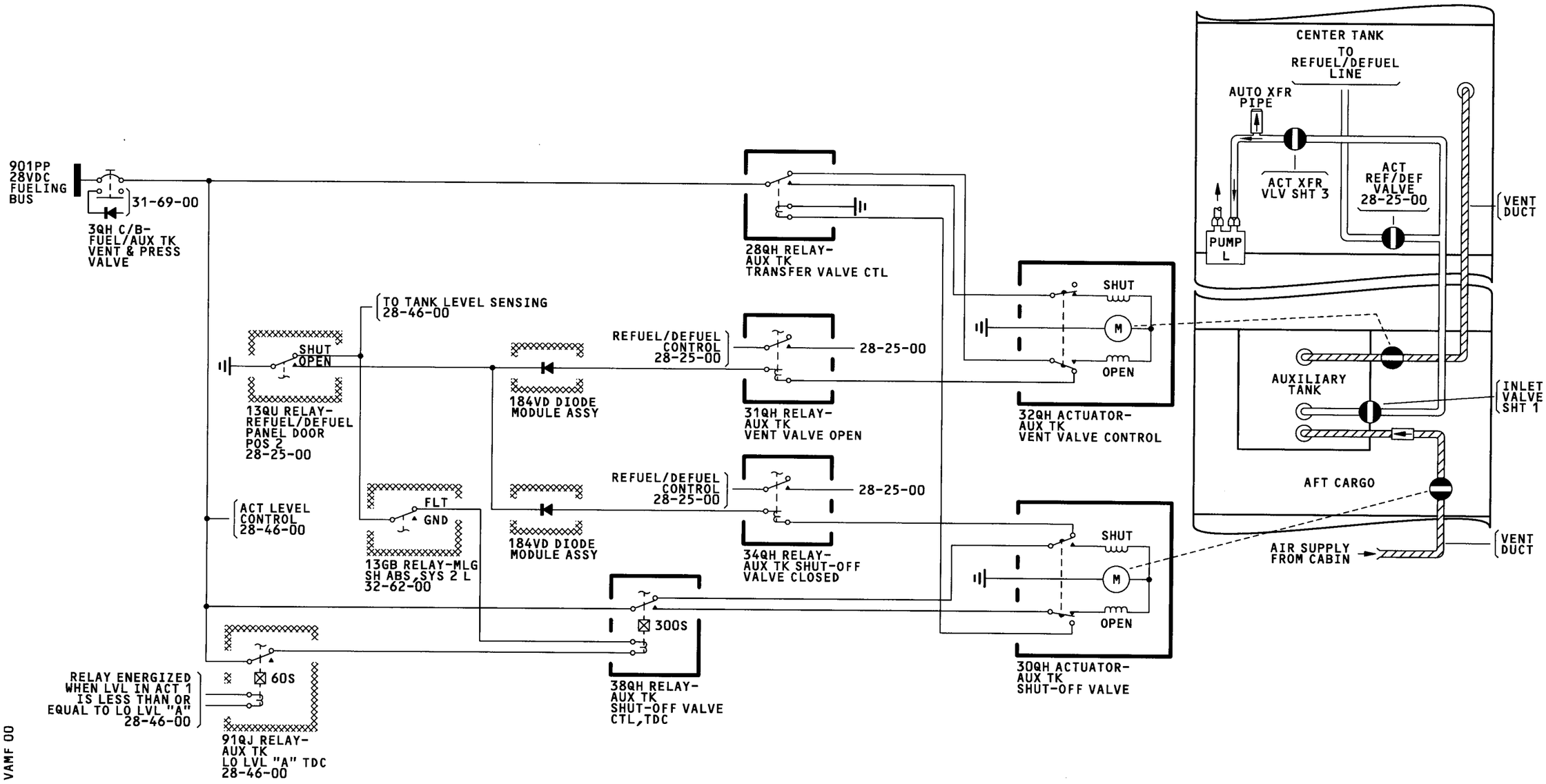
ACT (Inlet Valve) Control - Circuit Diagram
(Sheet 1/4)
Figure 011



ACT(s) (Inlet Valve(s)) Control - Circuit Diagram
(Sheet 1/4)
Figure 012



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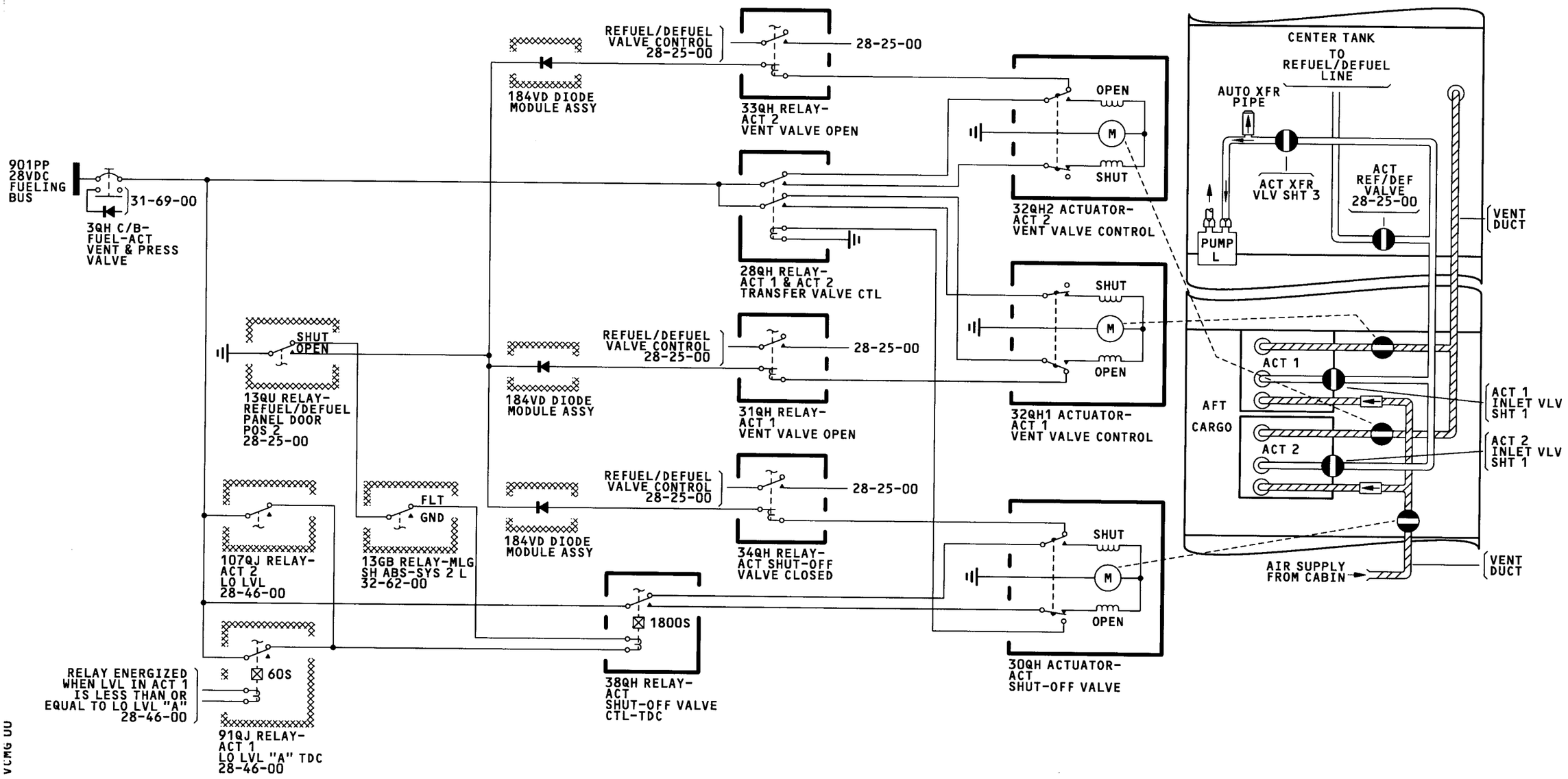
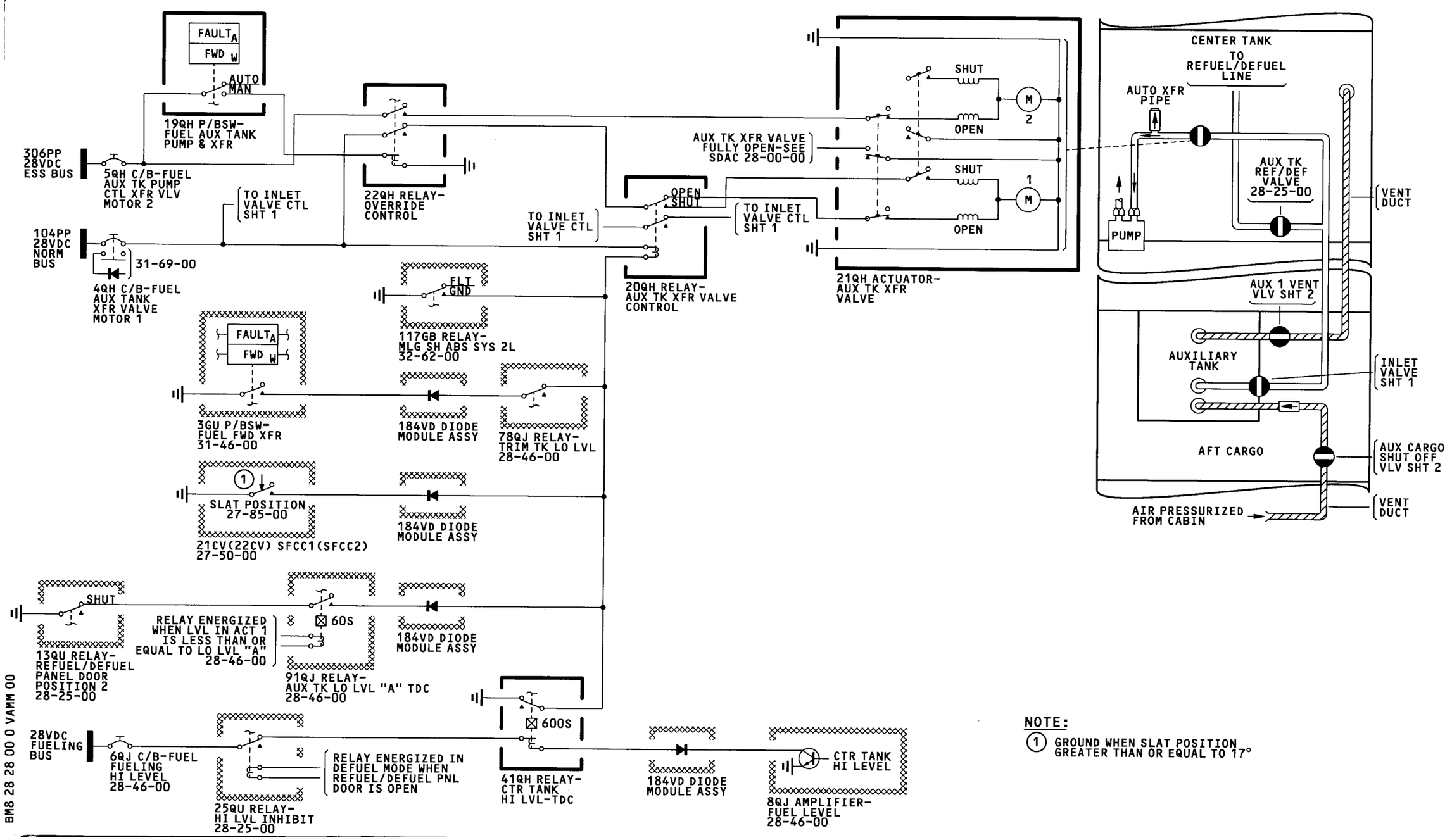
ACT (Pressurization) Control - Circuit Diagram
(Sheet 2/4)
Figure 011



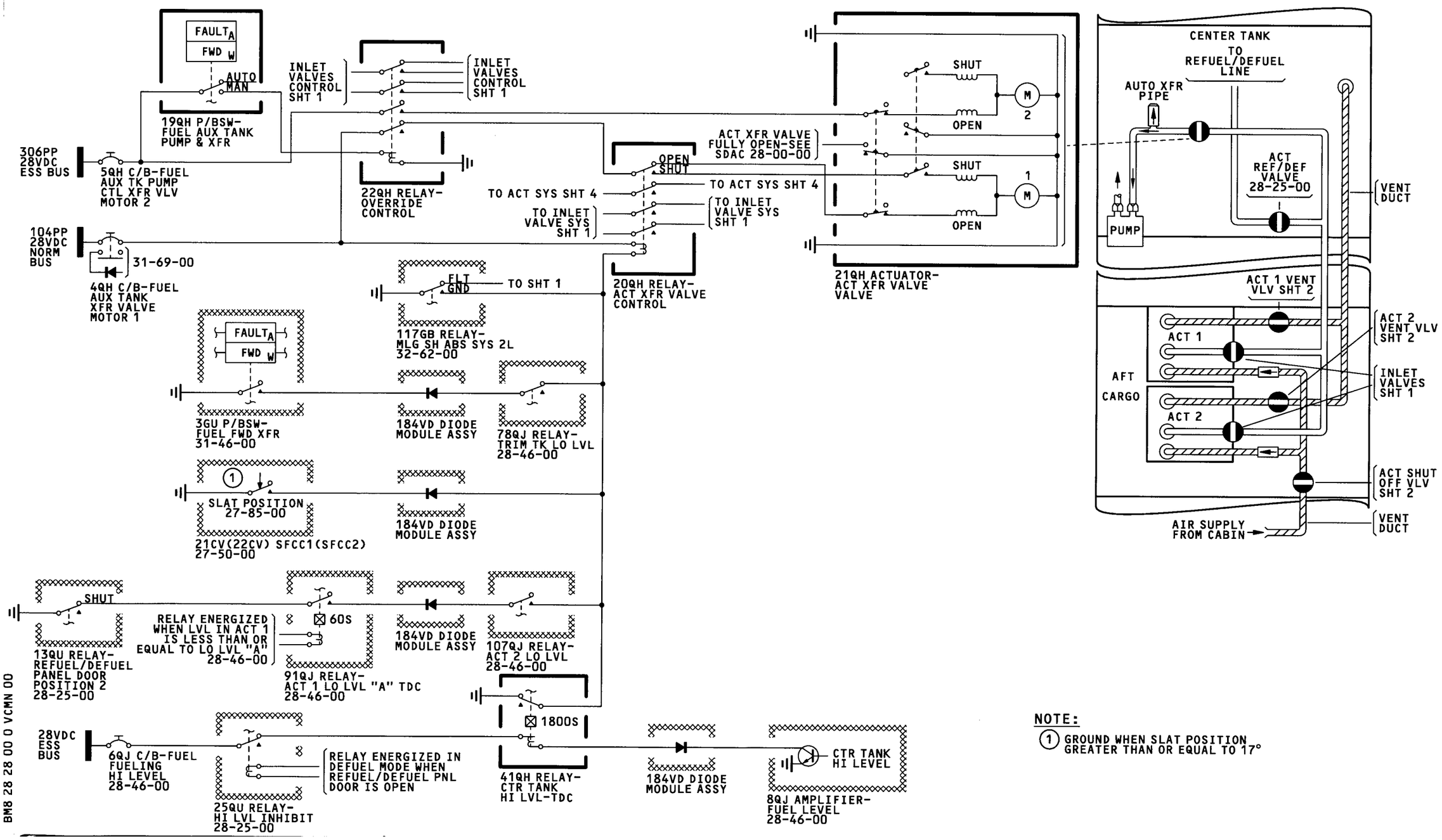
ACT(s) (Pressurisation) Control - Circuit Diagram
(Sheet 2/4)
Figure 012



ACT (Transfer Valve) Control - Circuit Diagram
(Sheet 3/4)
Figure 011

NOTE:

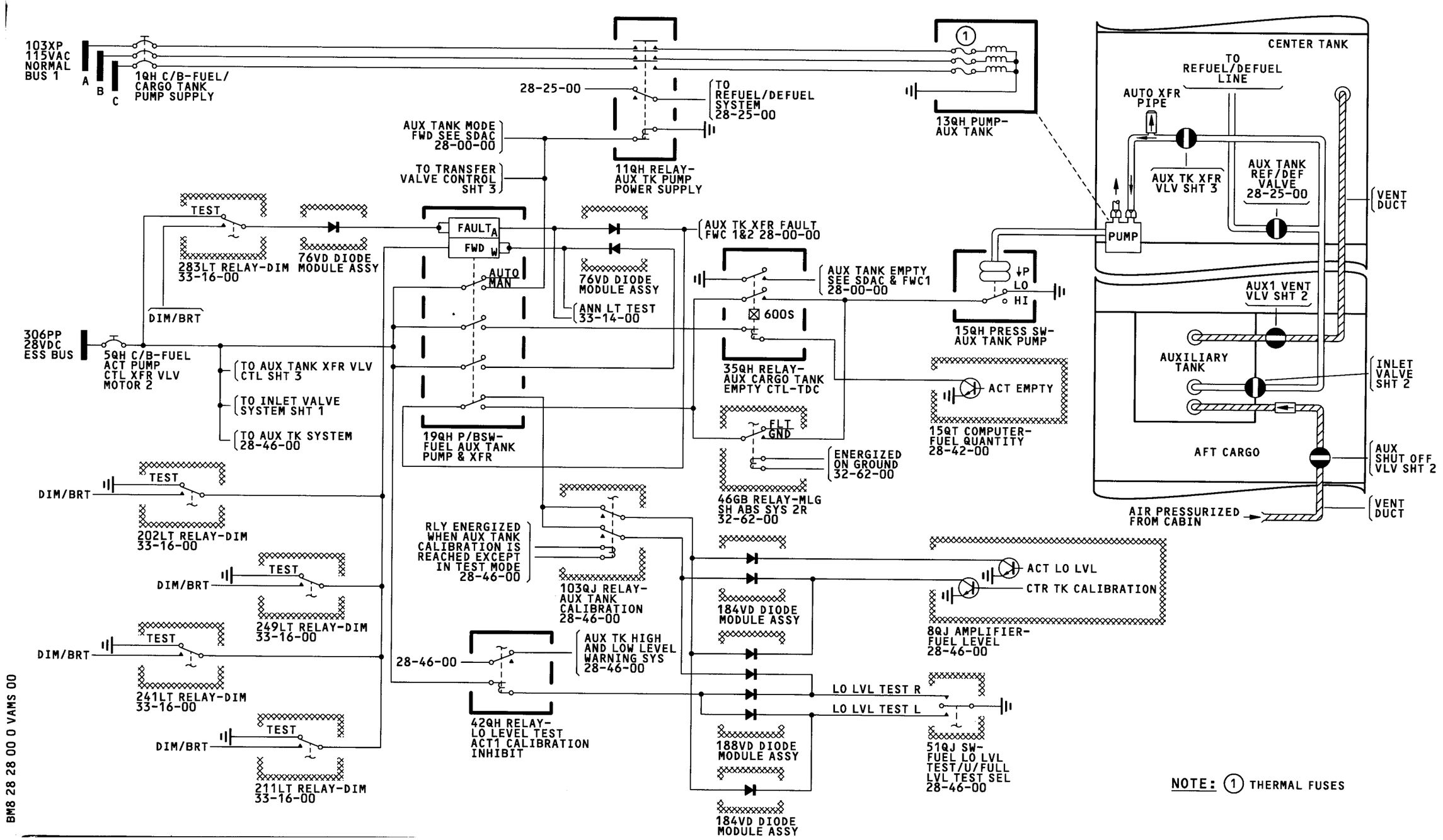
(1) GROUND WHEN SLAT POSITION GREATER THAN OR EQUAL TO 17°



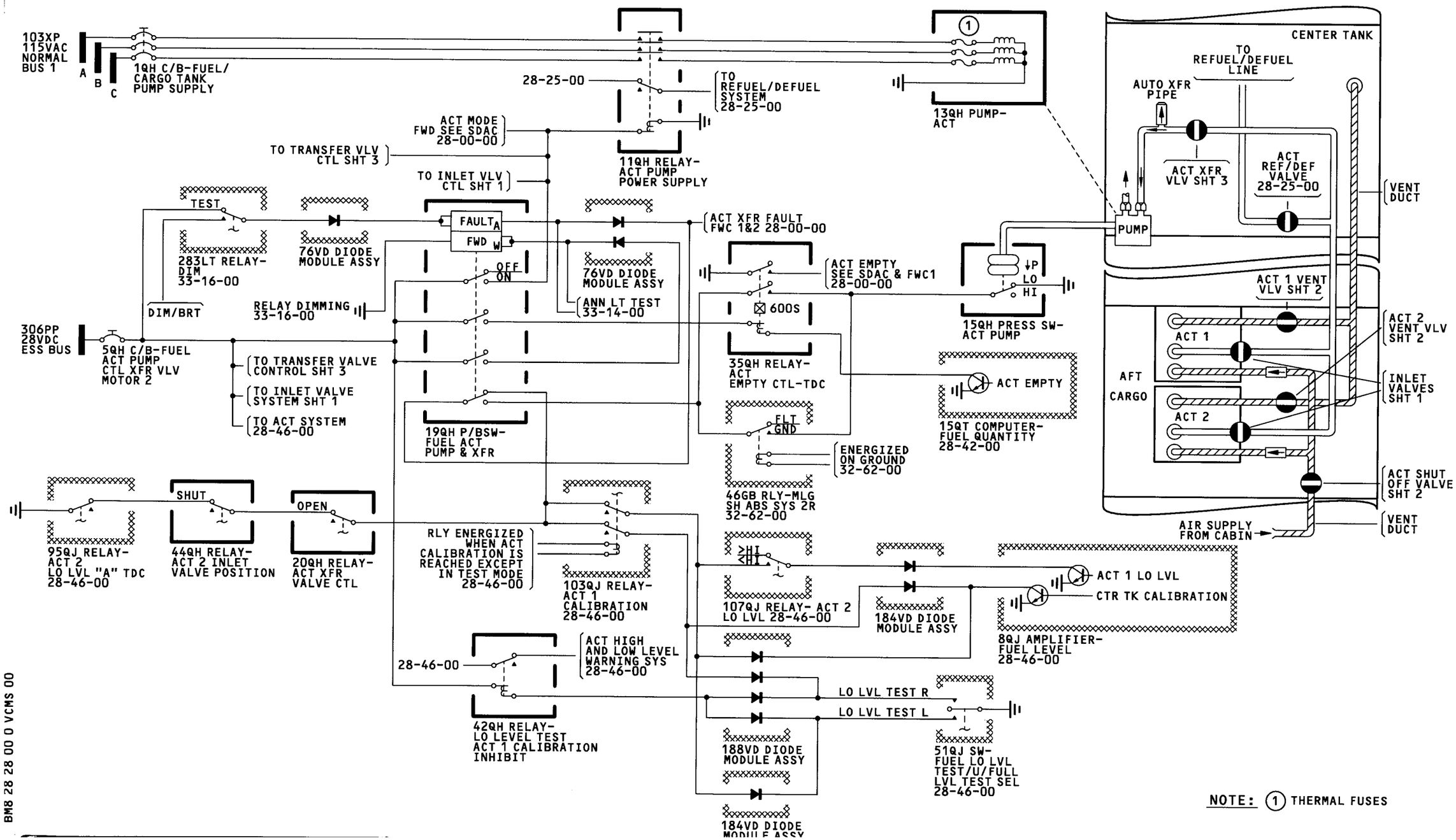
NOTE:

(1) GROUND WHEN SLAT POSITION GREATER THAN OR EQUAL TO 17°

ACT(s) (Transfer Valve) Control - Circuit Diagram
(Sheet 3/4)
Figure 012



ACT (Transfer Pump) Control - Circuit Diagram
(Sheet 4/4)
Figure 011



ACT(s) (Transfer Pump) Control - Circuit Diagram
(Sheet 4/4)
Figure 012

**ON A/C 101-200,

A. Normal Operation (Auto Mode)
During normal operation the ACT transfer system operates automatically. The system will not operate unless the ACT low-level sensor is wet, then five minutes after take-off (weight off wheels):
- the ACT air shut-off valve will open, the vent valve will close and the ACT will pressurize.

If the center-tank high-level sensor becomes dry for ten minutes the ACT transfer valve and the tank inlet valve will open and fuel transfer will start.

NOTE : If the center-tank high-level sensor becomes wet during transfer, the ACT transfer valve will close.

One minute after the ACT low-level sensor becomes dry:
- the ACT transfer valve will close
- the ACT air shut-off valve will close
- the ACT vent valve will open.

**ON A/C 101-200,

Post SB 28-2105 For A/C 101-200,

Post SB 28-2122 For A/C 101-200,

A. Normal Operation (Auto mode)
During normal operation the ACT transfer system operates automatically. The system will not operate unless either ACT low-level sensor is wet, then five minutes after take-off (weight off wheels):
- the ACT air shut-off valve will open, the vent valves will close and the ACT(s) will pressurize.

If the center-tank high-level sensor becomes dry for ten minutes then the ACT transfer valve and the applicable inlet valve will open and fuel transfer will start.

NOTE : If the center-tank high-level sensor becomes wet during transfer, the ACT transfer valve will close.

Normal transfer sequence is from ACT 2, one minute after the ACT 2 low-level sensor becomes dry:
- ACT 2 tank inlet-valve will close and ACT 1 tank inlet-valve will open to maintain fuel feed.

One minute after the ACT 1 low-level sensor becomes dry:
- the ACT transfer valve will close

- the ACT 1 inlet valve will close
- the ACT air shut-off valve will close
- the vent valves will open.

R **ON A/C 101-200,

B. Manual Operation

The circuit breaker panel 132 VU has the FUEL/ACT/XFR VALVE/MOTOR 1 circuit breaker 4QH (line 325/K58), which controls the electrical supply to the transfer motor 1. When the circuit breaker is open, fuel is permitted to transfer forward from the ACT to the center tank.

A manual override (AUX TK AUTO) pushbutton switch is installed on panel 430VU.

The fault legend in the AUX TK AUTO pushbutton switch will come on when:
- the center tank calibration sensor is dry and the ACT calibration level sensor is wet
- the ACT low level sensor is dry and ACT calibration sensor is wet.

Pressing the AUX TK AUTO pushbutton switch (in) will cause:
- the FAULT legend in AUX TK AUTO pushbutton switch to go off and FWD legend to come on
- the ACT tank inlet valve to open
- the ACT transfer valve to open
- the transfer pump to run
- the ACT pressure switch output to be inhibited.

Transfer from the ACT must be monitored on the ECAM fuel page, follow the procedures given in the FLIGHT MANUAL.
Ten minutes after the ACT is empty the FAULT legend on the AUX TK AUTO pushbutton switch will come on following a signal from the pump pressure switch.
Selecting the AUX TK AUTO pushbutton switch out, will cause:
- the transfer pump to stop
- the ACT transfer valve to be controlled by the automatic system (or to return to automatic control)
- the FWD legend in the AUX TK AUTO pushbutton switch to go off.

During the period the pump is emptying the ACT, the pressure switch output is inhibited.

NOTE : The pump can operate with or without the ACT being pressurized.

NOTE : Below 10,000 ft the pressurization system is not operational and the pump must be used to transfer fuel.

**ON A/C 101-200,

R Post SB 28-2105 For A/C 101-200,

R Post SB 28-2126 For A/C 104-104,

B. Manual Operation

The circuit breaker panel 132vu has the FUEL/ACT/XFR VALVE/MOTOR 1 circuit breaker 4QH (line 325/K58), which controls the electrical supply to the transfer motor 1. When the cuircuit breaker is open, fuel is permitted to transfer forward from the ACT to the center tank.

A manual override (ACT AUTO) pushbutton switch is installed on panel 430VU.

The fault legend in the ACT AUTO pushbutton switch will come on when:
- the center tank calibration sensor is dry and the ACT 1 calibration sensor is wet
- the ACT 1 low level sensor is dry, the ACT 1 calibration sensor is wet and the ACT 2 low level sensor is dry.

Pressing the ACT AUTO pushbutton switch (in) will cause:
- the FAULT legend in ACT AUTO pushbutton switch to go off and FWD legend to come on
- ACT 2 tank inlet valve to open if ACT 2 low level sensor is wet. If ACT 2 calibration, or low level sensor is dry or becomes dry ACT 2 tank inlet valve will close and ACT 1 tank inlet valve will open
- the transfer valve to open
- the transfer pump to run
- the ACT(s) pressure switch output to be inhibited until ACT 1 reaches empty and a tank empty signal is produced by the FQI computer after a ten minute delay.

Transfer from the ACT(s) must be monitored on the ECAM fuel page which will advise:
- monitor fuel transfer
- if necessary, descend to or below 27,000 ft until fuel transfer from the ACT(s) is completed.

Ten minutes after ACT 1 is empty the FAULT legend on the ACT AUTO pushbutton switch will come on following a signal from the pump pressure switch.

Selecting the ACT AUTO pushbutton switch out, will cause:
- the transfer pump to stop
- the ACT transfer valve to be controlled by the automatic system (or to return to automatic control)
- the FWD legend in the ACT AUTO pushbutton switch to go off.

During the period the pump is emptying the ACT(s), the pressure switch output is inhibited.

NOTE : The pump can operate with or without the ACT(s) being

pressurized.

NOTE : Below 10,000 ft the pressurization system is not operational and the pump must be used to transfer fuel.

R **ON A/C 101-200,

C. Ground Transfer

CAUTION : AS CENTER-TANK HIGH-LEVEL SENSING IS INHIBITED, TRANSFER MUST BE MONITORED ON THE ECAM FUEL PAGE TO AVOID OVERFILLING THE CENTER TANK.

Fuel can be transferred from the ACT to the center tank with the aircraft on the ground (weight on wheels) as follows:
Press (in) the AUX TK AUTO P/BSW which will cause:
- the FWD legend on the AUX TK AUTO pushbutton switch to come on
- the transfer valve to open

- the inlet valve to open

- the ACT transfer pump to run.

With the ACT empty, (P/BSW FAULT LT comes on) release (out) the AUX TK AUTO P/BSW.

**ON A/C 101-200,

Post SB 28-2105 For A/C 101-200,

R Post SB 28-2126 For A/C 104-104,

C. Ground Transfer

CAUTION : AS CENTER-TANK HIGH-LEVEL-SENSING IS INHIBITED, TRANSFER MUST BE MONITORED ON THE ECAM FUEL PAGE TO AVOID OVERFILLING THE CENTER TANK.

Fuel can be transferred from the ACT(s) to the center tank with the aircraft on the ground (weight on wheels) as follows:
Press (in) the ACT AUTO P/BSW which will cause:
- the FWD legend on the ACT AUTO P/BSW to come on
- the ACT transfer valve to open

- the ACT 2 inlet valve to open

- the ACT transfer pump to run.

NOTE : When the ACT 2 low-level sensor becomes dry, the ACT 1 inlet valve will open and allow the fuel transfer to continue from ACT 1 to the center tank.

To ground transfer fuel from an ACT 2 that contains fuel and an ACT 1 that is empty you must, on panel 110VU, select the ACT 2 REFUEL-DEFUEL-VALVE SWITCH to the OPEN position.

With the ACT(s) empty, release (out) the ACT AUTO P/BSW at panel 430VU. At panel 110VU, put back the ACT 2 REFUEL-DEFUEL-VALVE SWITCH to the NORM and guarded position.

WARNING : LANDING GEAR - MAKE SURE THAT THE GROUND SAFETIES AND CHOCKS ARE IN POSITION.

FLIGHT CONTROLS - MAKE SURE THAT THE GROUND SAFETIES AND NOTICES ARE IN POSITION.

OBSERVE THE SAFETY PRECAUTIONS IN 28-00-00, P. BLOCK 301.

MAKE SURE THAT THE FIRE FIGHTING EQUIPMENT IS AVAILABLE AND ADEQUATE.

MAKE SURE THAT YOU ISOLATE THE ELECTRICAL CIRCUITS UPON WHICH WORK IS IN PROGRESS.

1. Operational Test - Manual (FWD) Transfer and Automatic Transfer Mode

R

R NOTE 1 : When you do the manual operational test on the transfer system a
R visual indication is given by the indicator grooves on the ACT
R transfer valve and the ACT inlet valve. The ECAM fuel page shows
R the applicable ACT transfer valve symbol and the changing fuel
R quantities confirm the operation of the transfer pump.

R NOTE 2 : When you do the automatic operational test on the transfer system
R an audible indication is given by the ACT transfer valve, air shut-
R off valve and the ACT inlet valve. A visual indication is given by
R the indicator groove on each valve.
R The ECAM fuel page shows the applicable ACT transfer valve symbol.

**ON A/C 101-200,

Post SB 28-2105 For A/C 101-200,

R NOTE 1 : When you do the manual operational test on the transfer system
R a visual indication is given by the indicator grooves on the ACT
R transfer valve and the ACT inlet valve(s). The ECAM fuel page
R shows the applicable ACT transfer valve symbol and the changing
R fuel quantities confirm the operation of the ACT transfer pump.

R NOTE 2 : When you do the automatic operational test on the transfer system
R an audible indication is given by the ACT transfer valve, air shut-
R off valve and the ACT inlet valve(s). A visual indication is given
R by the indicator groove on each valve.
R The ECAM fuel page shows the applicable ACT transfer valve symbol.

R **ON A/C 101-200,

R A. Equipment and Materials

ITEM	DESIGNATION
A.	Access Platform 2 m (6.5 ft)
B.	Access Platform 2.7 m (9 ft)
C.	Circuit Breaker Safety Clips and Tags
D.	Ground Air Supply with pressure gage and self-sealing quick-release coupling PN HTE 714-85-G. The maximum outlet pressure must be 2.0 psi (0.14 bar). The outlet flow-rate (free air delivery) must be more than 0.35 cubic ft/min (10 liters/min) at 2.0 psi (0.14 bar). The test will take less time if you increase the flowrate. The air must be free of moisture.
E.	Inspection Mirror, capable of extending to approximately 2.7 m (9 ft) (If applicable)
F.	Pressure Gage suitable for reading 0 - 2.0 psi (0 - 0.14 bar) complete with self-sealing quick-release test coupling PN HTE 714-85-G.
Referenced Procedures	
- 06-41-53, P. Block 1	Fuselage
- 12-11-28, P. Block 301	Replenishing of Fuel Tanks
- 24-41-00, P. Block 301	AC External Power Control
- 25-28-11, P. Block 401	Carpet - Floor Covering
- 25-28-12, P. Block 401	Covering - Non Textile Floor
- 25-52-00, P. Block 1	Semi-Automatic Cargo Loading
- 27-80-00, P. Block 301	Lift Augmenting
- 28-00-00, P. Block 301	Fuel - General
- 28-11-36, P. Block 401	Additional Center Tank
- 28-12-00, P. Block 601	Tank Venting System
- 28-25-00, P. Block 301	Refuel-Defuel System
- 32-12-11, P. Block 301	Main Gear Main Door
- 52-30-00, P. Block 1	Cargo Compartment Door(s)
- 53-10-25, P. Block 401	Panels - Passenger Compartment Floor

R B. Procedure

R (1)Operational Test - FWD Transfer Mode
R (a)Job Set-Up
R 1 Energize the aircraft electrical network (Ref. 24-41-00, P. Block 301).
R 2 Make sure that the circuit breakers that follow are closed:

PANEL	SERVICE	IDENT.	LOCATION
21VU	ECAM/CTL PNL LT	12WT	108/B01
21VU	ECAM/DISPLAY UNIT/L	7WT	108/B02
21VU	ECAM/DISPLAY UNIT/R	8WT	108/B03
21VU	ECAM/SGU/1	11WT1	108/B04
21VU	ECAM/SGU/2	11WT2	108/B05
21VU	ECAM/FLT WARN MONITOR	4WW	108/B06
21VU	ECAM/FLT WARN MONITOR	24WW	108/B07
21VU	ECAM/FWC 1	7WW	108/B08
21VU	ECAM/SDAC/26VAC/NORM 1	3WV1	109/A2
21VU	ECAM/SDAC/26VAC/NORM 2	3WV2	109/A3
21VU	ECAM/SDAC/PWR SUPPLY	6WV	109/A5
22VU	FUEL/TK LO LVL AND CAL/L OUTR AND R INR AND CTR R	1QJ	208/B26
22VU	FUEL/TK LO LVL AND CAL/R OUTR AND L INR AND CTR L	2QJ	208/B27
101VU	FUEL/CARGO TK PUMP SUPPLY	1QH	GEN1/A02
132VU	FUEL/FUELLING/HI LVL	6QJ	321/P57
132VU	FUEL/FUELLING/OVERFLOW AND CAL	5QJ	321/P58
132VU	FUEL/FQI/SUPPLY & IND	1QT	321/P59
132VU	FUEL/FQI/CHAN SUPPLY 1	3QT	321/P60
132VU	FUEL/FQI/CHAN SUPPLY 2	4QT	321/P61
132VU	FUEL/AUX TK/VENT & PRESS VALVE	3QH	325/K57
132VU	FUEL/AUX TK/XFR VALVE/MOTOR 1	4QH	325/K58
132VU	FUEL/AUX TK/PUMP CTL/XFR VALVE/MOTOR 2	5QH	325/K59
133VU	L/G PROX DET & RELAYS SYS 2/FLT/GND	1GB	331/V52

R 3 Activate the ECAM display units (DU's) as follows:
R - on the flight compartment center pedestal, push (in) the ECAM SGU 1 & 2 P/BSW's.
R - turn the LEFT and RIGHT DISPLAY rotary switches clockwise to switch on the display and adjust the brightness to the required level.
R - push (in) the FUEL P/BSW to call up the fuel page.

R CAUTION : THE CENTER TANK MUST HAVE THE CAPACITY TO RECEIVE ALL THE FUEL IN THE ACT.

R 4 Check on the ECAM fuel page that the center tank and the ACT, each contain 1100 lb (500 kg) of fuel. If necessary, refuel or defuel the tanks accordingly (Ref. 12-11-28 or 28-25-00, P. Block 301).

R NOTE 1 : The fuel quantities given are the minimum required to perform this test.

R NOTE 2 : The fuel quantities in the inner and outer tanks will not
R affect this test.

R 5 Make sure that the refuel panel access-door 144DR is closed.

R (b)Test

R ACTION	RESULT
R 1. On panel 430VU:	On panel 430VU:
R - release (out) the TRIM TK ISOL VALVE P/BSW	- the trim tank isolation valve is latched out of the system.
R	- the valve is already in the shut position because the aircraft is on the ground and the refueling panel is de-energized.
R - make sure that the TRIM TK PUMP 1 and 2 P/BSW's are released (out)	- the OFF legends in the TRIM TK PUMP 1 and 2 P/BSW's, are on
R	- the trim tank pumps are latched out.
R - make sure that the TRIM TK AUTO MODE P/BSW is released (out).	
R 2. On circuit breaker panel 132VU:	
R - open the FUEL/AUX TK/XFR VALVE/ MOTOR 1 circuit breaker 4QH (line 325/K58).	- the electrical supply to the ACT transfer valve motor 1, is removed.
R NOTE : Under manual control, only the actuator motor 2 of the act transfer-valve will open the valve.	
R 3. On panel 430VU:	On panel 430VU:
R - push (in) the AUX TK AUTO/ ACT AUTO P/BSW.	- the FWD legend in the AUX TK AUTO/ ACT AUTO P/BSW, comes on
R	- the FAULT legend comes on momentarily then goes off
R	The ECAM fuel page shows:
R	- the ACT transfer valve symbol in green
R	- the fuel tank quantity indicators show that the fuel transfers from the ACT into the center tank.
R 4. Only transfer enough fuel to confirm that the system is operating correctly.	
R 5. On circuit breaker panel 132VU:	

ACTION	RESULT
- close the FUEL/AUX TK/XFR VALVE/ MOTOR 1 circuit breaker 4QH (line 325/K58).	- the electrical supply to the ACT transfer valve motor 1, is restored.
6. On panel 430VU: - release (out) the AUX TK AUTO/ ACT AUTO P/BSW	On panel 430VU: - the FWD legend in the AUX TK AUTO/ ACT AUTO P/BSW, goes off On the ECAM fuel page: - the ACT transfer valve green symbol goes off - the fuel tank quantity indicators show that the fuel transfer from the ACT into the center tank has stopped.
- push (in) the TRIM TK ISOL VALVE P/BSW.	- the trim tank isolation valve will be latched back into the system but will stay in the shut position while the aircraft is on the ground and the refuel panel is de-energized.

(c)Close-Up

1 De-activate the ECAM display units as follows:
- on the flight compartment center pedestal, turn the ECAM LEFT and RIGHT DISPLAY rotary switches to OFF.
- release (out) the ECAM SGU 1 and 2 P/BSW's.

2 De-energize the aircraft electrical network (Ref. 24-41-00, P. Block 301).

3 Make sure that the work area is clean and clear of tools and all other items of equipment.

(2)Not Applicable.

(3)Not Applicable.

(4)Not Applicable.

R **ON A/C 101-200,

R Post SB 28-2105 For A/C 101-200,

R (1)Operational Test - FWD Transfer Mode
R (a)Job Set-Up
R 1 Energize the aircraft electrical network (Ref. 24-41-00, P. Block 301).
R 2 Make sure that the following circuit breakers are closed:

	PANEL	SERVICE	IDENT.	LOCATION
R	21VU	ECAM/CTL PNL LT	12WT	108/B01
R	21VU	ECAM/DISPLAY UNIT/L	7WT	108/B02
R	21VU	ECAM/DISPLAY UNIT/R	8WT	108/B03
R	21VU	ECAM/SGU/1	11WT1	108/B04
R	21VU	ECAM/SGU/2	11WT2	108/B05
R	21VU	ECAM/FLT WARN MONITOR	4WW	108/B06
R	21VU	ECAM/FLT WARN MONITOR	24WW	108/B07
R	21VU	ECAM/FWC 1	7WW	108/B08
R	21VU	ECAM/SDAC/26VAC/NORM 1	3WV1	109/A2
R	21VU	ECAM/SDAC/26VAC/NORM 2	3WV2	109/A3
R	21VU	ECAM/SDAC/PWR SUPPLY	6WV	109/A5
R	22VU	FUEL/TK LO LVL AND CAL/L OUTR AND R INR AND CTR R	1QJ	208/B26
R	22VU	FUEL/TK LO LVL AND CAL/R OUTR AND L INR AND CTR L	2QJ	208/B27
R	101VU	FUEL/CARGO TK PUMP SUPPLY	1QH	GEN1/A02
R	132VU	FUEL/FUELLING/HI LVL	6QJ	321/P57
R	132VU	FUEL/FUELLING/OVERFLOW AND CAL	5QJ	321/P58
R	132VU	FUEL/FQI/SUPPLY & IND	1QT	321/P59
R	132VU	FUEL/FQI/CHAN SUPPLY 1	3QT	321/P60
R	132VU	FUEL/FQI/CHAN SUPPLY 2	4QT	321/P61
R	132VU	FUEL/ACT/VENT & PRESS VALVE	3QH	325/K57
R	132VU	FUEL/ACT/XFR VALVE/MOTOR 1	4QH	325/K58
R	132VU	FUEL/ACT/PUMP CTL/XFR VALVE/MOTOR 2	5QH	325/K59
R	133VU	L/G PROX DET & RELAYS SYS 2/FLT/GND	1GB	331/V52

R 3 Activate the ECAM display units (DU's) as follows:
R - on the flight compartment center pedestal, push (in) the ECAM SGU 1 & 2 P/BSW's.
R - turn the LEFT and RIGHT DISPLAY rotary switches clockwise to switch on the display and adjust the brightness to the required level.
R - push (in) the FUEL P/BSW to call up the fuel page.

R CAUTION : THE CENTER TANK MUST HAVE THE CAPACITY TO RECEIVE ALL THE FUEL IN THE ACT(S).

R 4 If ACT 2 is not installed, make sure on the ECAM fuel page that:
R - the center tank and ACT 1 each contain 500 kg (1100 lb) of fuel. If necessary, refuel or defuel the tanks accordingly (Ref. 12-11-28 or 28-25-00, P. Block 301).
R 5 If ACT 2 is installed, make sure on the ECAM fuel page that:
R - the center tank, ACT 1 and ACT 2 each contain 500 kg (1100 lb) of fuel. If necessary, refuel or defuel the tanks accordingly (Ref. 12-11-28 or 28-25-00, P. Block 301).

R NOTE 1 : The fuel quantities given are the minimum required to do this test.

R NOTE 2 : ACT 2 must not contain more than 500 kg (1100 lb) of fuel. This is to make sure that the calibration sensor stays dry.

R NOTE 3 : The fuel quantities in the inner and outer tanks will not affect this test.

R NOTE 4 : If you manually do a fuel transfer from a full ACT 2 tank it is possible for up to 1000 kg (2200 lb) of fuel to stay in the tank (the amount of fuel is related to the attitude of the aircraft). This is to make sure that the ACT 1 can transfer fuel forward if the low level sensor or the calibration sensor (in the ACT 2) fails.

R 6_ Make sure that the refuel panel access door 144DR, is closed.

R 7 If ACT 2 is not installed, do the test ref. para. 1. B. (1) (b).
R If ACT 2 is installed, do the test ref. para. 1. B. (1) (c).

R (b)Test (ACT 1 installed)

R ACTION	RESULT
R 1. On panel 430VU:	On panel 430VU:
R - release (out) the TRIM TK ISOL VALVE P/BSW	- the trim tank isolation valve is latched out of the system. - the valve is already in the shut position because the aircraft is on the ground and the refueling panel is de-energized.
R - make sure that the TRIM TK PUMP 1 and 2 P/BSW's are released (out)	- the OFF legends in the TRIM TK PUMP 1 and 2 P/BSW's, are on - the trim tank pumps are latched out.
R - make sure that the TRIM TK AUTO MODE P/BSW is released (out).	
R 2. On circuit breaker panel 132VU:	

ACTION	RESULT
- open the FUEL/ACT/XFR VALVE/ MOTOR 1 circuit breaker 4QH (line 325/K58).	- the electrical supply to the ACT transfer valve motor 1, is removed.
NOTE : Under manual control, only the actuator motor 2 of the ACT transfer-valve will open the valve.	
3. On panel 430VU: - push (in) the ACT AUTO P/BSW.	On panel 430VU: - the FWD legend in the ACT AUTO P/BSW, comes on - the FAULT legend comes on momentarily then goes off The ECAM fuel page shows: - the ACT transfer valve symbol in green - the fuel tank quantity indicators show that the fuel transfers from ACT 1 into the center tank.
4. Only transfer enough fuel to confirm that the system is operating correctly.	
5. On circuit breaker panel 132VU: - close the FUEL/ACT/XFR VALVE/ MOTOR 1 circuit breaker 4QH (line 325/K58).	- the electrical supply to the ACT transfer valve motor 1, is restored.
6. On panel 430VU: - release (out) the ACT AUTO P/BSW	On panel 430VU: - the FWD legend in the ACT AUTO P/BSW, goes off On the ECAM fuel page: - the ACT transfer valve green symbol goes off - the fuel tank quantity indicators show that the fuel transfer from ACT 1 into the center tank has stopped.
- push (in) the TRIM TK ISOL VALVE P/BSW.	- the trim tank isolation valve will be latched back into the system but will stay in the shut position while the aircraft is on the ground and the refueling panel is de-energized.

R 1 Continue with the Close-Up procedure ref. Para. 1.B.(1)(d).

R (c)Test (ACT 1 and ACT 2 installed)

ACTION	RESULT
1. On panel 430VU: - release (out) the TRIM TK ISOL VALVE P/BSW	On panel 430VU: - the trim tank isolation valve is latched out of the system. - the valve is already in the shut position because the aircraft is on the ground and the refueling panel is de-energized
- make sure that the TRIM TK PUMP 1 and 2 P/BSW's are released (out)	- the OFF legends in the TRIM TK PUMP 1 and 2 P/BSW's, are on - the trim tank pumps are latched out.
- make sure that the TRIM TK AUTO MODE P/BSW is released (out).	
2. On circuit breaker panel 132VU: - Open the FUEL/ACT/XFR VALVE/ MOTOR 1 circuit breaker 4QH (line 325/K58).	- the electrical supply to the ACT transfer valve motor 1 is, removed.
NOTE : Under manual control, only the actuator motor 2 of the ACT transfer-valve will open the valve.	
3. On circuit breaker panel 132VU: - open and close FUEL/FUELLING/ HI LVL circuit breaker 6QJ on (line 321/P57) and immediately perform test step 4.	Simulates the calibration sensor for the ACT 2 in the wet condition.
4. On panel 430VU: - push (in) the ACT AUTO P/BSW.	On panel 430VU: - the FWD legend in the ACT AUTO P/BSW, comes on - the FAULT legend comes on momentarily then goes off The ECAM fuel page shows: - the ACT transfer valve symbol in green - the fuel tank quantity indicators show that the fuel transfers from ACT 2 into the center tank.
5. Approximately one minute after you do test step 3.	The ECAM fuel page shows: - the ACT transfer valve symbol in

ACTION	RESULT
	green - the fuel tank quantity indicators show that the fuel transfers from ACT 1 into the center tank.
6. Only transfer enough fuel to confirm that the system is operating correctly.	
7. On circuit breaker panel 132VU: - close the FUEL/ACT/XFR VALVE/ MOTOR 1 circuit breaker 4QH (line 325/K58).	- the electrical supply to the ACT transfer valve motor 1 is restored.
8. On panel 430VU: - release (out) the ACT AUTO P/BSW	On panel 430VU: - the FWD legend in the ACT AUTO P/BSW, goes off
	On the ECAM fuel page: - the ACT transfer valve green symbol goes off - the fuel tank quantity indicators show that the fuel transfer from ACT 1 into the center tank has stopped
- push (in) the TRIM TK ISOL VALVE P/BSW.	- the trim tank isolation valve will be latched back into the system but will stay in the shut position while the aircraft is on the ground and the refueling panel is de-energized.

(d)Close-Up.

1 De-activate the ECAM display units as follows:
- on the flight compartment center pedestal, turn the LEFT and RIGHT DISPLAY rotary switches to OFF.
- release (out) the ECAM SGU 1 and 2 P/BSW's.

2 De-energize the aircraft electrical network (Ref. 24-41-00, P. Block 301).

3 Make sure that the work area is clean and clear of tools and all other items of equipment.

(2)Not Applicable.

(3)Not Applicable.

(4)Not Applicable.

R **ON A/C 101-200,

R (5)Operational Test - Automatic Transfer and Pressurization System
R (a)Job set-up

R NOTE : The pressure system operational test is performed without the
R transfer of fuel. An audible indication is given by the ACT
R transfer valve and air shut-off valve. A visual indication is
R given by the indicator groove on the actuator of each valve.
R The ECAM fuel page shows the applicable transfer valve symbol.

R 1 Energize the aircraft electrical network (Ref. 24-41-00,
R P. Block 301).
R 2 Make sure that the circuit breakers that follow are closed:

R	PANEL	SERVICE	IDENT.	LOCATION
R	21VU	ECAM/CTL PNL LT	12WT	108/B01
R	21VU	ECAM/DISPLAY UNIT/L	7WT	108/B02
R	21VU	ECAM/DISPLAY UNIT/R	8WT	108/B03
R	21VU	ECAM/SGU/1	11WT1	108/B04
R	21VU	ECAM/SGU/2	11WT2	108/B05
R	21VU	ECAM/FLT WARN MONITOR	4WW	108/B06
R	21VU	ECAM/FLT WARN MONITOR	24WW	108/B07
R	21VU	ECAM/FWC 1	7WW	108/B08
R	21VU	ECAM/SDAC/26VAC/NORM 1	3WV1	109/A2
R	21VU	ECAM/SDAC/26VAC/NORM 2	3WV2	109/A3
R	21VU	ECAM/SDAC/PWR SUPPLY	6WV	109/A5
R	22VU	FUEL/TK LO LVL AND CAL/L OUTR AND R INR AND CTR R	1QJ	208/B26
R	22VU	FUEL/TK LO LVL AND CAL/R OUTR AND L INR AND CTR L	2QJ	208/B27
R	101VU	FUEL/CARGO TK PUMP SUPPLY	1QH	GEN1/A02
R	132VU	FUEL/FUELLING/HI LVL	6QJ	321/P57
R	132VU	FUEL/FUELLING/OVERFLOW AND CAL	5QJ	321/P58
R	132VU	FUEL/FQI/SUPPLY & IND	1QT	321/P59
R	132VU	FUEL/FQI/CHAN SUPPLY 1	3QT	321/P60
R	132VU	FUEL/FQI/CHAN SUPPLY 2	4QT	321/P61
R	132VU	FUEL/AUX TK/VENT & PRESS VALVE	3QH	325/K57
R	132VU	FUEL/AUX TK/XFR VALVE/ MOTOR 1	4QH	325/K58
R	132VU	FUEL/AUX TK/PUMP CTL/XFR VALVE/MOTOR 2	5QH	325/K59

R 3 Open the RH main landing gear bay door (Ref. 32-12-11, P. Block 301).
R 4 Position the access platform for access to the ACT transfer valve on
R the RH center tank manhole cover 148AZ.
R 5 Position the access platform and open the aft cargo compartment
R door (Ref. 52-30-00, P. Block 1).
R 6 If installed, remove the containers(s) located behind the ACT
R (Ref. 25-52-00, P. Block 1).

R 7 Unlock the quick release fasteners and remove the RH section of the
R heat shield from the rear wall of the ACT (Ref. 28-11-36,
R P. Block 401).
R 8 Remove the panel section of the side wall lining at STA3090/FR54.3.
R 9 Activate the ECAM DU's as follows:
R - on the flight compartment center pedestal, push (in) the ECAM
R SGU 1 & 2 P/BSW's
R - turn LEFT and RIGHT DISPLAY rotary switches clockwise to switch on
R the display and adjust the brightness to the required level
R - push (in) the FUEL P/BSW to call up the fuel page.
R 10 Make sure that on the ECAM FUEL page the center tank and ACT,
R each contain 1100 lb (500 kg) of fuel. If necessary refuel or defuel
R the tanks accordingly (Ref. 12-11-28 or 28-25-00, P. Block 301).

R NOTE : The fuel quantity in the inner and outer tanks will not affect
R this test.

R 11 Make sure that the slats are fully retracted (Ref. 27-80-00,
R P. Block 301).
R 12 Make sure that the refuel panel access-door 144DR, is closed.
R 13 Make sure that on panel 430VU, the AUX TK AUTO/ACT AUTO P/BSW, is
R released (out) - system in AUTO.
R 14 Position one person in the main undercarriage bay and one person in
R the aft cargo compartment. They are to make sure (where possible) by
R audible and visual means that the valves under test function
R correctly.
R 15 Visually examine the indicator groove on each valve actuator.
R Make sure that they indicate as follows:
R - air shut-off valve (ACT pressurization line, aft cargo
R compartment) is shut
R - ACT transfer valve (RH CTR TK manhole cover) is shut.
R 16 Open, safety and tag the circuit breaker that follows:

PANEL	SERVICE	IDENT.	LOCATION
132VU	FUEL/FUELLING/HI LVL	6QJ	321/P57

R (b)Test

ACTION	RESULT
1. On circuit breaker panel 133VU:	
- Open L/G PROX DET & RELAYS SYS 2/FLT/GND circuit breaker 1GB (line 331/V52).	- the aircraft is put in the simulated flight condition.
2. 5 minutes after you do step 1.:	
- in the aft cargo compartment at STA 3090/FR54.3	- listen to make sure that the air shut-off valve is opened by the valve electrical motor - do a visual check of the indicator groove on the electrical motor to

ACTION	RESULT
	confirm that the valve has opened.
3. On circuit breaker panel 132VU: - close FUEL/FUELLING/HI LVL circuit breaker 6QJ (line 321/P57)	- the high level sensors in the center tank return to their original condition.
4. 10 minutes after you do step 3.: - in the main undercarriage bay on the center tank manhole cover 148AZ	- listen to make sure that the ACT transfer valve is opened by the valve electrical motor - do a visual check of the indicator groove on the electrical motor to confirm that the valve has opened. - the ECAM fuel page shows the transfer valve symbol in green.
5. On circuit breaker panel 132VU: - open FUEL/FUELLING/HI LVL circuit breaker 6QJ (line 321/P57)	- simulates wet condition for the high level sensors in the center tank and the ACT
- in the main undercarriage bay on the center tank manhole cover 148AZ.	- listen to make sure that the ACT transfer valve is closed by the valve electrical motor - do a visual check of the indicator groove on the electrical motor to confirm that the valve has closed - on the ECAM fuel page the transfer valve green symbol, goes off.
6. On circuit breaker panel 132VU: - close circuit breaker 6QJ (line 321/P57)	- the high level sensors in the center tank and the ACT return to their original condition
7. 10 minutes after you do step 6.: - in the main undercarriage bay on the center tank manhole cover 148AZ	- listen to make sure that the ACT transfer valve is opened by the valve electrical motor - do a visual check of the indicator groove on the electrical motor to confirm that the valve has opened - the ECAM fuel page shows the transfer valve symbol in green.
8. On circuit breaker panel 132VU: - open circuit breaker 3QH (line 325/K57)	- isolates the air shut-off valve and the vent valve.

ACTION	RESULT
9. On circuit breaker panel 22VU: - open circuit breakers 1QJ (line 208/B26) and 2QJ (line 208/B27)	- simulates wet condition for the low level sensors in all the tanks
10. Close circuit breaker 3QH (line 325/K57)	- restores the power supply to the air shut-off valve and vent valve.
11. Defuel the ACT (Ref. 28-25-00, P. Block 301).	
12. On circuit breaker panel 22VU: - close circuit breakers 1QJ (line 208/B26) and 2QJ (line 208/B27).	- all the low level sensors are active.
13. One minute after you do step 12.	- on the center tank manhole cover 148AZ, listen to make sure that the ACT transfer valve is closed by the valve electrical motor - do a visual check of the indicator groove on the electrical motor to confirm that the valve has closed - on the ECAM fuel page the transfer valve green symbol, goes off - on the ACT pressurization line, listen to make sure that the air shut-off valve is closed by the valve electrical motor - do a visual check of the indicator groove on the electrical motor to confirm that the valve has closed.
14. On circuit breaker panel 133VU: - close circuit breaker 1GB (line 331/V52).	- the simulated flight condition is removed and the aircraft is put in the ground condition.

(c) Close-Up

1 De-activate the ECAM display units as follows:
- on the flight compartment center pedestal, turn the ECAM LEFT and RIGHT DISPLAY rotary switches to OFF
- release (out) the ECAM SGU 1 and 2 P/BSW's.

2 De-energize the aircraft electrical network (Ref. 24-41-00, P. Block 301.)

3 Make sure that the persons that were positioned in the main undercarriage bay and the aft cargo compartment, are clear of the

R aircraft.
R 4 Make sure that the work area is clean and clear of tools and all
R other items of equipment.
R 5 Install the panel section of the sidewall lining at STA3090/FR54.3.
R 6 Install the right hand section of the heat shield (Ref. 28-11-36,
R P. Block 401).
R 7 If necessary, install the cargo container(s) (Ref. 25-52-00,
R P. Block 1).
R 8 Close the aft cargo compartment door (Ref. 52-30-00, P. Block 1)
R and remove the access platform.
R 9 Make sure that the main undercarriage bay is clean and clear of
R tools and all other items of equipment.
R 10 Remove the access platform and close the RH main landing gear bay
R door (Ref. 32-12-11, P. Block 301).
R 11 Refuel the aircraft to the required fuel load (Ref. 12-11-28,
R P. Block 301).

R **ON A/C 101-200,

R Post SB 28-2105 For A/C 101-200,

R Post SB 28-2122 For A/C 101-200,

R (5)Operational Test - Automatic Pressurization and Transfer System
R (a)Job Set-Up

R NOTE : The pressure system operational test is done without the
R transfer of fuel. An audible indication is given by the ACT(s)
R transfer valve and air shut-off valve. A visual indication is
R given by the indicator groove on the actuator of each valve.
R The ECAM fuel page shows the applicable transfer valve symbol.

R 1 Energize the aircraft electrical network (Ref. 24-41-00,
R P. Block 301).
R 2 Make sure that the circuit breakers that follow are closed:

	PANEL	SERVICE	IDENT.	LOCATION
R	21VU	ECAM/CTL PNL LT	12WT	108/B01
R	21VU	ECAM/DISPLAY UNIT/L	7WT	108/B02
R	21VU	ECAM/DISPLAY UNIT/R	8WT	108/B03
R	21VU	ECAM/SGU/1	11WT1	108/B04
R	21VU	ECAM/SGU/2	11WT2	108/B05
R	21VU	ECAM/FLT WARN MONITOR	4WW	108/B06
R	21VU	ECAM/FLT WARN MONITOR	24WW	108/B07
R	21VU	ECAM/FWC 1	7WW	108/B08
R	21VU	ECAM/SDAC/26VAC/NORM 1	3WV1	109/A2
R	21VU	ECAM/SDAC/26VAC/NORM 2	3WV2	109/A3
R	21VU	ECAM/SDAC/PWR SUPPLY	6WV	109/A5
R	101VU	FUEL/CARGO TK PUMP SUPPLY	1QH	GEN1/A02
R	132VU	FUEL/FUELLING/HI LVL	6QJ	321/P57
R	132VU	FUEL/FUELLING/OVERFLOW AND CAL	5QJ	321/P58
R	132VU	FUEL/FQI/SUPPLY & IND	1QT	321/P59
R	132VU	FUEL/FQI/CHAN SUPPLY 1	3QT	321/P60
R	132VU	FUEL/FQI/CHAN SUPPLY 2	4QT	321/P61
R	132VU	FUEL/ACT/VENT & PRESS VALVE	3QH	325/K57
R	132VU	FUEL/ACT/XFR VALVE/ MOTOR 1	4QH	325/K58
R	132VU	FUEL/ACT/PUMP CTL/XFR VALVE/MOTOR 2	5QH	325/K59

R 3 Open the RH main landing gear bay door (Ref. 32-12-11, P. Block 301).
R 4 Position the access platform for access to the ACT transfer valve on
R the RH center tank manhole cover 148AZ.

R 5 You can get access to the actuator on the air shut-off valve through

R the floor of the passenger compartment or through the aft cargo
R compartment.
R 6 To get access through the floor of the passenger compartment:
R - remove the applicable passenger compartment seats (Ref. 25-21-00,
R P. Block 401).
R - remove the floor covering (Ref. 25-28-11 and 25-28-12,
R P. Block 401).
R - remove the applicable floor panel (Ref. 06-41-53, P. Block 1 and
R 53-10-25, P. Block 401).
R 7 To get access through the aft cargo compartment (if only ACT 1 is
R installed):
R - put the access platform in position.
R - open the aft cargo compartment door (Ref. 52-30-00, P. Block 1)
R - if installed, remove the cargo container(s) (Ref. 25-52-00,
R P. Block 1).
R - remove the sidewall panel 152 BX in zone 152 (Ref. 06-41-53,
R P. Block 1).
R 8 Activate the ECAM DU's as follows:
R - on the flight compartment center pedestal push (in) the ECAM
R SGU 1 & 2 P/BSW's
R - turn the LEFT and RIGHT DISPLAY rotary switches clockwise to switch
R on the display and adjust the brightness to the required level
R - push (in) the FUEL P/BSW to call up the fuel page.
R 9 On the ECAM FUEL page make sure that:
R - the center tank is not full. It may be empty or contain fuel
R - ACT 1 and ACT 2 are empty.
R If necessary, defuel the center tank and the ACT(s) accordingly
R (Ref. 28-25-00, P. Block 301).

R NOTE : The fuel quantity in the inner and outer tanks will not affect
R this test.

R 10 Make sure that the slats are fully retracted (Ref. 27-80-00,
R P. Block 301).
R 11 Make sure that the refuel panel access door 144DR, is closed.
R 12 On panel 430VU, make sure that the ACT AUTO P/BSW, is released
R (out) - system in AUTO.
R 13 Position one person at the RH center tank manhole cover in the main
R undercarriage bay and one person in the passenger compartment or aft
R cargo compartment. They are to make sure (by audible and visual
R means) that the ACT transfer valve and the air shut-off valve
R function correctly.
R 14 Visually examine the indicator groove on each valve actuator.
R Make sure that they indicate as follows:
R - air shut-off valve (ACT pressurization line, passenger compartment)
R is shut
R - ACT Transfer Valve (RH Center tank manhole cover) is shut
R 15 Open, safety and tag the circuit breakers that follow:

PANEL	SERVICE	IDENT.	LOCATION
22VU	FUEL/TK LO LVL AND CAL/L OUTR AND R INR AND CTR R	1QJ	208/B26
22VU	FUEL/TK LO LVL AND CAL/R OUTR AND L INR AND CTR L	2QJ	208/B27
132VU	FUEL/FUELLING/HI LVL	6QJ	321/P57

NOTE 1 : When you open the circuit breakers 1QJ and 2QJ, the low level sensors in the center tank, ACT 1 and ACT 2, are simulated in the wet condition.

NOTE 2 : When you open the circuit breaker 6QJ, the high level sensors in the center tank, ACT 1 and ACT 2, are simulated in the wet condition.

CAUTION : MAKE SURE THAT THERE IS NO BREAK IN THE ELECTRICAL POWER SUPPLY TO THE FUEL SYSTEM CONTROL CIRCUITS DURING THE TEST, UNLESS THERE IS AN INSTRUCTION TO OPEN A CIRCUIT BREAKER.

(b)Test

ACTION	RESULT
1. On circuit breaker panel 132VU: - open and then close the FUEL/ACT/VENT & PRESS VALVE circuit breaker 3QH (line 325/K57).	- the latches on the ACT low level sensor relays are removed.
2. On circuit breaker panel 133VU: - open L/G PROX DET & RELAYS SYS 2/FLT/GND circuit breaker 1GB (line 331/V52).	- the aircraft is put in the simulated flight condition.
3. On circuit breaker panel 132VU: - remove the safety clip and tag and close the FUEL/FUELLING/HI LVL circuit breaker 6QJ (line 321/P57)	- the high level sensors in the center tank, ACT 1 and ACT 2, are put back to the dry condition.
	30 ± 3 minutes after you open the circuit breaker 1GB; in the passenger compartment or the aft cargo compartment: - listen to make a check that the air shut-off valve is opened by the valve electrical motor - do a visual check of the indicator groove on the actuator to confirm that the valve has opened.

ACTION	RESULT
	30 ± 3 minutes after you close the circuit breaker 6QJ; in the main undercarriage bay on the RH center tank manhole cover: - listen to make a check that the ACT transfer valve is opened by the valve electrical motor - do a visual check of the indicator groove on the actuator to confirm that the valve has opened On the ECAM, make a check that the fuel page shows the ACT transfer valve symbol in green.
4. On circuit breaker panel 132VU: - open the FUEL/FUELLING/HI LVL circuit breaker 6QJ (line 321/P57).	- listen to make a check that the ACT transfer valve shuts immediately - do a visual check of the indicator on the actuator to confirm that the valve has shut
5. On circuit breaker panel 132VU: - close the FUEL/FUELLING/HI LVL circuit breaker 6QJ (line 321/P57)	30 ± 3 minutes after you close the circuit breaker 6QJ; in the main undercarriage bay on the RH center tank manhole cover: - listen to make a check that the ACT transfer valve is opened by the valve electrical motor - do a visual check of the indicator groove on the actuator to confirm that the valve has opened.
6. On circuit breaker panel 22VU: - remove the safety clips and tags and close circuit breakers 1QJ (line 208/B26) 2QJ (line 208/B27)	One minute after you close the circuit breakers 1QJ and 2QJ; in the passenger compartment or the aft cargo compartment: - listen to make a check that the air shut-off valve is shut by the valve electrical motor - do a visual check of the indicator on the actuator to confirm that the valve has shut
	In the main undercarriage bay on the RH center tank manhole cover: - Listen to make a check that the ACT transfer valve is shut by the

ACTION	RESULT
	valve electrical motor - do a visual check of the indicator groove on the actuator to confirm that the valve has shut.
7. On circuit breaker panel 133VU: - close L/G PROX DET & RELAYS SYS 2/FLT/GND circuit breaker 1GB (line 331/V52).	- the simulated flight condition is removed and the aircraft is put in the ground condition.

(c)Close-Up

1 Refuel or defuel the aircraft to the required fuel load (Ref. 12-11-28 or 28-25-00, P. Block 301).

2 De-activate the ECAM display units as follows:
- on the flight compartment center pedestal turn the LEFT and RIGHT DISPLAY rotary switches to the OFF position
- release (out) the ECAM SGU 1 and 2 P/BSW's.

3 De-energize the aircraft electrical network (Ref. 24-41-00, P. Block 301)

4 Make sure that the main undercarriage bay is clean and clear of tools and all other items of equipment.

5 Remove the access platform and close the RH main landing gear bay door (Ref. 32-12-11, P. Block 301).

6 If you got access to the actuator on the air shut-off valve, through the floor of the passenger compartment, then do the steps that follow:
- install the applicable floor panel in the passenger compartment (Ref. 06-41-53, P. Block 1 and 53-10-25,P. Block 401).
- install the floor covering (Ref. 25-28-11 and 25-28-12, P. Block 401).
- install the applicable passenger compartment seats (Ref. 25-21-00, P. Block 401).

7 If you got access to the actuator on the air shut-off valve, through the aft cargo compartment, then do the steps that follow:
- install the sidewall panel 152 BX in zone 152 (Ref. 06-41-53, P. Block 1).
- install the cargo container(s) (Ref. 25-52-00, P. Block 1)
- close the aft cargo compartment door (Ref. 52-30-00, P. Block 1).
- remove the access platform.

R **ON A/C 101-200,

R (6)Functional Test - ACT Vent Valve
R (a)Job Set-Up
R 1 Energize the aircraft electrical network (Ref. 24-41-00, P. Block 301).
R 2 Make sure that the circuit breakers that follow are closed:

PANEL	SERVICE	IDENT.	LOCATION
21VU	ECAM/CTL PNL LT	12WT	108/B01
21VU	ECAM/DISPLAY UNIT/L	7WT	108/B02
21VU	ECAM/DISPLAY UNIT/R	8WT	108/B03
21VU	ECAM/SGU/1	11WT/1	108/B04
21VU	ECAM/SGU/2	11WT/2	108/B05
21VU	ECAM/FLT WARN MONITOR	4WW	108/B06
21VU	ECAM/FLT WARN MONITOR	24WW	108/B07
21VU	ECAM/FWC 1	7WW	108/B08
21VU	ECAM/SDAC/26VAC/NORM 1	3WV1	109/A2
21VU	ECAM/SDAC/26VAC/NORM 2	3WV2	109/A3
21VU	ECAM/SDAC/PWR SUPPLY	6WV	109/A5
22VU	FUEL/TK LO LVL AND CAL/L OUTR AND R INR AND CTR R	1QJ	208/B26
22VU	FUEL/TK LO LVL AND CAL/R OUTR AND L INR AND CTR L	2QJ	208/B27
101VU	FUEL/CARGO TK PUMP SUPPLY	1QH	GEN1/A02
132VU	FUEL/FUELLING/HI LVL	6QJ	321/P57
132VU	FUEL/FUELLING/OVERFLOW AND CAL	5QJ	321/P58
132VU	FUEL/FQI/SUPPLY & IND	1QT	321/P59
132VU	FUEL/FQI/CHAN SUPPLY 1	3QT	321/P60
132VU	FUEL/FQI/CHAN SUPPLY 2	4QT	321/P61
132VU	FUEL/AUX TK/VENT & PRESS VALVE	3QH	325/K57
132VU	FUEL/AUX TK/XFR VALVE/MOTOR 1	4QH	325/K58
132VU	FUEL/AUX TK/PUMP CTL/XFR VALVE/MOTOR 2	5QH	325/K59

R 3 Position the access platform and open the aft cargo compartment door (Ref. 52-30-00, P. Block 1).
R 4 If installed, remove the containers(s) located behind the ACT (Ref. 25-52-00, P. Block 1).
R 5 Unlock the quick release fasteners and remove the right hand section of the heat shield from the rear wall of the ACT (Ref. 28-11-36, P. Block 401).
R 6 Remove the panel section of the side wall lining aft at STA3090/ FR54.3 to get access to the self-sealing test points T1 and T2 (Ref. 28-12-00, P. Block 601).
R 7 Activate the ECAM display units (DU's) as follows:
R - on the flight compartment center-pedestal, push (in) the ECAM SGU 1 and 2 P/BSW's
R - turn the LEFT and RIGHT DISPLAY rotary switches clockwise to switch

R on the display and adjust the brightness to the required level
R - push (in) the FUEL P/BSW to call up the fuel page.
R 8 Make sure that the slats are fully retracted (Ref. 27-80-00, P. Block 301).
R 9 Make sure on panel 430VU, that the AUX TK AUTO/ACT AUTO P/BSW is released (out) - system in AUTO.
R 10 Make sure that the refuel panel access door 144DR, is closed.
R 11 Connect the ground air supply to the self-sealing test coupling T1.
R 12 Connect the pressure gage to the self-sealing test coupling T2.
R 13 Establish a line of communication between the flight deck and the aft cargo compartment.
R 14 Transfer or refuel at least 440 lb (200 kg) of fuel to the ACT (Ref. 28-25-00 or 12-11-28, P. Block 301).

R (b)Test

R ACTION	RESULT
R 1. On circuit breaker panel 132VU:	
R - open and then close circuit breaker 3QH (line 325/K57).	
R - open circuit breaker 6QJ (line 321/P57).	- simulates wet condition for the high level sensors in all tanks R - the ACT transfer valve is closed.
R 2. On circuit breaker panel 133VU:	
R - open L/G PROX DET & RELAYS SYS 2/FLT/GND circuit breaker 1GB (line 331/V52).	- the aircraft is put in the simulated flight condition.
R 3. 5 minutes after you do step 2. if the ACT low level sensors are wet with fuel.	In the aft cargo compartment: - the air shut-off valve opens - the ACT vent valve closes.
R 4. Carefully pressurize the self-sealing test coupling T1 with air, to 2 psi (0.14 bar) and make sure that there is no decrease in pressure for at least 5 minutes.	
R 5. On circuit breaker panel 133VU:	
R - close circuit breaker 1GB (line 331/V52).	- the simulated flight condition is removed and the aircraft is put in the ground condition
R	In the aft cargo compartment: R - the air shut-off valve closes R - the ACT vent valve opens.
R 6. Monitor the pressure gage on the	- the air pressure drops to zero.

ACTION	RESULT
self-sealing test coupling T2.	
7. On circuit breaker panel 132VU: - close circuit breaker 6QJ (line 321/P57).	- all the high level sensors return to their original condition.

(c)Close-Up

1 De-activate the ECAM DU's as follows:
- on the the flight compartment center-pedestal, turn the LEFT and RIGHT DISPLAY rotary switches to OFF.
- release (out) the ECAM SGU 1 and 2 P/BSW's.

2 De-energize the aircraft electrical network (Ref. 24-41-00, P. Block 301)

3 Disconnect the ground air supply from the self-sealing test coupling T1.

4 Remove the pressure gage from the self-sealing test coupling T2.

5 Make sure that the work area is clean and clear of tools and all other items of equipment.

6 Install the panel section of the sidewall lining at STA3249/FR60.

7 Install the right hand section of the heat shield (Ref. 28-11-36, P. Block 401).

8 If necessary, install the cargo container(s) (Ref. 25-52-00, P. Block 1).

9 Close the aft cargo compartment door (Ref. 52-30-00, P. Block 1) and remove the access platform.

10 Refuel the aircraft to the required fuel load (Ref. 12-11-28, P. Block 301).

R **ON A/C 101-200,

R Post SB 28-2105 For A/C 101-200,

R Post SB 28-2122 For A/C 101-200,

R (6)Functional Test - ACT 1 Vent Valve

R NOTE : If ACT 1 & 2 are installed, do not do this test but
R continue with paragraph (7).

R (a)Job Set-Up
R 1 Energize the aircraft electrical network (Ref. 24-41-00,
R P. Block 301).
R 2 Make sure that the circuit breakers that follow are closed:

	PANEL	SERVICE	IDENT.	LOCATION
R	21VU	ECAM/CTL PNL LT	12WT	108/B01
R	21VU	ECAM/DISPLAY UNIT/L	7WT	108/B02
R	21VU	ECAM/DISPLAY UNIT/R	8WT	108/B03
R	21VU	ECAM/SGU/1	11WT/1	108/B04
R	21VU	ECAM/SGU/2	11WT/2	108/B05
R	21VU	ECAM/FLT WARN MONITOR	4WW	108/B06
R	21VU	ECAM/FLT WARN MONITOR	24WW	108/B07
R	21VU	ECAM/FWC 1	7WW	108/B08
R	21VU	ECAM/SDAC/26VAC/NORM 1	3WV1	109/A2
R	21VU	ECAM/SDAC/26VAC/NORM 2	3WV2	109/A3
R	21VU	ECAM/SDAC/PWR SUPPLY	6WV	109/A5
R	22VU	FUEL/TK LO LVL AND CAL/L OUTR AND R INR AND CTR R	1QJ	208/B26
R	22VU	FUEL/TK LO LVL AND CAL/R OUTR AND L INR AND CTR L	2QJ	208/B27
R	101VU	FUEL/CARGO TK PUMP SUPPLY	1QH	GEN1/A02
R	132VU	FUEL/FUELLING/HI LVL	6QJ	321/P57
R	132VU	FUEL/FUELLING/OVERFLOW AND CAL	5QJ	321/P58
R	132VU	FUEL/FQI/SUPPLY & IND	1QT	321/P59
R	132VU	FUEL/FQI/CHAN SUPPLY 1	3QT	321/P60
R	132VU	FUEL/FQI/CHAN SUPPLY 2	4QT	321/P61
R	132VU	FUEL/ACT/VENT & PRESS VALVE	3QH	325/K57
R	132VU	FUEL/ACT/XFR VALVE/MOTOR 1	4QH	325/K58
R	132VU	FUEL/ACT/PUMP CTL/XFR VALVE/MOTOR 2	5QH	325/K59

R 3 Position the access platform and open the aft cargo compartment door
R (Ref. 52-30-00, P. Block 1).
R 4 If installed, remove the containers(s) located behind ACT 1
R (Ref. 25-52-00, P. Block 1).

R 5 Unlock the quick release fasteners and remove the right hand section
R of the heat shield from the rear wall of ACT 1 (Ref. 28-11-36,
R P. Block 401).
R 6 Remove the panel section of the side wall lining aft at STA3249/FR60
R to get access to the self-sealing test points T1 and T2
R (Ref. 28-12-00, P. Block 601).
R 7 Activate the ECAM display units (DU's) as follows:
R - on the flight compartment center-pedestal, push (in) the ECAM SGU
R 1 and 2 P/BSW's
R - turn the LEFT and RIGHT DISPLAY rotary switches clockwise to switch
R on the display and adjust the brightness to the required level
R - push (in) the FUEL P/BSW to call up the fuel page.
R 8 Make sure that the slats are fully retracted (Ref. 27-80-00,
R P. Block 301).
R 9 Make sure on panel 430VU, that the ACT AUTO P/BSW is released (out) -
R system in AUTO.
R 10 Make sure that the refuel panel access door 144DR, is closed.
R 11 Connect the ground air supply to the self-sealing test coupling T1.
R 12 Connect the pressure gage to the self-sealing test coupling T2.
R 13 Establish a line of communication between the flight deck and the
R aft cargo compartment.
R 14 Transfer or refuel at least 200 kg (440 lb) of fuel to the ACT 1
R (Ref. 28-25-00 or 12-11-28, P. Block 301).

R (b)Test

R ACTION	RESULT
R 1. On circuit breaker panel 132VU:	
R - open and then close circuit breaker 3QH (line 325/K57)	
R - open circuit breaker 6QJ (line 321/P57).	- simulates wet condition for the high level sensors in all tanks R - the ACT transfer valve is closed.
R 2. On circuit breaker panel 133VU:	
R - open L/G PROX DET & RELAYS SYS 2/FLT/GND circuit breaker 1GB (line 331/V52).	- the aircraft is put in the simulated flight condition.
R 3. 30 minutes after you do step 2. if the ACT 1 low level sensors are wet with fuel.	In the aft cargo compartment: - the air shut-off valve opens - the ACT 1 vent valve closes.
R 4. Carefully pressurize the self-sealing test coupling T1 with air, to 2 psi (0.14 bar) and make sure that there is no decrease in pressure for at least 5 minutes.	

ACTION	RESULT
5. On circuit breaker panel 133VU: - close circuit breaker 1GB (line 331/V52).	- the simulated flight condition is removed and the aircraft is put in the ground condition In the aft cargo compartment: - the air shut-off valve closes - the ACT 1 vent valve opens.
6. Monitor the pressure gage on the self-sealing test coupling T2.	- the air pressure drops to zero.
7. On circuit breaker panel 132VU: - close circuit breaker 6QJ (line 321/P57).	- all the high level sensors return to their original condition.

(c)Close-Up

1 De-activate the ECAM DU's as follows:
- on the the flight compartment center-pedestal, turn the LEFT and RIGHT DISPLAY rotary switches to OFF.
- release (out) the ECAM SGU 1 and 2 P/BSW's.

2 De-energize the aircraft electrical network (Ref. 24-41-00, P. Block 301)

3 Disconnect the ground air supply from the self-sealing test coupling T1.

4 Remove the pressure gage from the self-sealing test coupling T2.

5 Make sure that the work area is clean and clear of tools and all other items of equipment.

6 Install the panel section of the sidewall lining at STA3090/FR54.3.

7 Install the right hand section of the heat shield (Ref. 28-11-36, P. Block 401).

8 If necessary, install the cargo container(s) (Ref. 25-52-00, P. Block 1).

9 Close the aft cargo compartment door (Ref. 52-30-00, P. Block 1) and remove the access platform.

10 Refuel the aircraft to the required fuel load (Ref. 12-11-28, P. Block 301).

R **ON A/C 101-200,

R Post SB 28-2105 For A/C 101-200,

R Post SB 28-2122 For A/C 101-200,

R (7)Functional Test - ACT 1 and 2 Vent Valves
R (a)Job Set-Up
R 1 If necessary, do the procedure that follows to achieve these fuel states:

CENTER TANK	ACT 1	ACT 2
6000 kg min (13228 lb min)	200 kg min (440 lb min)	200 kg min (440 lb min)

R NOTE : The time necessary to do the test is reduced if you put more fuel in the ACTs. The ACTs can be pressurized in 30 minutes if you use the fuel/air quantities that follow:

TOTAL FUEL QUANTITY IN ACT(S)	FLOW RATE OF AIR (MEASURED AT ATMOSPHERIC PRESSURE AND TEMPERATURE)
400 kg (880 lb)	2.12 cubic ft/min (60 liters/min)
FULL	0.35 cubic ft/min (10 liters/min)

R CAUTION : THE AIRCRAFT MUST BE IN THE NORMAL OPERATIONAL CONDITION WHEN YOU REFUEL THE ACT(S) TO MAKE SURE THE AIRCRAFT CENTER OF GRAVITY IS WITHIN SAFE LIMITS.

R 2 Transfer any fuel in the trim tank into the center tank until the trim tank is empty or the center tank is full (Ref. 28-25-00, P. Block 301).
R 3 Transfer any remaining fuel in the trim tank into the inner tanks and/or defuel the trim tank into a defuel tanker (Ref. 28-25-00, P. Block 301).
R 4 Transfer any fuel in the outer tanks into the center tank until the outer tanks are empty or the center tank is full (Ref. 28-25-00, P. Block 301).
R 5 Transfer any remaining fuel in the outer tanks into the ACT(s) until the outer tanks are empty or the ACT(s) are full (Ref. 28-25-00, P. Block 301).
R 6 If the quantity of fuel in each ACT is less than 200 kg (440 lb) or a greater quantity of fuel is required to speed the pressurization, do the procedure that follows:
R - if the center tank quantity is less than 6000 kg (13228 lb) transfer fuel from the inner tanks into the center tank, or refuel the center

tank from the refuel tanker until the fuel quantity is 6000 kg (13228 lb) minimum (Ref. 28-25-00 or 12-11-28, P. Block 301).
- transfer fuel to the ACT(s) from the inner tanks or the center tank (Ref. 28-25-00, P. Block 301) or refuel the ACT(s) from a refuel tanker (Ref. 12-11-28, P. Block 301). The transfer of fuel from the center tank must stop if the center tank quantity decreases to 6000 kg (13228 lb).

7 Energize the aircraft electrical network (Ref. 24-41-00, P. Block 301).

8 Make sure that the circuit breakers that follow are closed:

PANEL	SERVICE	IDENT.	LOCATION
22VU	FUEL/TK LO LVL AND CAL/L OUTR AND R INR AND CTR R	1QJ	208/B26
22VU	FUEL/TK LO LVL AND CAL/R OUTR AND L INR AND CTR L	2QJ	208/B27
101VU	FUEL/CARGO TK PUMP SUPPLY	1QH	GEN1/A02
132VU	FUEL/FUELLING/HI LVL	6QJ	321/P57
132VU	FUEL/FUELLING/OVERFLOW AND CALIBRATION	5QJ	321/P58
132VU	FUEL/FQI/SUPPLY & IND	1QT	321/P59
132VU	FUEL/FQI/CHAN SUPPLY 1	3QT	321/P60
132VU	FUEL/FQI/CHAN SUPPLY 2	4QT	321/P61
132VU	FUEL/ACT/VENT & PRESS VALVE	3QH	325/K57
132VU	FUEL/ACT/XFR VALVE/MOTOR 1	4QH	325/K58
132VU	FUEL/ACT/PUMP CTL/XFR VALVE/MOTOR 2	5QH	325/K59

9 Put the access platform in position and open the aft cargo compartment door (Ref. 52-30-00, P. Block 1).

10 If installed, remove the container(s) located behind ACT 2 (Ref. 25-52-00, P. Block 1).

11 Disconnect the quick release fasteners and remove the right hand section of the heat shield from the rear wall of ACT 2 (Ref. 28-11-36, P. Block 401).

12 Remove the panel section of the sidewall lining at STA3249/FR60 to get access to the self-sealing test couplings T1 and T2 (Ref. 28-12-00, P. Block 601).

13 Connect the ground air supply to the self-sealing test coupling T1.

14 Connect the pressure gage to the self-sealing test coupling T2.

15 Activate the ECAM DU's as follows:
- on the flight compartment center-pedestal push (in) the ECAM SGU 1 and 2 P/BSW's
- turn the LEFT and RIGHT DISPLAY rotary switches clockwise to switch on the display and adjust the brightness to the required level
- push (in) the FUEL P/BSW to call up the fuel page.

16 Make sure that the refuel panel access door 144DR, is closed.

17 On panel 430VU, make sure that the ACT AUTO P/BSW is released (out) - system in AUTO.

R CAUTION : MAKE SURE THAT THERE IS NO BREAK IN THE ELECTRICAL POWER SUPPLY
R TO THE FUEL SYSTEM CONTROL CIRCUITS DURING THE TEST, UNLESS
R THERE IS AN INSTRUCTION TO OPEN A CIRCUIT BREAKER.

R (b)Test

R NOTE 1 : This test makes a check that the ACT vent valves operate
R correctly in flight.

R NOTE 2 : The RESULT column states what happens as a result of the
R action described in the ACTION column. There is no
R requirement to make a check that it happens except where there
R is an instruction to do so.

R NOTE 3 : Access to the vent valves or their actuators is not required.

R ACTION	RESULT
R 1. On circuit breaker panel 132VU: R - open circuit breaker 6QJ (line 321/P57).	Simulates wet condition for the high level sensors in all tanks The ACT transfer valve and the inlet valves cannot be opened.
R 2. On circuit breaker panel 133VU: R - open L/G PROX DET & RELAYS SYS 2/FLT/GND circuit breaker 1GB (line 331/V52).	The aircraft is put in the simulated flight condition 30 ± 3 minutes after you open the circuit breaker 1GB: In the aft cargo compartment: - the air shut-off valve will open - the ACT 1 vent valve will close - the ACT 2 vent valve will close.
R 3. Wait at least 35 minutes after you open the circuit breaker 1GB, then, on circuit breaker panel 132VU: R - open circuit breaker 3QH (line 325/K57).	
R 4. In the aft cargo compartment at STA3249/FR60: R - disconnect the electrical-connector from the actuator on the ACT 2 vent valve (Ref. 28-11-36, P. Block 401).	- the actuator on the vent valve on ACT 2, is now isolated from the aircraft electrical system.
R 5. On circuit breaker panel 132VU: R - close the circuit breaker	In the aft cargo compartment: - the air shut-off valve will close

ACTION	RESULT
3QH (line 325/K57).	- the ACT 1 vent valve will open - the ACT 2 vent valve stays closed.
	30 ± 3 minutes after you close the circuit breaker 3QH: In the aft cargo compartment: - the air shut-off valve will open - the ACT 1 vent valve will close - the ACT 2 vent valve stays closed.
6. At least 35 minutes after you close the circuit breaker 3QH: - carefully pressurize the self-sealing test coupling T1 with air until the gage pressure at test coupling T2 is 1.6 psi (0.110 bar). Shut off the air supply to T1 and do a check of the pressure at T2.	- the pressure at T2 stays the same or decreases by less than 0.10 psi (0.007 bar) in 5 minutes.
7. On circuit breaker panel 133VU: - close circuit breaker 1GB (line 331/V52).	- the simulated flight condition is removed and the aircraft is put in the ground condition
	In the aft cargo compartment: - the air shut-off valve will close - the ACT 1 vent valve will open - the ACT 2 vent valve stays closed.
8. Monitor the pressure gage on the self-sealing test coupling T2.	- the air pressure drops to between zero and 0.2 psi (0.014 bar).
9. On circuit breaker panel 132VU: - open the circuit breaker 3QH (line 325/K57).	
10. In the aft cargo compartment STA3249/FR60: - connect the electrical-connector to the actuator on the vent valve of ACT 2 (Ref. 28-11-36, P. Block 401).	- the actuator on the vent valve on ACT 2, is now connected to the aircraft electrical system.
11. On circuit breaker panel 132VU: - close the circuit breaker 3QH (line 325/K57).	In the aft cargo compartment: - the air shut-off valve stays closed - the ACT 1 vent valve stays open

ACTION	RESULT
	- the ACT 2 vent valve will open.
12. At least 5 seconds after you close the circuit breaker 3QH: - open the circuit breaker 3QH (line 325/K57).	
13. In the aft cargo compartment STA3249/FR60: - disconnect the electrical-connector from the actuator on the ACT 2 vent valve, again (Ref. 28-11-36, P. Block 401).	- the actuator on the vent valve on ACT 2, is now isolated from the aircraft electrical system.
14. On circuit breaker panel 132VU: - close the circuit breaker 3QH (line 325/K57).	In the aft cargo compartment: - the air shut-off valve stays closed - the ACT 1 vent valve stays open - the ACT 2 vent valve stays open.
15. On circuit breaker panel 133VU: - open the circuit breaker 1GB (line 331/V52).	- the aircraft is put in the simulated flight condition.
	30 ± 3 minutes after you open the circuit breaker 1GB: In the aft cargo compartment: - the air shut-off valve will open - the ACT 1 vent valve will close - the ACT 2 vent valve stays open.
16. At least 35 minutes after you open the circuit breaker 1GB: - carefully open the ground air supply to the test coupling T1 and monitor the pressure gage on the test coupling T2.	- the pressure at T2 does not reach 1.6 psi (0.110 bar).
17. Shut off the air supply to T1 and monitor the pressure gage at T2.	The pressure at T2 stays below 0.2 psi (0.014 bar) or drops quickly to below 0.2 psi (0.014 bar).
18. On circuit breaker panel 133VU: - close the circuit breaker 1GB (line 331/V52).	- the simulated flight condition is removed and the aircraft is put in the ground condition
	In the aft cargo compartment: - the air shut-off valve will close

ACTION	RESULT
	- the ACT 1 vent valve will open - the ACT 2 vent valve stays open.
19. On circuit breaker panel 132VU: - open the circuit breaker 3QH (line 325/K57).	
20. In the aft cargo compartment STA3249/FR60: - connect the electrical-connector to the actuator on the vent valve of ACT 2 (Ref. 28-11-36, P. Block 401).	- the actuator on the vent valve on ACT 2, is now connected to the aircraft electrical system.
21. On circuit breaker panel 132VU: - close the circuit breaker 3QH (line 325/K57)	In the aft cargo compartment: - the air shut-off valve stays closed - the ACT 1 vent valve stays open - the ACT 2 vent valve stays open
- close the circuit breaker 6QJ (line 321/P57).	- all the high level sensors return to their original condition.

(c) Close-Up

1 De-activate the ECAM DU's as follows:
- on the flight compartment center-pedestal turn the LEFT and RIGHT DISPLAY rotary switches to OFF.
- release (out) the ECAM SGU 1 and 2 P/BSW's.

2 De-energize the aircraft electrical network (Ref. 24-41-00, P. Block 301).

3 Disconnect the ground air supply from the self-sealing test coupling T1.

4 Remove the pressure gage from the self-sealing test coupling T2.

5 Make sure that the work area is clean and clear of tools and all other items of equipment.

6 Install the panel section of the sidewall lining at STA3249/FR60.

7 Install the right hand section of the heat shield (Ref. 28-11-36, P. Block 401).

8 If necessary, install the cargo container(s) (Ref. 25-52-00, P. Block 1).

9 Close the aft cargo compartment door (Ref. 52-30-00, P. Block 1) and remove the access platform.

10 Refuel or defuel the aircraft to the required fuel load (Ref. 12-11-28 or 28-25-00, P. Block 301.

R **ON A/C 101-200,

R 2. Functional Test - Pressurization System

R A. Equipment and Materials

R ITEM	DESIGNATION
R A.	Access Platform 2.7 m (9 ft)
R B.	Circuit Breaker Safety Clips and Tags
R C.	Ground Air Supply with pressure gage (to deliver moisture free air at a maximum pressure of 10 psi (0.7 bar)), with self-sealing quick-release coupling PN HTE 714-85-G
R D.	Pressure Gage 0-10 psi (0-0.7 bar) complete with self-sealing quick-release test coupling PN HTE 714-85-G
R Reference Procedures	
R - 12-11-28, P. Block 301	Replenishing of Fuel Tanks
R - 24-41-00, P. Block 301	AC External Power Control
R - 25-52-00, P. Block 1	Semi-Automatic Cargo Loading
R - 27-80-00, P. Block 301	Lift Augmenting
R - 28-00-00, P. Block 301	Fuel - General
R - 28-11-36, P. Block 401	Additional Center Tank
R - 28-12-00, P. Block 601	Tank Venting System
R - 28-25-00, P. Block 301	Refuel-Defuel System
R - 52-30-00, P. Block 1	Cargo Compartment Door(s)

R B. Procedure

R (1)Job Set-Up

R (a)Energize the aircraft electrical network (Ref. 24-41-00, P. Block 301).

R (b)Make sure that the circuit breakers that follow are closed:

R PANEL	SERVICE	IDENT.	LOCATION
R 21VU	ECAM/CTL PNL LT	12WT	108/B01
R 21VU	ECAM/DISPLAY UNIT/L	7WT	108/B02
R 21VU	ECAM/DISPLAY UNIT/R	8WT	108/B03
R 21VU	ECAM/SGU/1	11WT/1	108/B04
R 21VU	ECAM/SGU/2	11WT/2	108/B05
R 21VU	ECAM/FLT WARN MONITOR	4WW	108/B076
R 21VU	ECAM/FWC 1	7WW	108/B08
R 21VU	ECAM/SDAC/26VAC/NORM 1	3WV1	109/A2
R 21VU	ECAM/SDAC/26VAC/NORM 2	3WV2	109/A3
R 21VU	ECAM/SDAC/PWR SUPPLY	6WV	109/A5
R 22VU	FUEL/TK LO LVL AND CAL/L OUTR AND R INR AND CTR R	1QJ	208/B26
R 22VU	FUEL/TK LO LVL AND CAL/R OUTR AND L INR AND CTR L	2QJ	208/B27

PANEL	SERVICE	IDENT.	LOCATION
101VU	FUEL/CARGO TK PUMP SUPPLY	1QH	GEN1/A02
132VU	FUEL/FUELLING/HI LVL	6QJ	321/P57
132VU	FUEL/FUELLING/OVERFLOW & CAL	5QJ	321/P58
132VU	FUEL/FQI/SUPPLY & IND	1QT	321/P59
132VU	FUEL/FQI/CHAN SUPPLY 1	3QT	321/P60
132VU	FUEL/FQI/CHAN SUPPLY 2	4QT	321/P61
132VU	FUEL/AUX TK/VENT & PRESS VALVE	3QH	325/K57
132VU	FUEL/AUX TK/XFR VALVE/MOTOR 1	4QH	325/K58
132VU	FUEL/AUX TK/PUMP CTL/XFR VALVE/MOTOR 2	5QH	325/K59

(c)Position the access platform and open the aft cargo compartment door (Ref. 52-30-00, P. Block 1).
(d)If installed, remove the containers(s) located behind the ACT (Ref. 25-52-00, P. Block 1).
(e)Unlock the quick release fasteners and remove the right hand section of the heat shield from the rear wall of the ACT (Ref. 28-11-36, P. Block 401).
(f)Remove the panel section of the side wall lining aft at STA3090/FR54.3 to get access to the self-sealing test points T1 and T2 (Ref. 28-12-00, P. Block 601, Paragraph 2. E., Vent Pipeline - ACT).
(g)Activate ECAM display units (DU's) as follows:
- on the flight compartment center-pedestal push (in) the ECAM SGU 1 and 2 P/BSW's
- turn LEFT and RIGHT DISPLAY rotary switches clockwise to switch on the display and adjust the brightness to the required level
- push (in) the FUEL P/BSW to call up the fuel page.
(h)Make sure that the slats are fully retracted (Ref. 27-80-00, P. Block 301).
(j)Make sure on panel 430VU, that the AUX TK AUTO/ACT AUTO P/BSW is released (out) - system in AUTO.
(k)Make sure that the refuel panel access door 144DR, is closed.
(l)Connect the ground air supply with the gage to the self-sealing test coupling T1.
(m)Connect the pressure gage to the self sealing test coupling T2.
(n)Establish a line of communication between the flight deck and the aft cargo compartment.
(p)Transfer or refuel at least 440 lb (200 kg) of fuel to the ACT (Ref. 28-25-00 or 12-11-28, P. Block 301).

(2)Test

NOTE : When the aircraft is on the ground the associated ACT valves will be in the positions that follow:
- ACT transfer valve is closed
- Air shut-off valve is closed
- ACT vent valve is open.

ACTION	RESULT
1. On circuit breaker panel 132VU: - open circuit breaker 6QJ (line 321/P57).	- simulates wet condition for the high level sensors in all tanks.
2. Carefully pressurize the self-sealing test coupling T1 with air to between 7 and 10 psi (0.48 and 0.69 bar).	- the ACT pressurization line between the test coupling T1 and the air shut-off valve, is pressurized.
3. Shut off the air supply at T1.	
4. Make sure that: - there is no decrease in pressure at the gage on T1 for at least 5 minutes - the pressure on the gage at the self-sealing test coupling T2, stays at zero.	
5. On circuit breaker panel 133VU: - open L/G PROX DET & RELAYS SYS 2/FLT/GND circuit breaker 1GB (line 331/V52).	- the aircraft is put in the simulated flight condition.
6. Approximately, 5 minutes after you do step 5.	- the air shut-off valve opens - the ACT vent valve closes.
7. Carefully pressurize T1, until the pressure reading on the gage at T2, reads between gage at T2, reads between 5 and 6.5 psi (0.35 and 0.44 bar) and becomes stable.	- the ACT pressurization line and the space in the ACT above the fuel, is pressurized.
NOTE : The thermal relief valve in the ACT vent valve is set to open between 4 and 7 psi (0.28 and 0.48 bar). The pressure reducing valve is set to supply air at 6.5 psi (0.44 bar) maximum.	
8. Shut off the air supply at T1.	
9. In the undercarriage bay on the LH side of frame 54: - remove the filter on the vent of the pressure reducing valve and install a blank on the vent pipe - make sure that the pressure at T2, does not decrease to less than 5 psi (0.35 bar) in	- makes sure that the thermal relief valve in the ACT vent valve, is closed

ACTION	RESULT
15 minutes - make sure that there is no increase in pressure at T1, for at least 5 minutes.	- makes sure that the check valve between T1 and T2 is satisfactory.
10. Remove the blank from the vent pipe of the pressure reducing valve and install the filter on the vent pipe.	
11. With the pressure at T2 at least 3 psi (0.21 bar), release the air pressure from the pipe connection at T2 to reduce the air pressure to zero - make sure that the pressure at T2, stays at zero for at least 5 minutes.	- makes sure that the ACT check valve is satisfactory
12. Carefully pressurize T1 until the pressure reading at T2 reads between 4 and 6.5 psi (0.28 and 0.44 bar).	- the ACT pressurization line and the space in the ACT above the fuel, is pressurized.
13. Close circuit breaker 1GB (line 331/V52).	- the simulated flight condition is removed and the aircraft is put in the ground condition - the air shut-off valve closes - the ACT vent valve opens.
14. Make sure that the air pressure at T2, reduces to zero.	
15. Shut off the air supply at T1 and make sure that the air pressure at T1 and T2 reads zero.	
16. Close circuit breaker 6QJ (line 321/P57).	- all the high level sensors return to their original condition.

(4) Close-Up
  (a) De-activate ECAM DU's as follows:
    - on flight compartment center-pedestal, turn the LEFT and RIGHT DISPLAY rotary switches to OFF
    - release (out) the ECAM SGU 1 and 2 P/BSW's.
  (b) De-energize the aircraft electrical network (Ref. 24-41-00, P. Block 301).

R (c)Disconnect the ground air supply from the self-sealing test coupling
R T1.
R (d)Remove the pressure gage from the self-sealing test coupling T2.
R (e)Make sure that the work area is clean and clear of tools and all other
R items of equipment.
R (f)Install the panel section of the sidewall lining at STA3090/FR54.3.
R (g)Install the right hand section of the heat shield (Ref. 28-11-36,
R P. Block 401).
R (h)If necessary, install the cargo container(s) (Ref. 25-52-00,
R P. Block 1).
R (j)Close the aft cargo compartment door (Ref. 52-30-00, P. Block 1) and
R remove the access platform.
R (k)Refuel the aircraft to the required fuel load (Ref. 12-11-28,
R P. Block 301).

R **ON A/C 101-200,

R Post SB 28-2105 For A/C 101-200,

R Post SB 28-2122 For A/C 101-200,

R 2. Functional Test - Pressurization System

R A. Equipment and Materials

ITEM	DESIGNATION
A.	Access Platform 2.7 m (9 ft)
B.	Circuit Breaker Safety Clips and Tags
C.	Ground Air Supply to deliver moisture free air at a maximum pressure of 8.0 psi (0.552 bar), with a self-sealing quick-release coupling PN HTE 714-85-G. There must be a facility to set the air supply maximum outlet pressure to 2.0 psi (0.14 bar) and a pressure relief system to prevent the pressure exceeding 8.0 psi (0.552 bar). The outlet flowrate (free air delivery) must be greater than 1.06 cubic ft/min (30 liters/min) at 8.0 psi (0.552 bar). The time required to do the test is decreased if the flowrate is greater. The air supply must have a leak-free shut-off valve in its outlet pipe and a pressure gage on the outlet side of the valve, suitable for reading 0 - 8 psi (0 - 0.552 bar).
D.	Pressure Gage suitable for reading 0 - 8.0 psi (0 - 0.552 bar) complete with self-sealing quick-release test coupling PN HTE 714-85-G.
Reference Procedures	
- 12-11-28, P. Block 301	Replenishing of Fuel Tanks
- 24-41-00, P. Block 301	AC External Power Control
- 25-52-00, P. Block 1	Semi-Automatic Cargo Loading
- 28-00-00, P. Block 301	Fuel - General
- 28-11-36, P. Block 401	Additional Center Tank
- 28-12-00, P. Block 601	Tank Venting System
- 28-25-00, P. Block 301	Refuel-Defuel System
- 52-30-00, P. Block 1	Cargo Compartment Door(s)

R B. Procedure

R (1)Job Set-Up

R (a)If necessary, do the procedure that follows to achieve these fuel

R states:

CENTER TANK	ACT 1	ACT 2
6000 kg min (13228 lb min)	200 kg min (441 lb min)	200 kg min (441 lb min)

R NOTE 1 : The quantity in ACT 2 must be the same as in ACT 1.

R NOTE 2 : The time needed to do the test is reduced if you put more fuel in the ACTs. The ACTs can be pressurized in 30 minutes if you use the fuel/air quantities that follow:

TOTAL FUEL QUANTITY IN ACTS	FLOWRATE OF AIR (MEASURED AT ATMOSPHERE PRESSURE AND TEMPERATURE)
400 kg (882 lb)	8.8 cubic ft/min (250 liters/min)
FULL	1.4 cubic ft/min (40 liters/min)

R CAUTION : THE AIRCRAFT MUST BE IN THE NORMAL OPERATIONAL CONDITION WHEN YOU REFUEL THE ACTS. THIS IS TO MAKE SURE THE AIRCRAFT CENTER OF GRAVITY IS WITHIN SAFE LIMITS.

R (b)Transfer any fuel in the trim tank into the center tank until the trim tank is empty or the center tank is full (Ref. 28-25-00, P. Block 301).
R (c)Transfer any remaining fuel in the trim tank into the inner tanks and/or defuel the trim tank into a defuel tanker (Ref. 28-25-00, P. Block 301).
R (d)Transfer any fuel in the outer tanks into the center tank until the outer tanks are empty or the center tank is full (Ref. 28-25-00, P. Block 301).
R (e)Transfer any remaining fuel in the outer tanks into the ACTS until the outer tanks are empty or the ACTS are full (Ref. 28-25-00, P. Block 301).
R (f)If the quantity of fuel in each ACT is less than 200 kg (441 lb) or a greater quantity of fuel is required to speed the pressurization, do the procedure that follows:
R 1 If the center tank quantity is less than 6000 kg (13228 lb), transfer fuel from the inner tanks into the center tank, or refuel the center tank from the refuel tanker until the fuel quantity is 6000 kg (13228 lb) minimum (Ref. 28-25-00 or 12-11-28, P. Block 301).
R 2 Transfer fuel to the ACTS from the inner tanks or the center tank (Ref. 28-25-00, P. Block 301) or refuel the ACTS from a refuel tanker (Ref. 12-11-28, P. Block 301). The transfer of fuel from the center tank must stop if the center tank quantity decreases to 6000 kg (13228 lb).
R (g)Energize the aircraft electrical network (Ref. 24-41-00, P. Block 301).
R (h)Make sure that the circuit breakers that follow are closed:

PANEL	SERVICE	IDENT.	LOCATION
22VU	FUEL/TK LO LVL AND CAL/L OUTR AND R INR AND CTR R	1QJ	208/B26
22VU	FUEL/TK LO LVL AND CAL/R OUTR AND L INR AND CTR L	2QJ	208/B27
101VU	FUEL/CARGO TK PUMP SUPPLY	1QH	GEN1/A02
132VU	FUEL/FUELLING/OVERFLOW & CAL	5QJ	321/P58
132VU	FUEL/FQI/SUPPLY & IND	1QT	321/P59
132VU	FUEL/FQI/CHAN SUPPLY 1	3QT	321/P60
132VU	FUEL/FQI/CHAN SUPPLY 2	4QT	321/P61
132VU	FUEL/ACT/VENT & PRESS VALVE	3QH	325/K57
132VU	FUEL/ACT/XFR VALVE/MOTOR 1	4QH	325/K58
132VU	FUEL/ACT/PUMP CTL/XFR VALVE/MOTOR 2	5QH	325/K59

(j)Open, safety and tag the circuit breaker that follows:

PANEL	SERVICE	IDENT.	LOCATION
132VU	FUEL/FUELLING/HI LVL	6QJ	321/P57

(k)Put the access platform in position and open the aft cargo compartment door (Ref. 52-30-00, P. Block 1).
(l)If installed, remove the container(s) located behind the ACTs (Ref. 25-52-00, P. Block 1).
(m)Unlock the quick release fasteners and remove the right hand section of the heat shield from the rear wall of the ACT (Ref. 28-11-36, P. Block 401).
(n)Remove the panel section of the side wall lining at STA3249/FR60 to get access to the self-sealing test couplings T1 and T2 (Ref. 28-12-00, P. Block 601 paragraph 2.E., Vent Pipeline - ACTs).
(p)Connect the ground air supply to the self-sealing test coupling T1.
(q)Connect the pressure gage to the self-sealing test coupling T2.
(r)Make sure that the refuel panel access door 144DR, is closed.
(q)Make sure on panel 430VU, that the ACT AUTO P/BSW is released (out) - system in AUTO.

CAUTION : MAKE SURE THAT THERE IS NO BREAK IN THE ELECTRICAL POWER SUPPLY TO THE FUEL SYSTEM CONTROL CIRCUITS DURING THE TEST, UNLESS THERE IS AN INSTRUCTION TO OPEN A CIRCUIT BREAKER.

(2)Test - ACT 1 and 2 installed.

NOTE 1 : When the aircraft is on the ground the associated ACT valves will be in the positions that follow:
- ACT(s) transfer valve is closed
- air shut-off valve is closed
- ACT 1 vent valve is open
- ACT 2 vent valve is open
- ACT 1 inlet valve is closed

R - ACT 2 inlet valve is closed.

R NOTE 2 : The RESULT column describes what happens as a result of the
R action described in the ACTION column. There is no requirement
R to make a check that it happens except where there is an
R instruction to do so.

ACTION	RESULT
1. Carefully pressurize the self-sealing test coupling T1 with air to between 7 and 8 psi (0.48 and 0.552 bar).	The ACT pressurization line between test coupling T1 and the air shut-off valve, is pressurized.
2. Shut off the air supply at T1.	
3. Make a check that: - there is no decrease in pressure at the gage on T1 for at least 5 minutes - the pressure on the gage at the self-sealing test coupling T2, stays at zero.	
4. On circuit breaker panel 133VU: - open L/G PROX DET & RELAYS SYS 2/FLT/GND circuit breaker 1GB (line 331/V52).	- the aircraft is put in the simulated flight condition 30 ± 3 minutes after you open the circuit breaker 1GB: In the aft cargo compartment: - the air shut-off valve will open - the ACT 1 vent valve will close - the ACT 2 vent valve will close.
5. At least 35 minutes after you open the circuit breaker 1GB: - open the air supply to T1.	- the pressures at T1 and T2, increase slowly.
6. Adjust the air supply pressure until the pressure at T1 is 8.0 psi (0.552 bar) and the pressure reading at T2, does not change.	The stabilized pressure at T2 is between 5.3 and 6.0 psi (0.366 and 0.414 bar).

R NOTE : The thermal relief valves (in the ACT vent valves) are set to open
R between 4 and 7 psi (0.28 and 0.48 bar). The pressure reducing
R valve should reduce the pressure to 6.0 psi (0.42 bar) maximum.

ACTION	RESULT
7. When the pressure at T2 has stabilized, shut off the air supply at T1.	
8. Make a check of the time taken for the pressure at T2 to decrease by 0.2 psi (0.0138 bar) from its value when the air supply is shut off. Use the table that follows to calculate this accurately:	
	Minimum time for 0.2 psi (0.0138 bar) decrease:
Quantity of fuel in the ACT:	
200 kg (441 lb)	15 mins
1000 kg (2205 lb)	12 mins 45 seconds
2000 kg (4410 lb)	10 mins
3000 kg (6614 lb)	7 mins 15 seconds
4000 kg (8820 lb)	4 mins 30 seconds
5000 kg (11025 lb)	1 min 45 seconds
5400 kg (11905 lb)	0 min 35 seconds
more than:	
5400 kg (11905 lb)	0 min 35 seconds
9. With the pressure at T2 at least 3 psi (0.21 bar), release the air pressure from the test point T2 to reduce the air pressure to zero. Reseal the connection after the air has been released	
- make a check that the pressure at T2, stays at zero for at least 5 minutes	- makes sure that each ACT check valve is satisfactory.
10. On circuit breaker panel 132VU: - open the circuit breaker 3QH (line 325/K57).	
11. In the aft cargo compartment at STA3249/FR60: - disconnect the electrical-connector from the actuator on the ACT 2 vent valve (Ref. 28-11-36, P. Block 401).	- the actuator on the vent valve on ACT 2, is now isolated from the aircraft electrical system.
12. On circuit breaker panel 132VU: - close the circuit breaker 3QH (line 325/K57).	In the aft cargo compartment: - the air shut-off valve will close - the ACT 1 vent valve will open - the ACT 2 vent valve stays closed.

ACTION	RESULT
	30 ± 3 minutes after you close the circuit breaker 3QH: In the aft cargo compartment: - the air shut-off valve will open - the ACT 1 vent valve will close - the ACT 2 vent valve stays closed.
13. Set the GPG maximum outlet pressure to 2.0 psi (0.14 bar).	
14. At least 35 minutes after you closed the circuit breaker 3QH: - carefully pressurize the self-sealing test coupling T1 with air until the gage pressure at test coupling T2 is 1.6 psi (0.110 bar). Shut off the air supply to T1 and do a check of the pressure at T2.	- the pressure at T2 stays the same or decreases by less than 0.10 psi (0.007 bar) in 5 minutes.
15. On circuit breaker panel 133VU: - close circuit breaker 1GB (line 331/V52).	- the simulated flight condition is removed and the aircraft is put in the ground condition
	In the aft cargo compartment: - the air shut-off valve will close - the ACT 1 vent valve will open - the ACT 2 vent valve stays closed.
16. Monitor the pressure gage on T2.	- the air pressure drops to between zero and 0.2 psi (0.014 bar).
17. On circuit breaker panel 132VU: - open the circuit breaker 3QH (line 325/K57).	
18. In the aft cargo compartment STA3249/FR60: - connect the electrical-connector to the actuator on the vent valve of ACT 2 (Ref. 28-11-36, P. Block 401).	- the actuator on the vent valve on ACT 2, is now connected to the aircraft electrical system.
19. On circuit breaker panel 132VU: - close the circuit breaker 3QH (line 325/K57).	- the air shut-off valve stays closed - the ACT 1 vent valve stays open - the ACT 2 vent valve will open.

ACTION	RESULT
20. At least 5 seconds after you close the circuit breaker 3QH: - open the circuit breaker 3QH (line 325/K57).	
21. In the aft cargo compartment STA3249/FR60: - disconnect the electrical-connector from the actuator on the ACT 2 vent valve, again (Ref. 28-11-36, P. Block 401).	- the actuator on the vent valve on ACT 2, is now isolated from the aircraft electrical system.
22. On circuit breaker panel 132VU: - close the circuit breaker 3QH (line 325/K57).	- the air shut-off valve stays closed - the ACT 1 vent valve stays open - the ACT 2 vent valve stays open.
23. On circuit breaker panel 133VU: - open the circuit breaker 1GB (line 331/V52).	- the aircraft is put in the simulated flight condition 30 ± 3 minutes after you open the circuit breaker 1GB: In the aft cargo compartment: - the air shut-off valve will open - the ACT 1 vent valve will close - the ACT 2 vent valve stays open.
24. At least 35 minutes after you open the circuit breaker 1GB: - carefully pressurize the self-sealing test coupling T1 with air and monitor the pressure gage on the test coupling T2.	- the pressure on the gage at T2, stays below 1.6 psi (0.110 bar).
25. Shut off the air supply to T1 and monitor the pressure gage at T2.	The pressure at T2 stays below 0.2 psi (0.014 bar) or drops quickly to below 0.2 psi (0.014 bar).
26. On circuit breaker panel 133VU: - close the circuit breaker 1GB (line 331/V52).	- the simulated flight condition is removed and the aircraft is put in the ground condition In the aft cargo compartment: - the air shut-off valve will close - the ACT 1 vent valve will open - the ACT 2 vent valve stays open.

ACTION	RESULT
27. On circuit breaker panel 132VU: - open the circuit breaker 3QH (line 325/K57).	
28. In the aft cargo compartment STA3249/FR60: - connect the electrical-connector to the actuator on the vent valve of ACT 2 (Ref. 28-11-36, P. Block 401).	- the actuator on the vent valve on ACT 2, is now connected to the aircraft electrical system.
29. On circuit breaker panel 132VU: - close the circuit breaker 3QH (line 325/K57)	- the air shut-off valve stays closed - the ACT 1 vent valve stays open - the ACT 2 vent valve stays open
- close the circuit breaker 6QJ (line 321/P57).	- all the high level sensors return to their original condition.

(3) Close-Up
(a) Remove the safety clip and tag and close the circuit breaker 6QJ.
(b) De-energize the aircraft electrical network (Ref. 24-41-00, P. Block 301)
(c) Disconnect the ground air supply from the self-sealing test coupling T1.
(d) Remove the pressure gage from the self-sealing test coupling T2.
(e) Make sure that the work area is clean and clear of tools and all other items of equipment.
(f) Install the panel section of the sidewall lining aft at STA3249/FR60.
(g) Install the right hand section of the heat shield (Ref. 28-11-36, P. Block 401).
(h) If necessary, install the cargo container(s) (Ref. 25-52-00, P. Block 1).
(j) Close the aft cargo compartment door (Ref. 52-30-00, P. Block 1) and remove access platform.
(k) If required, refuel the aircraft to the required fuel load (Ref. 12-11-28, P. Block 301).

R **ON A/C 101-200,

3. Operational Test - Auxiliary Fuel Transfer Fault Warning System

NOTE: The test is carried out to indicate a transfer fault when the ACT fuel pump is at low pressure, in the simulated flight condition.

A. Equipment and Materials

ITEM	DESIGNATION
A.	Circuit Breaker Safety Clips and Tags
Referenced Procedures	
- 12-11-28, P. Block 301	Replenishing of Fuel Tanks
- 24-41-00, P. Block 301	AC External Power Control
- 28-25-00, P. Block 301	Refuel/Defuel System

B. Procedure

(1)Job Set-Up

(a)Energize the aircraft electrical network (Ref 24-41-00, P. Block 301).

(b)Open the refuel panel access-door 144DR. On panel 110VU:

1 Place the FQI DISPLAY switch in AUX position and make sure that the ACT is completely defueled. If necessary defuel or transfer fuel (Ref. 28-25-00, P. Block 301).

2 Place FQI DISPLAY switch in CTR & AUX & TT position.

(c)Close the refuel panel access-door 144DR.

(d)Not applicable.

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(b)Open the refuel panel access-door 144DR. On panel 110VU:

1 Place the FQI DISPLAY switch in ACT 1 position and then ACT 2 position (if ACT 2 fitted) and make sure that ACT 1 and ACT 2 (if ACT 2 fitted) are completely defueled. If necessary defuel or transfer fuel (Ref. 28-25-00, P. Block 301).

2 Place FQI DISPLAY switch in CTR-TT & ACT position.

(c)Close the refuel panel access-door 144DR.

(d)Not applicable.

**ON A/C 101-200,

(e)Make sure that the following circuit breakers are closed:

PANEL	SERVICE	IDENT.	LOCATION
22VU	FUEL/TK LO LVL AND CAL/R OUTR AND L INR AND CTR L	2QJ	208/B27

PANEL	SERVICE	IDENT.	LOCATION
132VU	FUEL/FUELLING/HI LVL	6QJ	321/P57
132VU	FUEL/FUELLING/OVERFLOW & CAL	5QJ	321/P58
132VU	FUEL/FUELLING/FQI/SUPPLY & IND	1QT	321/P59
132VU	FUEL/FUELLING/FQI/CHAN SUPPLY 1	3QT	321/P60
132VU	FUEL/FUELLING/FQI/CHAN SUPPLY 2	4QT	321/P61

PANEL	SERVICE	IDENT.	LOCATION
132VU	FUEL/AUX TK/XFR VALVE/MOTOR 1	4QH	325/K58
132VU	FUEL/AUX TK/PUMP CTL/XFR VALVE/MOTOR 2	5QH	325/K59

(f)Open, safety and tag the following circuit breakers:

PANEL	SERVICE	IDENT.	LOCATION
22VU	FUEL/TK LO LVL AND CAL/L OUTR AND R INR AND CTR R	1QJ	208/B26
101VU	FUEL/CARGO/TK PUMP SUPPLY	1QH	GEN1/A02
132VU	FUEL/AUX TK/VENT & PRESS VALVE	3QH	325/K57
133VU	L/G PROX DET & RELAYS SYS 2 FLT/GND	1GB	331/V52

(2)Test

ACTION	RESULT
1. On panel 430VU: - Press (in) the AUX TK AUTO pushbutton switch to select the Transfer pump on.	On panel 430VU: - The AUX TK AUTO FWD legend comes on.
NOTE: The Transfer pump will not run as circuit breaker 1QH (GEN1/A02) is open, safetied and tagged.	
	- After 10 minutes the AUX TK AUTO FAULT legend comes on.
- Release (out) AUX TK AUTO pushbutton switch to select Transfer pump off.	- The AUX TK AUTO FWD legend goes off. - The AUX TK AUTO FAULT legend goes off.

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PANEL	SERVICE	IDENT.	LOCATION
132VU	FUEL/ACT/XFR VALVE/MOTOR 1	4QH	325/K58
132VU	FUEL/ACT/PUMP CTL/XFR VALVE/MOTOR 2	5QH	325/K59

(f)Open, safety and tag the following circuit breakers:

PANEL	SERVICE	IDENT.	LOCATION
22VU	FUEL/TK LO LVL AND CAL/L OUTR AND R INR AND CTR R	1QJ	208/B26
101VU	FUEL/CARGO TK PUMP SUPPLY	1QH	GEN1/A02
132VU	FUEL/ACT/VENT & PRESS VALVE	3QH	325/K57
133VU	L/G PROX DET & RELAYS SYS 2 FLT/GND	1GB	331/V52

(2)Test

ACTION	RESULT
1. On panel 430VU: - Press (in) the ACT AUTO pushbutton switch to select the Transfer pump on.	On panel 430VU: - ACT AUTO FWD legend comes on.
NOTE: The Transfer pump will not run as circuit breaker 1QH (GEN1/A02) is open, safetied and tagged.	
	- After 10 minutes the ACT AUTO FAULT legend comes on.
- Release (out) the ACT AUTO pushbutton switch to select the Transfer pump off.	- The ACT AUTO FWD legend goes off. - The ACT AUTO LEGEND goes off.

**ON A/C 101-200,

(3)Close-Up
(a)Remove safety clips and tags and close circuit breakers 1QJ (line 208/B26), 1QH (line GEN1/A02), 3QH (line 325/K57) and 1GB (line 331/V52).
(b)De-energize the aircraft electrical network (Ref. 24-41-00, P. Block 301).
(c)Refuel or defuel aircraft to required fuel load (Ref. 12-11-28 or 28-25-00, P. Block 301).

4. Operational Test - Integrity of ACT(s) Fuel Transfer Fault Warning Circuit

NOTE: The test is carried out to confirm distribution logic between ACT

and center tank, in the ground condition.

A. Equipment and Materials

ITEM	DESIGNATION
A.	Circuit Breaker Safety Clip and Tag
Referenced Procedures	
- 12-11-28, P. Block 301	Replenishing of Fuel Tanks
- 24-41-00, P. Block 301	AC External Power Control
- 28-25-00, P. Block 301	Refuel/Defuel System

B. Procedure

(1)Job Set-Up

(a)Energize the aircraft electrical network (Ref. 24-41-00, P. Block 301).

(b)Make certain the following circuit breakers are closed:

PANEL	SERVICE	IDENT.	LOCATION
22VU	FUEL/TK LO LVL AND CAL/L OUTR AND R INR AND CTR R	1QJ	208/B26
22VU	FUEL/TK LO LVL AND CAL/R OUTR AND L INR AND CTR L	2QJ	208/B27
132VU	FUEL/FUELLING/HI LVL	6QJ	321/P57
132VU	FUEL/FUELLING/OVERFLOW & CAL	5QJ	321/P58
132VU	FUEL/FUELLING/FQI/SUPPLY & IND	1QT	321/P59
132VU	FUEL/FUELLING/FQI/CHAN SUPPLY 1	3QT	321/P60
132VU	FUEL/FUELLING/FQI/CHAN SUPPLY 2	4QT	321/P61
132VU	FUEL/AUX TK/VENT & PRESS VALVE	3QH	325/K57
132VU	FUEL/AUX TK/XFR VALVE/MOTOR 1	4QH	325/K58
132VU	FUEL/AUX TK/PUMP CTL/XFR VALVE/MOTOR 2	5QH	325/K59

(c)Open access door 144DR. On panel 110VU:

1 Place FQI DISPLAY switch in AUX position. On FUEL QTY indicator, make certain that ACT contains at least 2200 lb (1000 kg) of fuel. If necessary refuel, defuel or transfer fuel (Ref. 12-11-28 or 28-25-00, P. Block 301).

2 Place FQI DISPLAY switch in CTR posiion. On FUEL QTY indicator, make certain center tank is empty. If necessary defuel or transfer fuel (Ref. 28-25-00, P. Block 301).

3 Place FQI DISPLAY switch in CTR & AUX & TT position.

(d)Close access door 144DR.

(2)Test

ACTION	RESULT
1. On panel 430VU: - make certain ACT AUTO pushbutton switch is released (out) and AUX TK AUTO FAULT legend is on	

ACTION	RESULT
2. On panel 132VU: - open circuit breaker 5QJ (line 321/P58)	On panel 430VU: - make certain AUX TK AUTO FAULT legend goes off
3. On panel 472VU: - hold LO LEVEL & ACT TEST switch in L or R position	On panel 430VU: - AUX TK AUTO FAULT legend comes on
- release LO LEVEL & ACT test switch	- AUX TK AUTO FAULT legend goes off
4. On panel 132VU: - close circuit breaker 5QJ (line 321/P58)	On panel 430VU: - make certain AUX TK AUTO FAULT legend comes on

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132VU	FUEL/ACT/VENT & PRESS VALVE	3QH	325/K57
132VU	FUEL/ACT/XFR VALVE/MOTOR 1	4QH	325/K58
132VU	FUEL/ACT/PUMP CTL/XFR VALVE/MOTOR 2	5QH	325/K59

(c)Open access door 144DR. On panel 110VU:
1 Place FQI DISPLAY switch in CTR position. On FUEL QTY indicator, make certain that center tank is empty. If necessary defuel or transfer fuel (Ref. 28-25-00, P. Block 301).
2 Place FQI DISPLAY switch in ACT 1 position. On FUEL QTY indicator, make certain that ACT 1 contains at least 1000 kg (2200 lb) of fuel or is full if ACT 2 is fitted. If necessary refuel or transfer fuel (Ref. 12-11-28 or 28-25-00, P. Block 301) to achieve required fuel fuel load.
3 Place FQI DISPLAY switch in ACT 2 position (if ACT 2 fitted). On FUEL QTY indicator, make certain that ACT 2 contains 1000 kg (2200 lb) of fuel If necessary refuel or transfer fuel (Ref. 12-11-28 or 28-25-00, P. Block 301) to achieve required fuel load.
4 Place FQI DISPLAY switch in CTR-TT & ACT position.
(d)Close refuel panel door 144DR.

(2)Test

ACTION	RESULT
1. On panel 430VU: - make certain ACT AUTO pushbutton switch is released (out) and ACT AUTO FAULT legend is on	

ACTION	RESULT
2. On panel 132VU: - open circuit breaker 5QJ (line 321/P58)	On panel 430VU: - make certain ACT AUTO FAULT legend goes off
3. On panel 472VU: - hold LO LEVEL & ACT TEST switch in L or R position	On panel 430VU: - ACT AUTO FAULT legend comes on
- release LO LEVEL & ACT test switch	- ACT AUTO FAULT legend goes off
4. On panel 132VU: - close circuit breaker 5QJ (line 321/P58)	On panel 430VU: - make certain ACT AUTO FAULT legend comes on

**ON A/C 101-200,

(3)Close-Up
(a)Refuel or defuel aircraft to required fuel load (Ref. 12-11-28 or 28-25-00, P. Block 301).
(b)De-energize the aircraft electrical network (Ref. 24-41-00, P. Block 301).

5. Operational Test - ACT(s) Fuel Transfer Fault Warning Function By Low Level Test Switch With ACT(S) Installed

A. Reason for the Job
To test the warning function of the ACT(s) fuel transfer system.

NOTE: During this test, disregard the LO LVL light indications on the FUEL QTY indicator on panel 430VU.

B. Equipment and Materials

ITEM	DESIGNATION
Referenced Procedures	
- 12-11-28, P. Block 301	Replenishing of Fuel Tanks
- 24-41-00, P. Block 301	AC External Power Control
- 28-25-00, P. Block 301	Refuel/Defuel System

C. Procedure
(1)Job Set-Up
(a)Energize the aircraft electrical network (Ref. 24-41-00, P. Block 301).
(b)Open the access door 144DR. On panel 110VU:
1 Put the FQI DISPLAY switch in the AUX position. On the FUEL QTY

indicator, make sure that the ACT contains at least 3300 lb (1500 kg) of fuel. If necessary, refuel or defuel the ACT (Ref. 12-11-28 or 28-25-00, P. Block 301).
2 Put the FQI DISPLAY switch in the CTR & AUX & TT position.
3 Close the access door 144DR.

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R Post SB 28-2126 For A/C 104-104,

C. Procedure
(1)Job Set-Up
(a)Energize the aircraft electrical network (Ref. 24-41-00, P. Block 301).
(b)Open the access door 144DR. On panel 110VU:
1 Put the FQI DISPLAY switch first in the ACT 1 position and then the ACT 2 position (if ACT 2 is installed). On the FUEL QTY indicator, make sure that the ACT(s) do not contain fuel. If necessary, defuel the ACT(s) (Ref. 28-25-00, P. Block 301).
2 Put the FQI DISPLAY switch in the CTR-TT & ACT position.
3 Close the access door 144DR.

**ON A/C 101-200,

(c)Make sure that the circuit breakers that follow are closed:

PANEL	SERVICE	IDENT.	LOCATION
22VU	FUEL/TK LO LVL AND CAL/L OUTR AND R INR AND CTR R	1QJ	208/B26
22VU	FUEL/TK LO LVL AND CAL/R OUTR AND L INR AND CTR L	2QJ	208/B27
132VU	FUEL/FUELLING		Line 321
132VU	FUEL/FQI		Line 321

(2)Test

ACTION	RESULT
1. On panel 472VU: - hold the LO LEVEL & ACT TEST switch in the L or R position	On panel 430VU: - AUX TK AUTO FAULT legend comes on
- release the switch to the center position.	- AUX TK AUTO FAULT legend goes off.

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(2)Test

ACTION	RESULT
1. On panel 472VU: - hold the LO LEVEL & ACT TEST switch in the L or R position	On panel 430VU: - ACT AUTO FAULT legend comes on
- release the switch to the center position.	- ACT AUTO FAULT legend goes off.

**ON A/C 101-200,

(3)Close-Up
(a)Refuel or defuel the aircraft to the required fuel load (Ref. 12-11-28 or 28-25-00, P. Block 301).
(b)De-energize the aircraft electrical network (Ref. 24-41-00, P. Block 301).

6. Operational Test - ACT(s) Fuel Transfer Fault Warning Function By Low Level Test Switch Without ACT(s) Fitted.

A. Reason for the job
To test the Warning function of the ACT(s) fuel transfer system.

B. Equipment and Materials

ITEM	DESIGNATION
Referenced Procedures - 24-41-00, P. Block 301	AC External Power Control

C. Procedure
(1)Job Set-Up
(a)Energize the aircraft electrical network (Ref. 24-41-00, P. Block 301)
(b)Make certain the following circuit breakers are closed:

PANEL	SERVICE	IDENT.	LOCATION
22VU	FUEL/TK LO LVL AND CAL/L OUTR AND R INR AND CTR R	1QJ	208/B26
22VU	FUEL/TK LO LVL AND CAL/R OUTR AND L INR AND CTR L	2QJ	208/B27
132VU	FUEL/FUELLING		Line 321
132VU	FUEL/FQI		Line 321

(2)Test

ACTION	RESULT
1. On panel 472VU: - hold LO LEVEL & ACT TEST switch in L or R position	On panel 430VU: - AUX TK AUTO FAULT legend comes on
- release switch to center position	- AUX TK AUTO FAULT legend goes off

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(2)Test

ACTION	RESULT
1. On panel 472VU: - hold LO LEVEL & ACT switch in L or R position	On panel 430VU: - ACT AUTO FAULT legend comes on
- release switch to center position	- ACT AUTO FAULT legend goes off

**ON A/C 101-200,

(3)Close-Up
(a)De-energize the aircraft electrical network (Ref. 24-41-00, P. Block 301).

7. Leak Pressure Test of ACT System Provisions
(For A/C having ACT provisions but ACT(s) not installed).

A. Reason for the Job
(1)Leak pressure test the ACT system provisions.

B. Equipment and Materials

ITEM	DESIGNATION
A.	Access Platform 2.5 m (8 ft)
B.	Ground Pressure Generator (GPG) (to deliver moisture free air at a maximum pressure of 20 psi (1.4 bar)).
C.	Pressure Gage 0-20 psi (0-1.4 bar) - 2 off complete with self-sealing quick-release test coupling PN HTE 714-85-G
D.	Blank to suit PRV ambient datum inlet

ITEM	DESIGNATION
Referenced Procedures - 52-30-00, P. Block 1	Cargo Compartment Door(s)

C. Procedure

**ON A/C 101-200,

Post SB 28-2122 For A/C 101-200,

7. Leak Test of the ACT Air-Pressurization System Provisions (For A/C having ACT provisions but ACT(s) not installed).

A. Reason for the Job
(1)Leak test the ACT air pressurization system provisions.

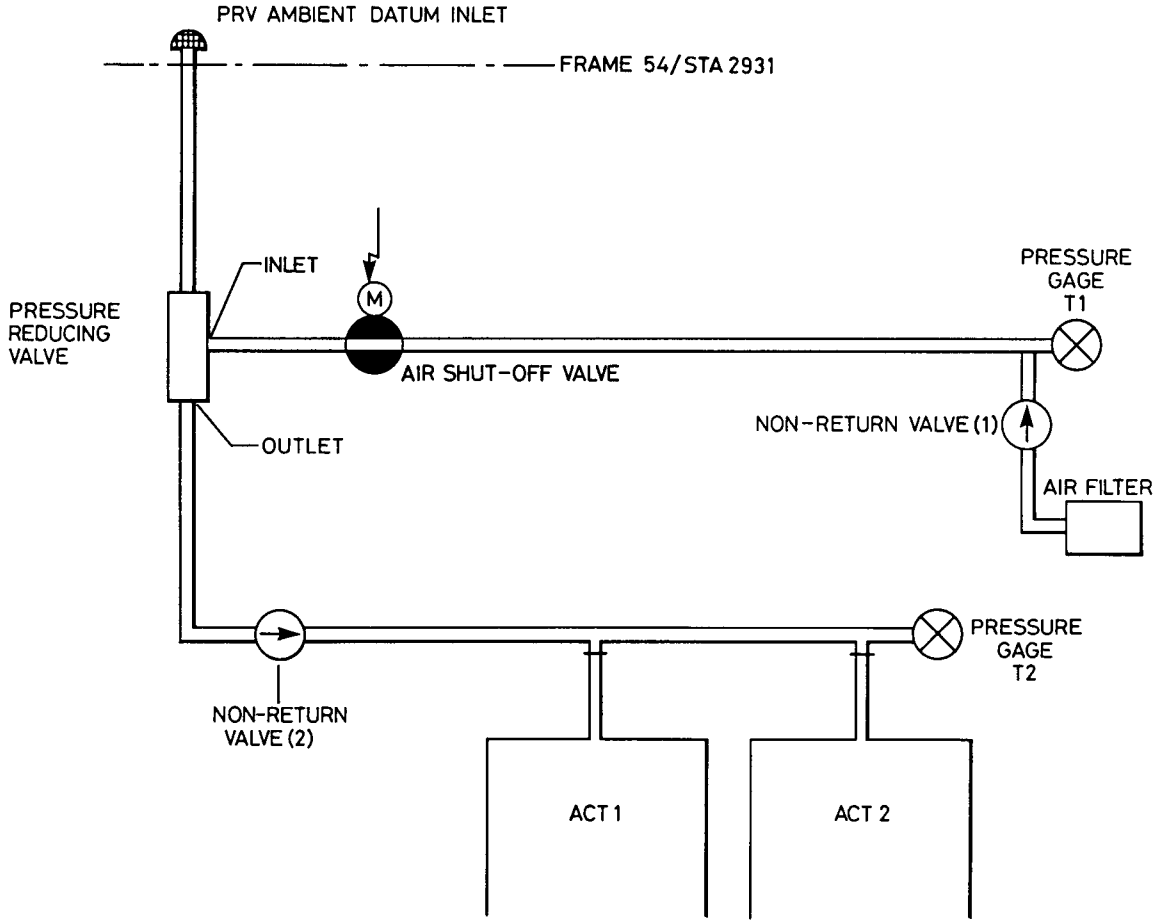
B. Equipment and Materials

ITEM	DESIGNATION
A.	Access Platform 2.5 m (8 ft)
B.	Circuit Breaker Safety Clips and Tags.
C.	Ground Pressure Generator (GPG) to deliver moisture free air at a maximum pressure of 20.0 psi (1.38 bar) and fitted with a pressure gage to measure the outlet pressure
D.	Pressure Gage - 2 off complete with self-sealing quick-release test coupling PN HTE 714-85-G to measure 0 - 20.0 psi (0 - 1.4 bar)
E.	Blank to suit PRV ambient datum inlet
Referenced Procedures - 52-30-00, P. Block 1	Cargo Compartment Door(s)

C. Procedure

**ON A/C 101-200,

(Ref. Fig. 501)
(1)Job Set-Up (Ref. Fig. 501)
(a)Position the access platform and open the aft cargo compartment door (Ref. 52-30-00, P. Block 1)
(b)Close the air shut-off valve.
(c)Remove the air filter and connect the GPG.
(d)Connect the pressure gages to points T1 and T2.
(e)Remove the guard from the PRV ambient datum inlet in the undercarriage bay and install the blank.



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ACT Pressurization System Schematic
Figure 501

**ON A/C 101-200,

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(1)Job Set-Up (Ref. Fig. 501)
(a)Put the access platform in position and open the aft cargo-compartment door (Ref. 52-30-00, P. Block 1)
(b)Get access to the air filter and the test points T1 and T2 of the ACT air pressurization system.
(c)Remove the air filter and connect the GPG to the pipe end from which the filter was removed.
(d)Connect the pressure gages to points T1 and T2.
(e)Remove the guard from the PRV ambient datum inlet in the undercarriage bay and install the blank.

(2)Test.
(a)Set the GPG pressure to 20.0 psi (1.38 bar).
(b)Start the GPG and pressurize the system to 20.0 psi (1.38 bar) at the GPG connection.
(c)Stop the GPG and release the pressure in the pipe between the non-return valve (1) and the GPG.
(d)Make a check that the pressure at T1 is between 19.7 and 20.0 psi (1.36 and 1.38 bar).
(e)Make a check that no pressure drop occurs for 10 minutes at T1 and the pressure at T2 stays at zero.

NOTE : Steps (2) (b) thru (e) make a check that the non-return valve between the GPG and T1 opens and that there is no leakage in the pipes or through the closed air shut-off valve.

CAUTION : MAKE SURE THAT THERE IS NO BREAK IN THE ELECTRICAL POWER SUPPLY TO THE FUEL SYSTEM CONTROL CIRCUITS DURING THE REMAINDER OF THE TEST UNLESS THERE IS AN INSTRUCTION TO OPEN A CIRCUIT BREAKER.

(f)Make sure the refuel panel door 144DR is shut.
(g)Open, safety and tag the circuit breakers that follow:

PANEL	SERVICE	IDENT.	LOCATION
22VU	FUEL/TK LO LVL AND CAL/L OUTR AND R INR AND CTR R	1QJ	208/B26
22VU	FUEL/TK LO LVL AND CAL/R OUTR AND L INR AND CTR L	2QJ	208/B27

(h)Open, and then close the circuit breaker that follows:

PANEL	SERVICE	IDENT.	LOCATION
132VU	FUEL/ACT/VENT & PRESS VALVE	3QH	325/K57

(j)Open, safety and tag the circuit breaker that follows:

PANEL	SERVICE	IDENT.	LOCATION
133VU	L/G PROX DET & RELAYS SYS 2/FLT/GND	1GB	331/V52

NOTE : This simulates the flight condition and causes the air shut-off valve to open after a 30 minute delay.

(k)At least 35 minutes after you open the circuit breaker 1GB; start the GPG and pressurize the system to 20.0 psi (1.38 bar) at the GPG connection.
(l)Stop the GPG and release the pressure in the pipe between the non-return valve (1) and the GPG.
(m)Make a check that the pressures at T1 and T2 are as follows:
- At T1 19.7 - 20.0 psi (1.36 - 1.38 bar).
- At T2 19.5 - 20.0 psi (1.345 - 1.379 bar).
(n)Make a check that the pressures at T1 and T2 are stable within these limits for 10 minutes.

NOTE : Para's (p) thru (u) that follow, make sure that there is no reverse leakage through non-return valves (1) and (2).

(p)Bleed the air from T1 to decrease the pressure to 2.0 psi (0.14 bar).
(q)Make a check that no pressure drop or rise occurs at T1 (2.0 psi (0.14 bar)) and T2 (19.5 - 20.0 psi (1.345 - 1.379 bar)) for 10 minutes.
(r)Bleed the air from T1 and remove the blank from the PRV ambient datum inlet.
(s)Replace the guard.
(t)Bleed the air from T2 to decrease the pressure at T2 to 2.0 psi (0.14 bar).
(u)Make a check that no pressure drop occurs at T2 for 10 minutes.
(v)Release the pressure.

(3)Close-Up
(a)Remove the GPG and install the air filter.
(b)Remove the pressure gages from points T1 and T2.
(c)Make sure that the work area is clean and clear of tools and equipment.
(d)Close the aft cargo-compartment door (Ref. 52-30-00, P. Block 1).
(e)Remove the access platform.
(f)On the circuit breaker panels 22VU and 133VU, remove the safety clips and tags and close the circuit breakers 1QJ, 2QJ and 1GB.

**ON A/C 101-200,

(2)Test.
(a)Set the GPG pressure to 1.4 bar (20 psi).
(b)Start the GPG and pressurize the system to 1.4 bar (20 psi).
(c)Stop the GPG.

(d)Make sure that the pressure at T1 is 1.4 bar (20 psi).
(e)Make sure that no pressure drop occurs for 10 minutes at T1 and the pressure at T2 stays at zero.
(f)Release the pressure.

NOTE: This test is to make sure that the non-return valve opens and that there is no leakage in the pipes or through the closed air shut-off valve.

(g)Open the air shut-off valve.
(h)Start the GPG and pressurize the system to 1.4 bar (20 psi).
(j)Make sure that the pressures at T1 and T2 are 1.4 bar (20 psi).
(k)Stop the GPG.
(l)Make sure that no pressure drop occurs for 10 minutes at T1 and T2.

NOTE: Para's (m) to (t) make sure that there is no reverse leakage through non-return valves (1) and (2).

(m)Release the pressure in the pipe between the non-return valve (1) and the GPG.
(n)Bleed the air from T1 to decrease the pressure to 0.14 bar (2 psi).
(p)Make sure that no pressure drop occurs at T1 (0.14 bar (2 psi)) and T2 (1.4 bar (20 psi)) for 10 minutes.
(q)Bleed the air from T1 and remove the blank from the PRV ambient datum inlet.
(r)Replace the guard.
(s)Decrease the pressure at T2 to 0.14 bar (2 psi).
(t)Make sure that no pressure drop occurs at T2 for 10 minutes.
(u)Release the pressure.

(3)Close-Up
(a)Remove the GPG and install the air filter.
(b)Remove the pressure gages from points T1 and T2.
(c)Make sure that the work area is clean and clear of tools and equipment.
(d)Close the aft cargo compartment door (Ref. 52-30-00, P. Block 1).
(e)Remove the access platform.

8. Operational Test - Vent Valve Actuator 280273

A. Reason for the Job
(1)To make sure that the vent valve opens.

**ON A/C 101-200,

Post SB 28-2105 For A/C 101-200,

Post SB 28-2122 For A/C 101-200,

8. Operational Test - Vent Valve Actuators 280273 and 280274

A. Reason for the Job
(1)To make sure that both ACT vent valves open.

B. Equipment and Materials

ITEM	DESIGNATION
A.	Access Platform 16 ft (5 m)

Referenced Procedures
- 06-41-53, P. Block 1 Fuselage
- 24-41-00, P. Block 301 AC External Power Control
- 25-21-00, P. Block 401 Passenger Compartment Seats
- 25-28-11, P. Block 401 Carpet - Floor Covering
- 25-28-12, P. Block 401 Covering - Non Textile Floor
- 53-10-25, P. Block 401 Panels - Passenger Compartment Floor

C. Procedure
(1)Job Set-Up.

NOTE : This test can be carried out with or without fuel in the ACT(s).

(a)Energize the aircraft electrical network (Ref. 24-41-00, P. Block 301).
(b)Put the access platform in position and gain access to the aft passenger compartment and the flight compartment.
(c)Make sure that the circuit breakers that follow are closed:

PANEL	SERVICE	IDENT.	LOCATION
132VU	FUEL/ACT TK/VENT & PRESS VALVE	3QH	325/K57
133VU	L/G PROX DET & RELAYS SYS 2/FLT/GND	1GB	331/V52

(d)In the aft passenger compartment between STA2931 (FR 54) and STA3090 (FR 54.3):

1 Remove the applicable passenger compartment seats (Ref. 25-21-00, P. Block 401).
2 Remove the floor covering (Ref. 25-28-11 and 25-28-12, P. Block 401).
3 Remove the floor panels 252BZ and 252DZ from the aft passenger compartment floor (Ref. 06-41-53, P. Block 1 and 53-10-25, P. Block 401).
4 Get access to the aft cargo-compartment ceiling-panels 152BZ and 152DZ through the floor of the aft passenger compartment.
5 Remove the ceiling panels 152BZ and 152DZ.

NOTE: The vent valve actuators 280273 and 280274 can now be seen through the floor of the passenger compartment.

(e)Make sure that the refuel panel door 144DR, is closed.
(f)Make sure that the ACT AUTO P/BSW on panel 430VU, is released out.
(g)Establish a line of communication between the persons in the flight compartment and the persons in the aft passenger compartment.

CAUTION : MAKE SURE THAT THERE IS NO BREAK IN THE ELECTRICAL POWER SUPPLY TO THE FUEL SYSTEM CONTROL CIRCUITS DURING THE TEST UNLESS THERE IS AN INSTRUCTION TO OPEN A CIRCUIT BREAKER.

(2)Test

**ON A/C 101-200,

B. Equipment and Materials

ITEM	DESIGNATION
A.	Access Platform 16 ft (5 m)

Referenced Procedures

- 24-41-00, P. Block 301	AC External Power Control
- 25-21-00, P. Block 401	Passenger Compartment Seats

C. Procedure

(1)Job Set-Up.

NOTE: This test can be carried out with or without fuel in the ACT(s).

(a)Energize the aircraft electrical network (Ref. 24-41-00, P. Block 301).
(b)Put the access platform in position and gain access to the aft passenger compartment and the flight compartment.
(c)Make sure that the circuit breakers that follow are closed:

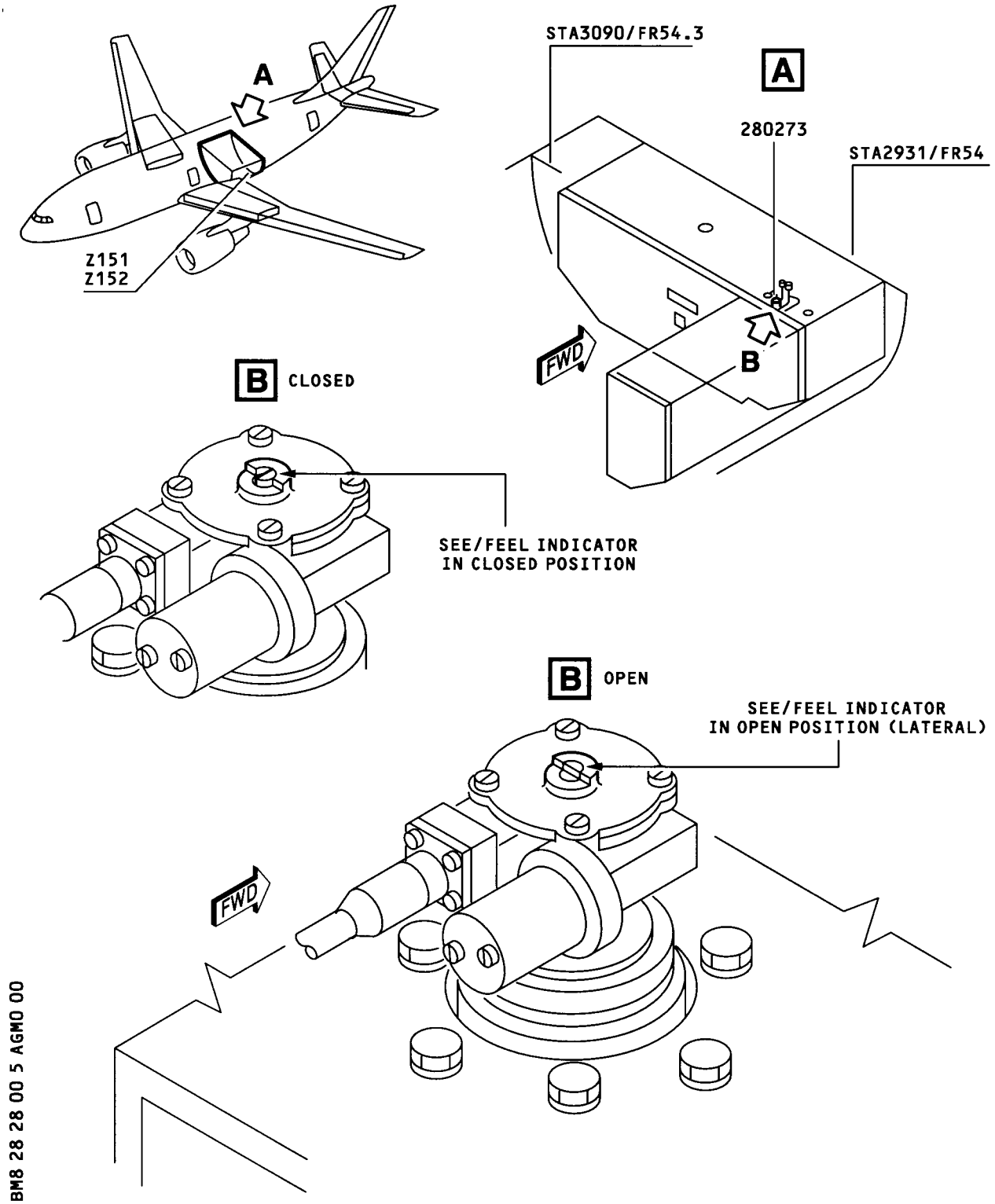
PANEL	SERVICE	IDENT.	LOCATION
132VU	FUEL/AUX TK/VENT & PRESS VALVE	3QH	325/K57
133VU	L/G PROX DET & RELAYS SYS 2/FLT/GND	1GB	331/V52

(d)In the aft passenger compartment between STA2931 (FR 54) and STA3090 (FR 54.3):
1 Remove the relevant passenger compartment seats where necessary (Ref. 25-21-00, P. Block 401).
2 Remove the floor covering.
3 Remove the floor panel 252BZ from the aft passenger compartment floor.
4 Get access to the aft cargo-compartment ceiling-panel 152BZ through the floor of the aft passenger compartment.
5 Remove the ceiling panel 152BZ.

NOTE: The vent valve actuator 280273 can now be seen through the floor of the passenger compartment.

(e)Make sure that the refuel panel door 144DR, is closed.
(f)Make sure that the AUX TK AUTO P/BSW on panel 430VU, is released out.
(g)Establish a line of communication between the persons in the flight compartment and the persons in the aft passenger compartment.

(2)Test
(Ref. Fig. 502)



Vent Valve - See/Feel indicator
Figure 502

**ON A/C 101-200,

Post SB 28-2105 For A/C 101-200,

(Ref. Fig. 503)

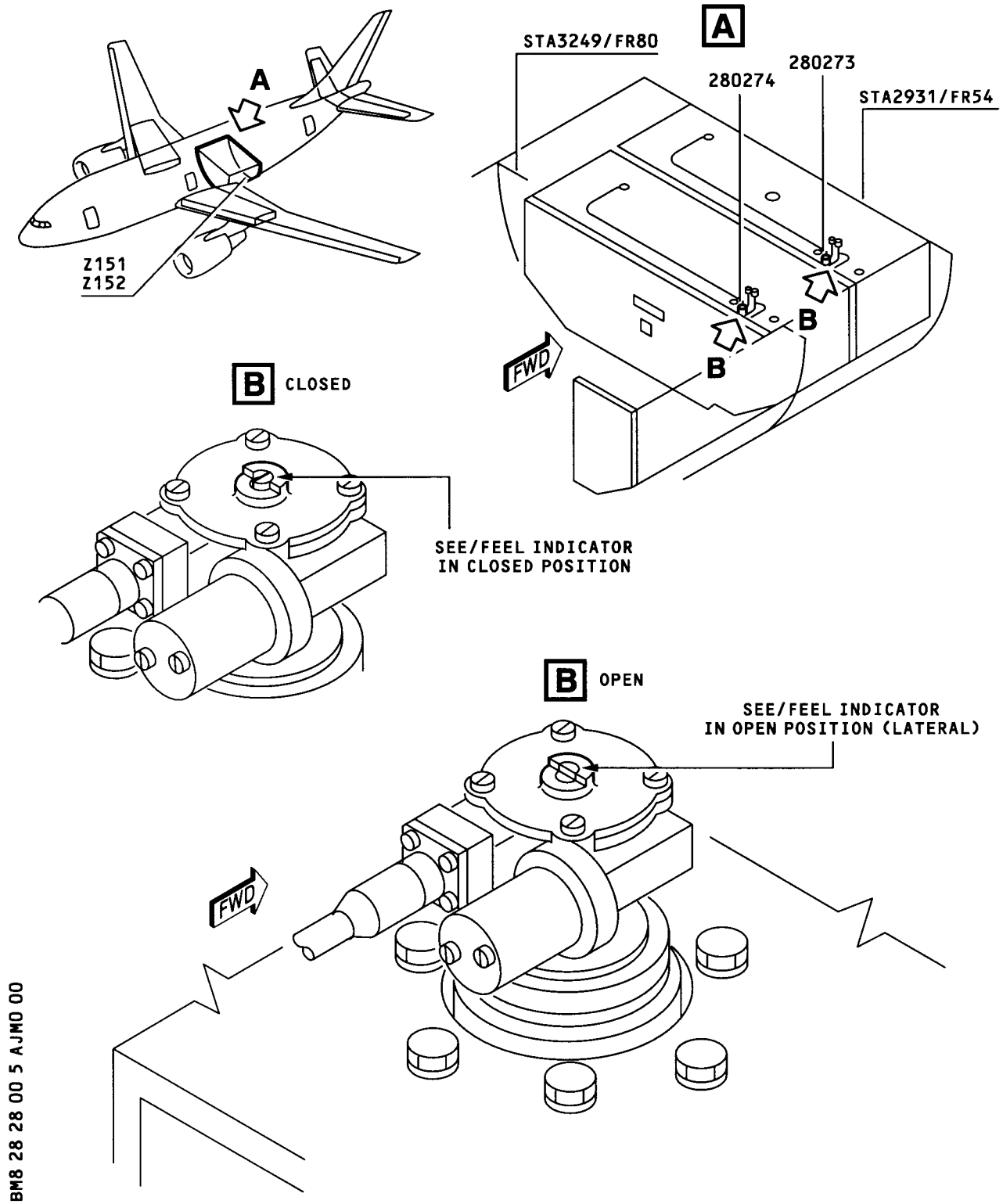
**ON A/C 101-200,

ACTION	RESULT
1. On circuit breaker panel 132VU: - open and close circuit breaker 3QH (line 325/K57).	
- open circuit breaker 1QJ (line 321/P57.	- Simulates wet condition for the low level sensor in the ACT.
2. On circuit breaker panel 133VU: - open circuit breaker 1GB (line 331/V52).	- Simulates flight condition.
3. Approximately 5 minutes after performing step 2.	In the aft cargo compartment: - the Air Shut-Off Valve opens - the ACT vent valve closes.
4. Make sure that the vent valve actuator operates from the open position to the closed position.	- The see/feel indicator on the actuator correctly shows the closed position.
5. On circuit breaker panel 133VU: - close circuit breaker 1GB (line 331/V52).	- The aircraft returns to the ground condition. - The Air Shut-Off valve closes. - The ACT vent valve opens.
6. Make sure that the vent valve actuator operates from the closed position to the open position.	- The see/feel indicator on the actuator correctly shows the open position.

**ON A/C 101-200,

Post SB 28-2105 For A/C 101-200,

Post SB 28-2122 For A/C 101-200,



Vent Valve - See/Feel indicator
Figure 503

ACTION	RESULT
1. On circuit breaker panel 22VU: - open the circuit breakers 1QJ (line 208/B26) and 2QJ (line 208/B27)	- Simulates wet condition for the low level sensors in both ACTs.
2. On circuit breaker panel 132VU: - open and then close the circuit breaker 3QH (line 325/K57).	
3. On circuit breaker panel 133VU: - open circuit breaker 1GB (line 331/V52).	- Simulates flight condition. 30 ± 3 minutes after you open the circuit breaker 1GB: In the aft cargo compartment: - The Air Shut-Off Valve opens. - Both ACT vent valves close.
4. Make a check that both vent valve actuators operate from the open position to the closed position.	- The see/feel indicator on both actuators correctly shows the closed position.
5. On circuit breaker panel 133VU: - close circuit breaker 1GB (line 331/V52).	- The flight simulation is removed and the aircraft is put in the ground condition. - The Air Shut-Off valve closes. - Both ACT vent valves open.
6. Make a check that both vent valve actuators operate from the closed position to the open position.	- The see/feel indicators on both actuators correctly show the open position.

(3)Close-Up
(a)On panel 22VU, close the circuit breakers 1QJ (line 208/B26) and 2QJ (line 208/B27).
(b)De-energize the aircraft electrical network (Ref. 24-41-00, P. Block 301).
(c)Make sure that the work area is clean and clear of tools and miscellaneous items of equipment.
(d)Put the ceiling panels 152BZ and 152DZ through the floor in the aft passenger compartment. Install the panels in the aft cargo-compartment ceiling.
(e)Make sure that the work area between the aft cargo-compartment ceiling

and the aft passenger-compartment floor is clean and clear of tools and miscellaneous items of equipment.

(f)Install panels 252BZ and 252DZ in the aft passenger-compartment floor.

(g)Put the floor covering in position.

(h)Install the relevant passenger compartment seats if previously removed (Ref. 25-21-00, P. Block 401).

(j)Make sure that the aft passenger compartment and the flight compartment is clean and clear of tools and miscellaneous items of equipment.

(k)Remove the access platform.

**ON A/C 101-200,

(3)Close-Up

(a)On panel 132VU, close circuit breaker 1QJ (line 321/P57).

(b)De-energize the aircraft electrical network (Ref. 24-41-00, P. Block 301).

(c)Make sure that the work area is clean and clear of tools and miscellaneous items of equipment.

(d)Put the ceiling panel 152BZ through the floor in the aft passenger compartment. Install the panel in the aft cargo-compartment ceiling.

(e)Make sure that the work area between the aft cargo-compartment ceiling and the aft passenger-compartment floor is clean and clear of tools and miscellaneous items of equipment.

(f)Install panel 252BZ in the aft passenger compartment floor.

(g)Put the floor covering in position.

(h)Install the relevant passenger compartment seats if previously removed (Ref. 25-21-00, P. Block 401).

(j)Make sure that the aft passenger compartment and the flight compartment is clean and clear of tools and miscellaneous items of equipment.

(k)Remove the access platform.

9. Functional Test - Inward Relief Valve 280251

A. Reason for the Job
(1)To make sure the Inward Relief Valve closes.

B. Equipment and Materials

ITEM	DESIGNATION
A.	Access Platform 2.7 m (9 ft)
B.	Circuit Breaker Safety Clips and Tags
C.	Ground Air Supply with pressure gage (to deliver moisture free air at a maximum pressure of 10 psi (0.7 bar)), with self-sealing quick-release coupling PN HTE 714-85-G
Reference Procedures	
- 12-11-28, P. Block 301	Replenishing of Fuel Tanks
- 24-41-00, P. Block 301	AC External Power Control
- 25-52-00, P. Block 1	Semi-Automatic Cargo Loading
- 27-80-00, P. Block 301	Lift Augmenting
- 28-00-00, P. Block 301	Fuel - General
- 28-11-36, P. Block 401	Additional Center Tank
- 28-12-00, P. Block 601	Tank Venting System
- 28-25-00, P. Block 301	Refuel-Defuel System
- 52-30-00, P. Block 1	Cargo Compartment Door(s)

C. Procedure
(1)Job Set-Up
(a)Energize the aircraft electrical network (Ref. 24-41-00, P. Block 301).
(b)Make sure that the circuit breakers that follow are closed:

PANEL	SERVICE	IDENT.	LOCATION
21VU	ECAM/CTL PNL LT	12WT	108/B01
21VU	ECAM/DISPLAY UNIT/L	7WT	108/B02
21VU	ECAM/DISPLAY UNIT/R	8WT	108/B03
21VU	ECAM/SGU/1	11WT/1	108/B04
21VU	ECAM/SGU/2	11WT/2	108/B05
21VU	ECAM/FLT WARN MONITOR	4WW	108/B06
21VU	ECAM/FLT WARN MONITOR	24WW	108/B07
21VU	ECAM/FWC 1	7WW	108/B08

**ON A/C 101-200,

Post SB 28-2105 For A/C 101-200,

Post SB 28-2122 For A/C 101-200,

R Post SB 28-2126 For A/C 104-104,

9. Functional Test - Inward Relief Valve 280251

A. Reason for the Job
(1)To make sure the Inward Relief Valve closes.

B. Equipment and Materials

ITEM	DESIGNATION
A.	Access Platform 2.7 m (9 ft)
B.	Circuit Breaker Safety Clips and Tags
C.	Ground Air Supply to deliver moisture free air at a maximum pressure of 2.0 psi (0.14 bar), with self-sealing quick-release coupling PN HTE 714-85-G. The outlet flowrate (free air delivery) should be greater than 0.18 cubic ft/min (5 liters/min) at 2.0 psi (0.14 bar). The time required to do the test is decreased if the flowrate is greater. The air supply must have a leak-free shut-off valve in its outlet pipe and a pressure gage on the outlet side of the valve, suitable for reading 0 - 2.0 psi (0 - 0.14 bar).

Reference Procedures

- 12-11-28, P. Block 301	Replenishing of Fuel Tanks
- 24-41-00, P. Block 301	AC External Power Control
- 28-00-00, P. Block 301	Fuel - General
- 28-12-00, P. Block 601	Tank Venting System
- 28-25-00, P. Block 301	Refuel-Defuel System
- 52-30-00, P. Block 1	Cargo Compartment Door(s)

C. Procedure
(1)Job Set-Up
(a)If necessary, do the procedure that follows to achieve these fuel states:

CENTER TANK	ACT 1	ACT 2
13228 lb min (6000 kg min)	441 lb min (200 kg min)	441 lb min (200 kg min)

NOTE : The time needed to do the test is reduced if you put more fuel in the ACTs. The ACTs can be pressurized in 30 minutes if you use the fuel/air quantities that follow:

TOTAL FUEL QUANTITY IN ACTS	FLOW RATE OF AIR (MEASURED AT ATMOSPHERIC PRESSURE AND TEMPERATURE)
882 lb (400 kg) FULL	2.12 cubic ft/min (60 liters/min) 0.18 cubic ft/min (5 liters/min)

CAUTION : THE AIRCRAFT MUST BE IN THE NORMAL OPERATIONAL CONDITION WHEN YOU REFUEL THE ACT(S) TO MAKE SURE THE AIRCRAFT CENTER OF GRAVITY IS WITHIN SAFE LIMITS.

(b)Transfer any fuel in the trim tank into the center tank until the trim tank is empty or the center tank is full (Ref. 28-25-00, P. Block 301).
(c)Transfer any fuel that remains in the trim tank into the inner tanks and/or defuel the trim tank into a defuel tanker (Ref. 28-25-00, P. Block 301).
(d)Transfer any fuel in the outer tanks into the center tank until the outer tanks are empty or the center tank is full (Ref. 28-25-00, P. Block 301).
(e)Transfer any fuel that remains in the outer tanks into the ACT(s) until the outer tanks are empty or the ACTS are full (Ref. 28-25-00, P. Block 301).
(f)If the quantity of fuel in each ACT is less than 441 lb (200 kg) or a greater quantity of fuel is required to speed the pressurization, do the procedure that follows:.
- If the center tank quantity is less than 13228 lb (6000 kg) transfer fuel from the inner tanks into the center tank, or refuel the center tank from the refuel tanker until the fuel quantity is 13228 lb (6000 kg) minimum (Ref. 28-25-00 or 12-11-28, P. Block 301).
- Transfer fuel to the ACT(s) from the inner tanks or the center tank (Ref. 28-25-00, P. Block 301) or refuel the ACT(s) from a refuel tanker (Ref. 12-11-28, P. Block 301). The transfer of fuel from the center tank must stop if the center tank quantity decreases to 13228 lb (6000 kg).

(g)Energize the aircraft electrical network (Ref. 24-41-00, P. Block 301).
(h)Make sure that the circuit breakers that follow are closed:

PANEL	SERVICE	IDENT.	LOCATION
22VU	FUEL/TK LO LVL AND CAL/L OUTR AND R INR AND CTR R	1QJ	208/B26
22VU	FUEL/TK LO LVL AND CAL/R OUTR AND L INR	2QJ	208/B27

PANEL	SERVICE	IDENT.	LOCATION
	AND CTR L		
101VU	FUEL/CARGO TK PUMP SUPPLY	1QH	GEN1/A02
132VU	FUEL/FUELLING/HI LVL	6QJ	321/P57
132VU	FUEL/FUELLING/OVERFLOW & CAL	5QJ	321/P58
132VU	FUEL/ACT/VENT & PRESS VALVE	3QH	325/K57
132VU	FUEL/ACT/XFR VALVE/MOTOR 1	4QH	325/K58
132VU	FUEL/ACT/PUMP CTL/XFR VALVE/MOTOR 2	5QH	325/K59

(j)Put the access platform in position and open the aft cargo-compartment door (Ref. 52-30-00, P. Block 1).
(k)Remove the panel section of the side wall lining aft of STA3249/FR60 to get access to the self-sealing test point T2 (Ref. 28-12-00, P. Block 601).
(l)Connect the ground air supply with the gage to the self-sealing test point T2.
(m)Make sure that on panel 430VU, the ACT AUTO P/BSW is released (out) - system in AUTO.
(n)Make sure that the refuel panel door 144DR is closed.

CAUTION : MAKE SURE THAT THERE IS NO BREAK IN THE ELECTRICAL POWER SUPPLY TO THE FUEL SYSTEM CONTROL CIRCUITS DURING THE TEST UNLESS THERE IS AN INSTRUCTION TO OPEN A CIRCUIT BREAKER.

(2)Test - ACT 1 and 2 installed

NOTE 1 : When the aircraft is on the ground the associated ACT valves will be in the positions that follow:
- ACT(s) Transfer Valve is closed
- Air Shut-Off Valve is closed
- ACT 1 Vent Valve is open
- ACT 2 vent valve is open.

NOTE 2 : It is not necessary to check the indicators on the valve actuators to confirm that the valves have moved.

ACTION	RESULT
1. On the circuit breaker panel 132VU: - Open the FUEL/FUELLING/HI LVL circuit breaker 6QJ (line 321/P57).	- Simulates wet conditions for high level sensors in all tanks - the ACT Transfer Valve is closed.
2. On the circuit breaker panel 133VU: - Open the L/G PROX DET & RELAYS SYS 2/FLT/GND circuit breaker 1GB (line 331/V52).	- Simulates flight condition.
	30 ± 3 minutes after you open the

ACTION	RESULT
	circuit breaker 1GB: In the aft cargo compartment: - the Air Shut-Off Valve opens - the ACT 1 and 2 Vent Valves close.
3. At least 35 minutes after you open the circuit breaker 1GB: - Carefully pressurize the self-sealing test point T2 with air to 1.6 psi (0.110 bar).	- The ACT pressurization line (from T2 only) and the space in each ACT above the fuel, is pressurized.
NOTE : The thermal relief valves in the ACT vent valves are set to open between 4 and 7 psi (0.28 and 0.48 bar).	
4. Shut off the air supply at T2.	
5. Make a check of the pressure at T2.	- There is no decrease in the pressure at T2 for 15 minutes.
NOTE : This makes a check that the inward relief valve is closed and does not leak, and that there is no other leakage from the ACTS.	
6. On the circuit breaker panel 133VU: - Close the L/G PROX DET & RELAYS SYS 2/FLT/GND circuit breaker 1GB (line 331/V52).	- the flight simulation is removed and the aircraft is put in the ground condition - the Air Shut-Off Valve closes - the ACT 1 Vent Valve opens - the ACT 2 Vent Valve opens
7. Do a check of the pressure at T2.	- The pressure at T2 falls to between zero and 0.2 psi (0.014 bar).
8. On the circuit breaker panel 132VU: - Close the FUEL/FUELLING/HI LVL circuit breaker 6QJ (line 321/P57).	- The high level sensors return to the normal condition in all the tanks.

(3)Close-Up
(a)De-energize the aircraft electrical network (Ref. 24-41-00, P. Block 301)
(b)Disconnect the ground air supply from self-sealing test point T2.
(c)Make sure that the work area is clean and clear of tools and miscellaneous items of equipment.
(d)Install the panel section of the sidewall lining aft of STA3249/FR60 (Ref. 28-12-00, P. Block 601).
(e)Close the aft cargo-compartment door (Ref. 52-30-00, P. Block 1) and remove the access platform.

(f)Refuel or defuel the aircraft to the required fuel load (Ref. 12-11-28 or 28-25-00, P. Block 301)

**ON A/C 101-200,

PANEL	SERVICE	IDENT.	LOCATION
22VU	FUEL/TK LO LVL AND CAL/L OUTR AND R INR AND CTR R	1QJ	208/B26
22VU	FUEL/TK LO LVL AND CAL/R OUTR AND L INR AND CTR L	2QJ	208/B27
101VU	FUEL/CARGO TK PUMP SUPPLY	1QH	GEN1/A02
132VU	FUEL/FUELLING/HI LVL	6QJ	321/P57
132VU	FUEL/FUELLING/OVERFLOW & CAL	5QJ	321/P58

PANEL	SERVICE	IDENT.	LOCATION
132VU	FUEL/AUX TK/VENT & PRESS VALVE	3QH	325/K57
132VU	FUEL/AUX TK/XFR VALVE/MOTOR 1	4QH	325/K58
132VU	FUEL/AUX TK/PUMP CTL/XFR VALVE/MOTOR 2	5QH	325/K59

(c)Make sure that the ACT contains between 440 and 8818 lb (200 and 4000 kg) of fuel. Refuel or transfer fuel as required (Ref. 12-11-28 or 28-25-00, P. Block 301).
(d)Put the access platform in position and open the aft cargo-compartment door (Ref. 52-30-00, P. Block 1).
(e)If installed, remove the container(s) located behind the ACT (Ref. 25-52-00, P. Block 1).
(f)Unlock the quick release fasteners and remove the right hand section of the heat shield from the rear wall of the ACT (Ref. 28-11-36, P. Block 401).
(g)Remove the panel section of the side wall lining aft of STA3090/FR54.3. to get access to the self-sealing test point T2 (Ref. 28-12-00, P. Block 601).

(h)Activate the ECAM display units as follows:
1 On the flight-compartment center-pedestal, press (in) the ECAM SGU 1 and 2 P/BSW's.
2 Turn the LEFT and RIGHT DISPLAY rotary switches clockwise to switch on the display and adjust the brightness to the required level.
3 Press (in) the FUEL P/BSW to call up the fuel page.
(j)Make sure that the slats are fully retracted (Ref. 27-80-00, P. Block 301).
(k)Make sure that on panel 430VU, the AUX TK AUTO P/BSW is released (out) - system in AUTO.
(l)Make sure that the refuel panel door 144DR is closed.
(m)Connect the ground air supply with the gage to the self-sealing test point T2.

(2)Test

NOTE : When the aircraft is on the ground the associated ACT valves will

be in the positions that follow:
- ACT Transfer Valve is closed
- Air Shut-Off Valve is closed
- ACT Vent Valve is open.

ACTION	RESULT
1. On the circuit breaker panel 132VU: - Open and then close the circuit breaker 3QH (line 325/K57)	
- Open the FUEL/FUELLING/HI LVL circuit breaker 6QJ (line 321/P57).	- simulates wet conditions for high level sensors in all tanks - the ACT Transfer Valve is closed.
2. On the circuit breaker panel 133VU: - Open the L/G PROX DET & RELAYS SYS 2/FLT/GND circuit breaker 1GB (line 331/V52).	- Simulates flight condition.
3. Approximately 5 minutes after you do step 2.	In the aft cargo compartment: - the Air Shut-Off Valve opens - the ACT 1 Vent Valve closes.
4. In the aft cargo compartment aft of frame 54.3: - Carefully pressurize the self-sealing test point T2 with air to between 5.5 and 6.5 psi (0.38 and 0.44 bar).	- The ACT pressurization line (from T2 only) and the space in the ACT above the fuel, is pressurized.
NOTE : The thermal relief valve in the ACT vent valve is set to open between 4 and 7 psi (0.28 and 0.48 bar).	
5. Shut off the air supply at T2.	
6. Make sure that the pressure at T2 does not decrease to less than 5 psi (0.35 bar) in 15 minutes.	- makes sure that the inward relief valve is closed.
7. If the test is satisfactory, continue with step 10.	
8. If the test pressure cannot be maintained then do the functional test of the ACT vent valve, (Ref. para. 1. B. (5)).	
9. Do the test again until step. 6. is satisfactory.	

ACTION	RESULT
10. On the circuit breaker panel 133VU: - Close the L/G PROX DET & RELAYS SYS 2/FLT/GND circuit breaker 1GB (line 331/V52).	- the aircraft returns to the ground condition - the Air Shut-Off Valve closes - the ACT 1 Vent Valve opens.
11. Make sure that the air pressure at T2 reduces to zero.	
12. On the circuit breaker panel 132VU: - Close the FUEL/FUELLING/HI LVL circuit breaker 6QJ (line 321/P57).	- The high level sensors return to the normal condition in all the tanks.
13. Do the Close-Up procedure (Ref. step (4)).	

(3) Not applicable.

(4) Close-Up
  (a) De-activate the ECAM display units as follows:
    1 On the flight-compartment center-pedestal, turn the LEFT and RIGHT DISPLAY rotary switches to OFF.
    2 Release (out) the ECAM SGU 1 and 2 P/BSW's.
  (b) De-energize the aircraft electrical network (Ref. 24-41-00, P. Block 301)
  (c) Disconnect the ground air supply from self-sealing test point T2.
  (d) Make sure that the work area is clean and clear of tools and miscellaneous items of equipment.
  (e) Install the panel section of the sidewall lining aft of STA3090/FR54.3 (Ref. 28-12-00, P. Block 601).
  (f) Install the right hand section of heat shield (Ref. 28-11-36, P. Block 401).
  (g) If necessary, install the cargo container(s) (Ref. 25-52-00, P. Block 1).
  (h) Close the aft cargo-compartment door (Ref. 52-30-00, P. Block 1) and remove the access platform.
  (j) Refuel or defuel the aircraft to the required fuel load (Ref. 12-11-28 or 28-25-00, P. Block 301)

R ADDITIONAL CENTER TANK PUMP 14QH - REMOVAL/INSTALLATION

WARNING : LANDING GEAR - MAKE CERTAIN GROUND SAFETIES AND CHOCKS ARE IN POSITION.
FLIGHT CONTROLS - MAKE CERTAIN GROUND SAFETIES AND NOTICES ARE IN POSITION.
OBSERVE THE SAFETIES PRECAUTIONS IN 28-00-00, P. BLOCK 301.
MAKE CERTAIN THAT FIRE FIGHTING EQUIPMENT IS AVAILABLE AND ADEQUATE.
BEFORE POWER IS SUPPLIED TO THE AIRCRAFT.
MAKE CERTAIN THAT ELECTRICAL CIRCUITS UPON WHICH WORK IS IN PROGRESS ARE ISOLATED.

1. Equipment and Materials

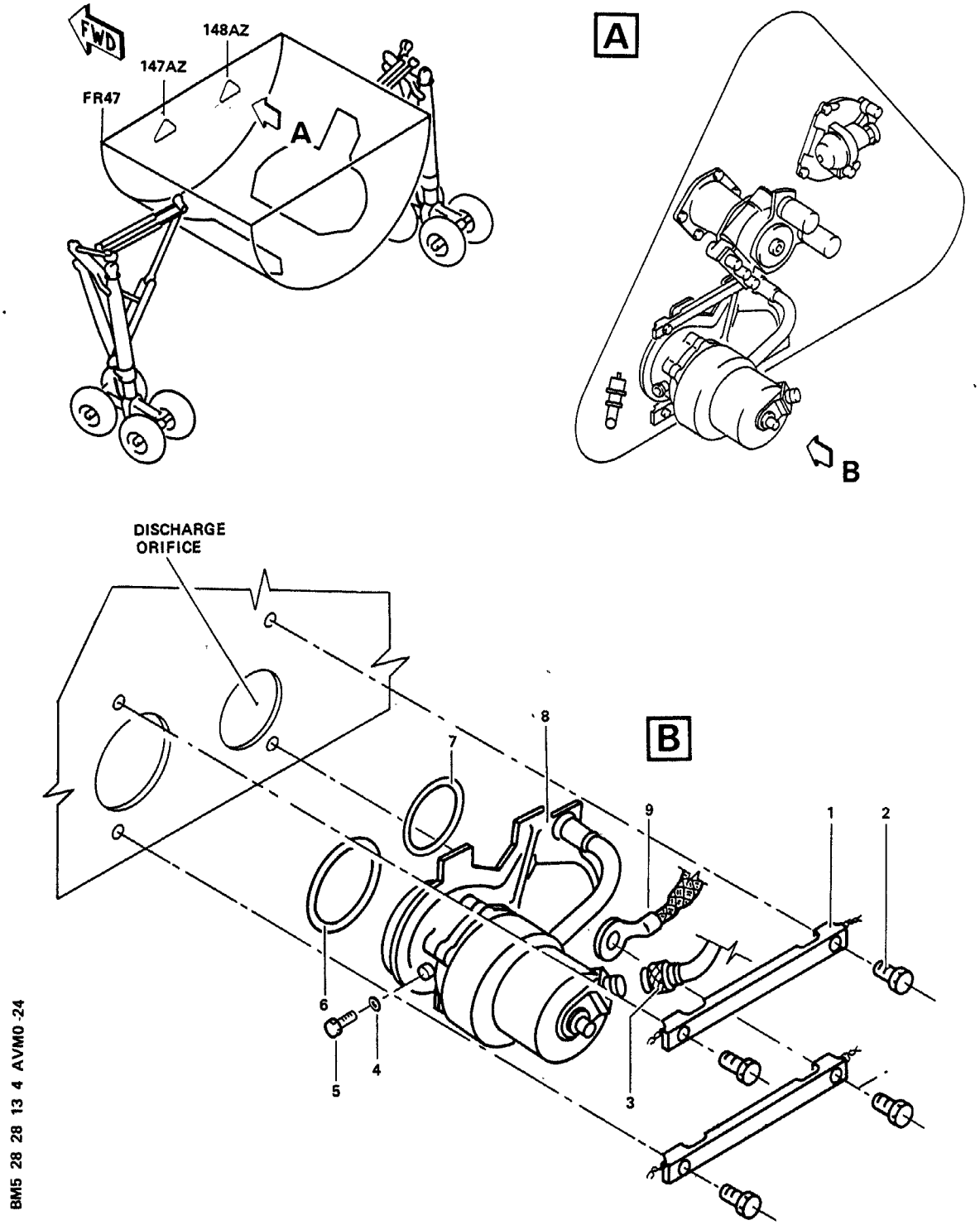
ITEM	DESIGNATION
A.	Access Platform 2.6 m (8 ft. 8 in.)
B.	Container
C.	Torque Wrench 0 to 1.13 m.daN (0 to 100 lbf. in.)
D.	Circuit Breaker Safety Clips
E.	O-Rings
F.	Sealing Rings
G.	Lockwire-Corrosion Resistant steel Dia. 0.8 mm (0.032 in.)
H.	Liquid Paraffin (Local Purchase)
I. Material No. 01-001	Fuel (Ref. 20-31-00)
Referenced Procedures	
- 28-00-00, P. Block 301	Fuel
- 32-12-11, P. Block 301	Main Gear Main Door- Ground Door(s) Opening

2. Procedure
(Ref. Fig. 401)

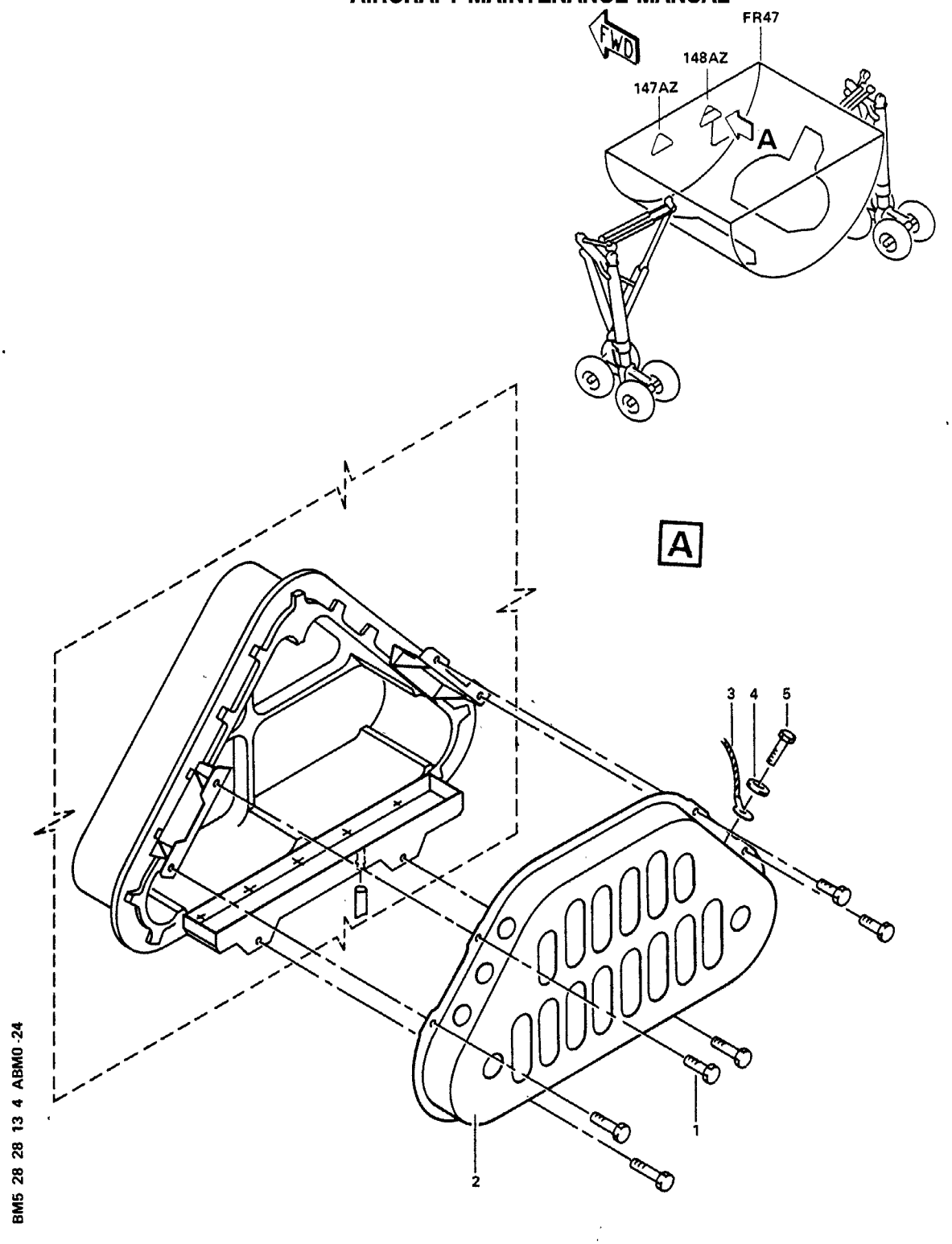
A. Job Set-Up
(1)Open, safety and tag the following circuit breakers :

PANEL	SERVICE	IDENT.	LOCATION
132VU	FUEL/CTR TK/R/PUMP/CTL	64QA	323/M59
132VU	FUEL/CTR TK/R/PUMP/WARN	102QA	322/N59
132VU	FUEL/AUX TK/VENT & PRESS VALVE	3QH	325/K57
132VU	FUEL/AUX TK/XFR VALVE/MOTOR 1	4QH	325/K58

(2)Open right main gear door (Ref. 32-12-11, P. Block 301).
(3)Position access platform.
(4)Removal of fairing
(Ref. Fig. 402)
(a)Remove screw (5), washer (4) and disconnect bonding strip (3).
(b)Remove screws (1) and remove fairing (2).
(5)Place fluid recovery container under transfer pump.



ACT Pump
Figure 401



Fairing
Figure 402

B. Removal
(1)Disconnect and cap electrical connector (3).
(2)Disconnect bonding strip (9) from support of the pump (8).
(3)Cut lockwire and unscrew the pump clamp retaining screws (2) approximately 6 mm (0.25 in.) ; withdraw pump (8) to allow the mounting plate flapper valve assemblies to close.
(4)Cut lockwire ; unlock and remove drain plug (5). Remove and discard sealing ring (4).
Allow the fuel to drain.
(5)Remove pump clamp plate (1) and retaining screws (2) and withdraw pump (8).
NOTE : A restrictor in the mounting plate adapter discharge orifice is clamped in position by the pump. Make certain that the restrictor does not fall out when the pump is removed.
(6)Remove and discard O-rings (6) and (7).

C. Installation
(1)Replace sealing ring (4) of drain plug (5) and apply liquid paraffin to it. TORQUE to between 0.73 and 0.85 m.daN (65 and 75 lbf. in.) and wirelock drain plug (5).
(2)Lubricate new O-rings (6) and (7) with Material No. 01-001 and install in appropriate grooves.
(3)Install pump (8) in housing until stop is reached.
NOTE : 1. Take care not to damage O-rings.
2. Make certain that the restrictor is correctly positioned in the mounting plate adapter discharge orifice before the pump is installed.
(4)Install clamp plates (1).
(5)Install the pump clamp retaining screws (2), TORQUE screws to between 1.02 and 1.13 m.daN (90 and 100 lbf. in.) and wirelock.
(6)Install bonding strip (9) on support of the pump.
(7)Remove protective cap and connect electrical connector (3).

R D. Test
R (a)Do an operational test of the ACT fuel transfer system (Ref. 28-28-00, P. Block 501).
R
R E. Close-Up
(1)Remove safety clips and tags and close circuit breakers 64QA, 102QA, 3QH and 4QH.
(2)Installation of fairing (Ref. Fig. 402)
(a)Install fairing (2) on manhole cover 148AZ : Install screws (1) and tighten.
(b)Install bonding strip (3) on support : install washer (4), screw (5) and tighten.
(3)Remove fluid recovery container.
(4)Make certain that working area is clean and clear of tools and miscellaneous items of equipment.
(5)Remove access platform.
(6)Close main gear door (Ref. 32-12-11, P. Block 301).

ADDITIONAL CENTER TANK PUMP MOUNTING (280232) - REMOVAL/INSTALLATION

WARNING : LANDING GEAR - MAKE CERTAIN GROUND SAFETIES AND CHOCKS ARE IN POSITION.
FLIGHT CONTROLS - MAKE CERTAIN GROUND SAFETIES AND NOTICES ARE IN POSITION.
OBSERVE THE SAFETY PRECAUTIONS IN 28-00-00, P. BLOCK 301.
MAKE CERTAIN THAT FIRE FIGHTING EQUIPMENT IS AVAILABLE AND ADEQUATE.
BEFORE POWER IS SUPPLIED TO THE AIRCRAFT MAKE CERTAIN THAT ELECTRICAL CIRCUITS UPON WHICH WORK IS IN PROGRESS ARE ISOLATED.

1. Equipment and Materials

ITEM	DESIGNATION
A.	Access Platform 2.6 m (8 ft. 8 in.)
B.	Container
C.	Circuit Breaker Safety Clips
D.	O-Rings
E.	Protective Caps.
F. Material No. 01-001	Fuels (Ref. 20-31-00)
G. Material No. 16-001	Structure Paints (Ref. 20-31-00)
Referenced Procedures	
- 12-11-28, P. Block 1	Fuel Tank Replenishing
- 28-00-00, P. Block 301	Fuel
- 28-10-00, P. Block 301	Storage
- 28-11-29, P. Block 401	Center Tank Manhole Cover
- 28-28-13, P. Block 401	Additional Center Tank Pump
- 32-12-11, P. Block 301	Main Gear Main Door - Ground Door(s) Opening
- 28-25-00, P. Block 301	Refuel/Defuel System

2. Procedure

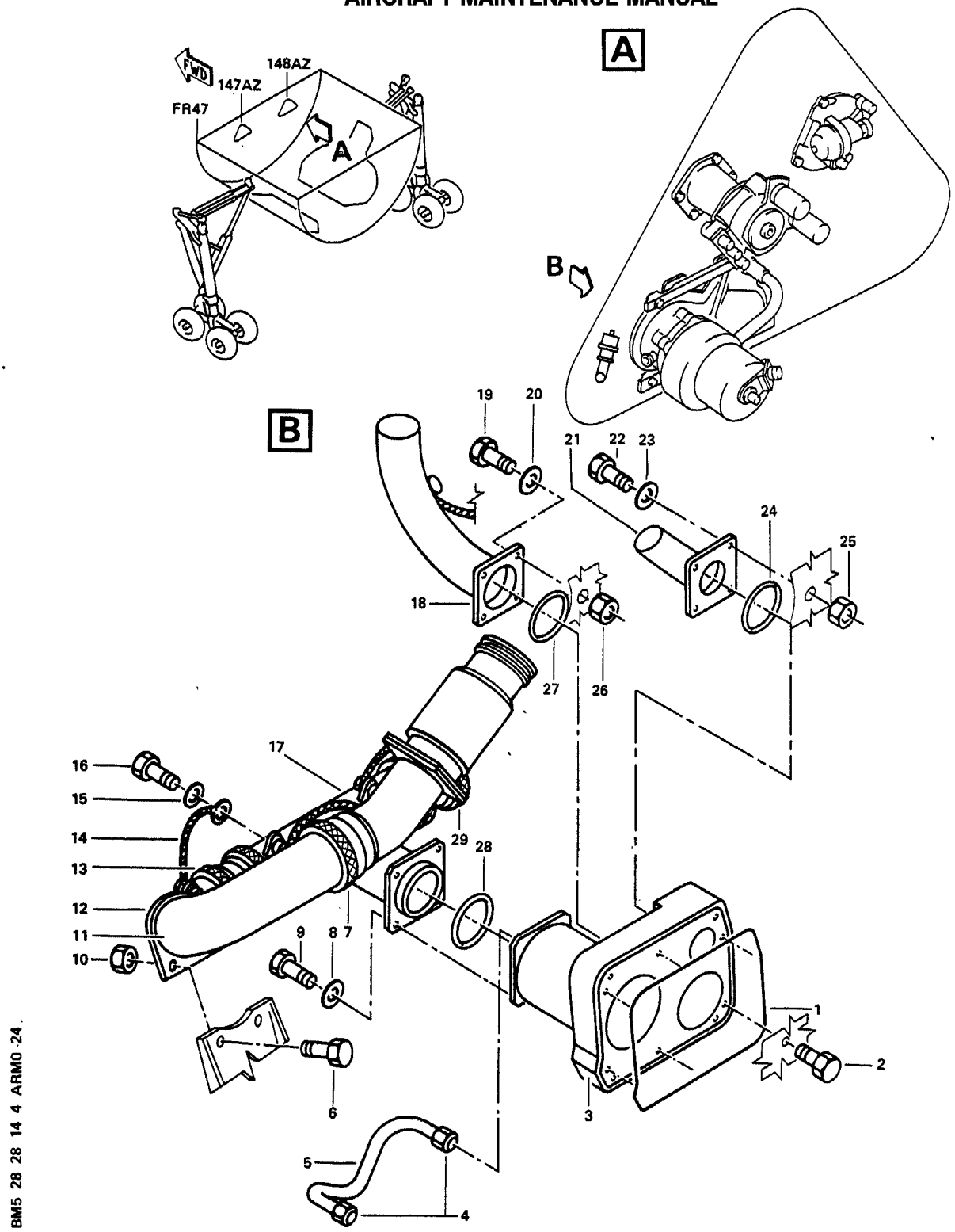
(Ref. Fig. 401)

A. Job Set-Up

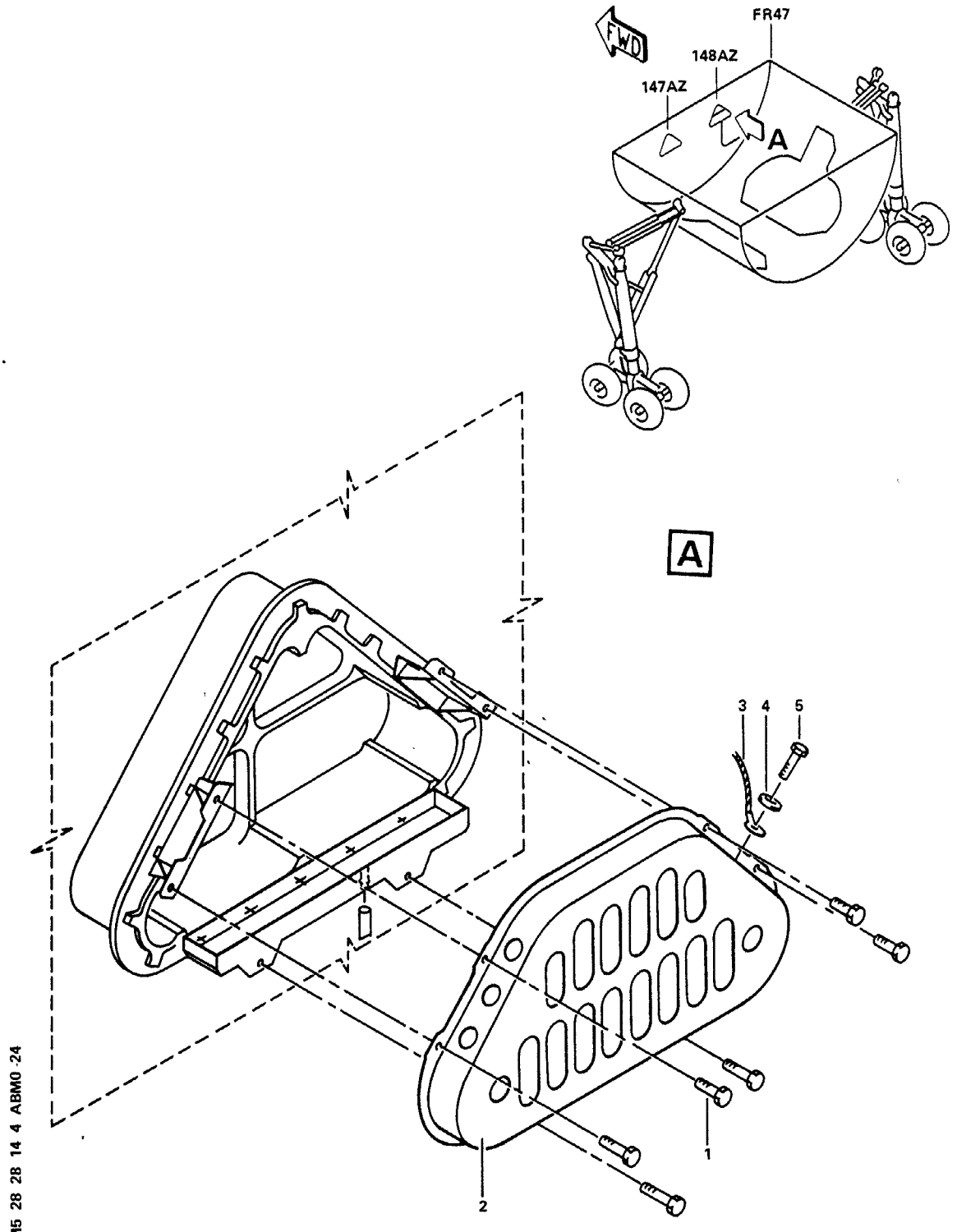
(1)Open, safety and tag the following circuit breakers :

PANEL	SERVICE	IDENT.	LOCATION
132VU	FUEL/CTR TK/R/PUMP/CTL	64QA	323/M59
132VU	FUEL/CTR TK/R/PUMP/WARN	102QA	322/N59
132VU	FUEL/AUX TK/VENT & PRESS VALVE	3QH	325/K57
132VU	FUEL/AUX TK/XFR VALVE/MOTOR1	4QH	325/K58

(2)Defuel center tank (Ref. 28-25-00, P. Block 301).
(3)Open right main landing gear door (Ref. 32-12-11, P. Block 301).
(4)Position access platform.
(5)Remove fairing.
(Ref. Fig. 402)
(a)Remove screw (5), washer (4) and disconnect bonding strip (3).
(b)Remove screw (1) and remove fairing (2).



ACT Pump Mounting
Figure 401



Fairing
Figure 402

(6)Remove auxiliary tank transfer pump (Ref. 28-28-13, P. Block 401).
(7)Remove manhole cover 147AZ (Ref. 28-11-29, P. Block 401).
(8)Gain access to center tank and observe prescribed safety precautions (Ref. 28-00-00, P. Block 301 and 28-10-00, P. Block 301).
(9)Position recovery container.

B. Removal
(1)Unscrew nuts (4) and disconnect tube (5).
(2)Remove nuts (10), screws (6) so as to free securing clamp (12) from its bracket.
(3)Remove screw (16), washer (15) ; remove bonding strip (14).
(4)Remove screws (9), washers (8).
(5)Unscrew knurled nuts (7) and (13) ; remove fuel line (11). Install protective caps.
(6)Unscrew knurled nut (29). Remove fuel line (17). Discard o-ring (28). Install protective caps.
NOTE : If removal of line (17) requires a greater clearance, unscrew couplings of closest lines.
(7)Unscrew nuts (26). Remove screws (19) and washers (20).
(8)Remove fuel line (18) and discard o-ring (27).
(9)Unscrew nuts (25). Remove screws (22) and washers (23).
(10)Remove fuel line (21) and discard o-ring (24).
(11)Remove screws (2) ; remove fuel pump mounting plate (3) ; discard o-ring (1).

C. Installation
NOTE : Take care not to damage o-rings
(1)Lubricate with Material No. 01-001 and install new O-ring (1) ; install new fuel pump mounting plate (3) ; install and tighten screws (2).
(2)Lubricate with material No. 01-001 and install new o-ring (24) ; install fuel line (21); install washers (23), screws (22), nuts (25) ; tighten nuts.
(3)Lubricate with material No. 01-001 and install new o-ring (27) ; install fuel line (18) ; install washers (20), screws (19), nuts (26) ; tighten nuts.
(4)Remove protective caps. Lubricate with material No. 01-001 and install new o-ring (28) and fuel line (17). Screw knurled nut (29).
(5)Remove protective caps. Install fuel line (11) and screw knurled nuts (7) and (13).
(6)Install washers (8), screw (9) and tighten.
(7)Install bonding strip (14), washer (15), screw (16) ; tighten screw.
(8)Install screws (6) and nuts (10) to secure clamp (12) to its bracket.
(9)Install tube (5) and tighten nuts (4).
R (10)Apply coat of paint with material No. 16-001 on screws and nuts.
R
R D. Test
R (1)Do an operational test of the ACT fuel transfer system (Ref. 28-28-00
R P. Block 501).
R (2)Do a physical inspection of the area around the pump mounting, looking
R for any fuel leakage.

R E. Close-Up

(1)Remove safety clips and tags and close circuit breakers 64QA, 102QA, 3QH and 4QH.

(2)Remove recovery container.

(3)Make certain that working area is clean and clear of tools and miscellaneous items of equipment.

(4)Close manhole cover (Ref. 28-11-29, P. Block 401).

(5)Install auxiliary tank tranfer pump (Ref. 28-28-13, P. Block 401).

(6)Refuel center tank (Ref. 12-11-28, P. Block 1).

(7)Installation of fairing (Ref. Fig. 402)

(a)Install fairing (2) on manhole cover 148AZ ; install screws (1) and tighten.

(b)Install bonding strip (3) on support. Install washer (4), screw (5) and tighten.

(8)Remove access platform.

(9)Close main landing gear right door (Ref. 32-12-11, P. Block 301).

ACT PUMP PRESSURE SWITCH 15QH - REMOVAL/INSTALLATION

WARNING : LANDING GEAR - MAKE CERTAIN GROUND SAFETIES AND CHOCKS ARE IN POSITION.
FLIGHT CONTROLS - MAKE CERTAIN GROUND SAFETIES AND NOTICES ARE IN POSITION.
OBSERVE THE SAFETY PRECAUTIONS IN 28-00-00, P. BLOCK 301.
MAKE CERTAIN THAT FIRE FIGHTING EQUIPMENT IS AVAILABLE AND ADEQUATE.
BEFORE POWER IS SUPPLIED TO THE AIRCRAFT, MAKE CERTAIN THAT ELECTRICAL CIRCUITS UPON WHICH WORK IS IN PROGRESS ARE ISOLATED.

1. Equipment and Materials

ITEM	DESIGNATION
A.	Access Platform 2.6 m (8 ft. 8 in.)
B.	Circuit Breaker Safety Clips
C.	Container
D.	O-Rings
E.	Corrosion Resistant Steel Lockwire 0.8 mm (0.032 in.)
F.	Lint - Free Cloth
G. Material No. 01-001	Fuel (Ref. 20-31-00)
Referenced Procedures	
- 28-00-00, P. Block 301	Fuel
- 32-12-11, P. Block 301	Main Gear Main Door - Ground Door(s) Opening

2. Procedure

(Ref. Fig. 401)

A. Job Set-Up

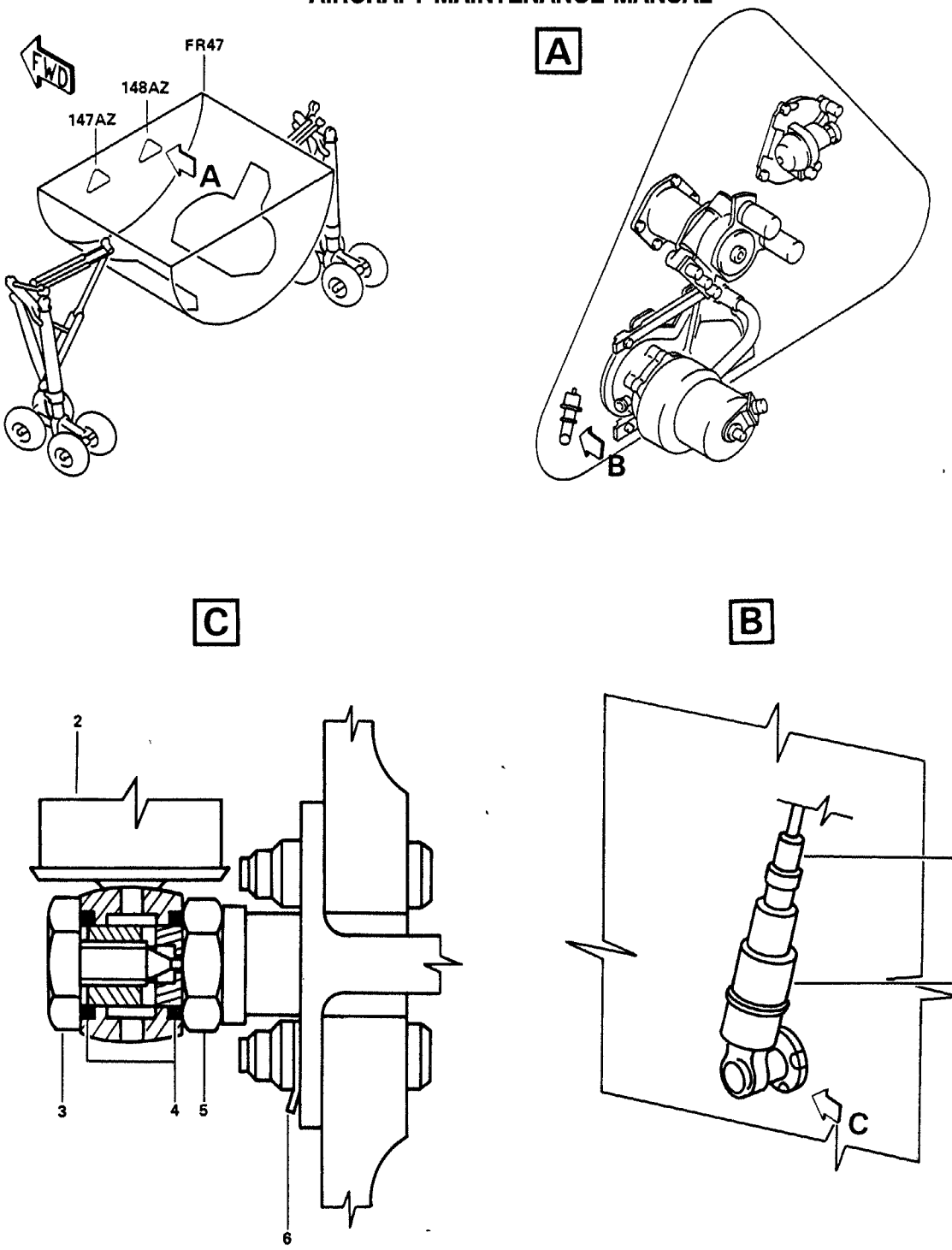
(1)Open safety and tag the following circuit breakers :

PANEL	SERVICE	IDENT.	LOCATION
132VU	FUEL/CTR TK/R/PUMP/CTL	64QA	323/M59
132VU	FUEL/CTR TK/R/PUMP/WARN	102QA	322/N59
132VU	FUEL/AUX TK/VENT & PRESS VALVE	3QH	325/K57
132VU	FUEL/AUX TK/XFR VALVE/MOTOR1	4QH	325/K58

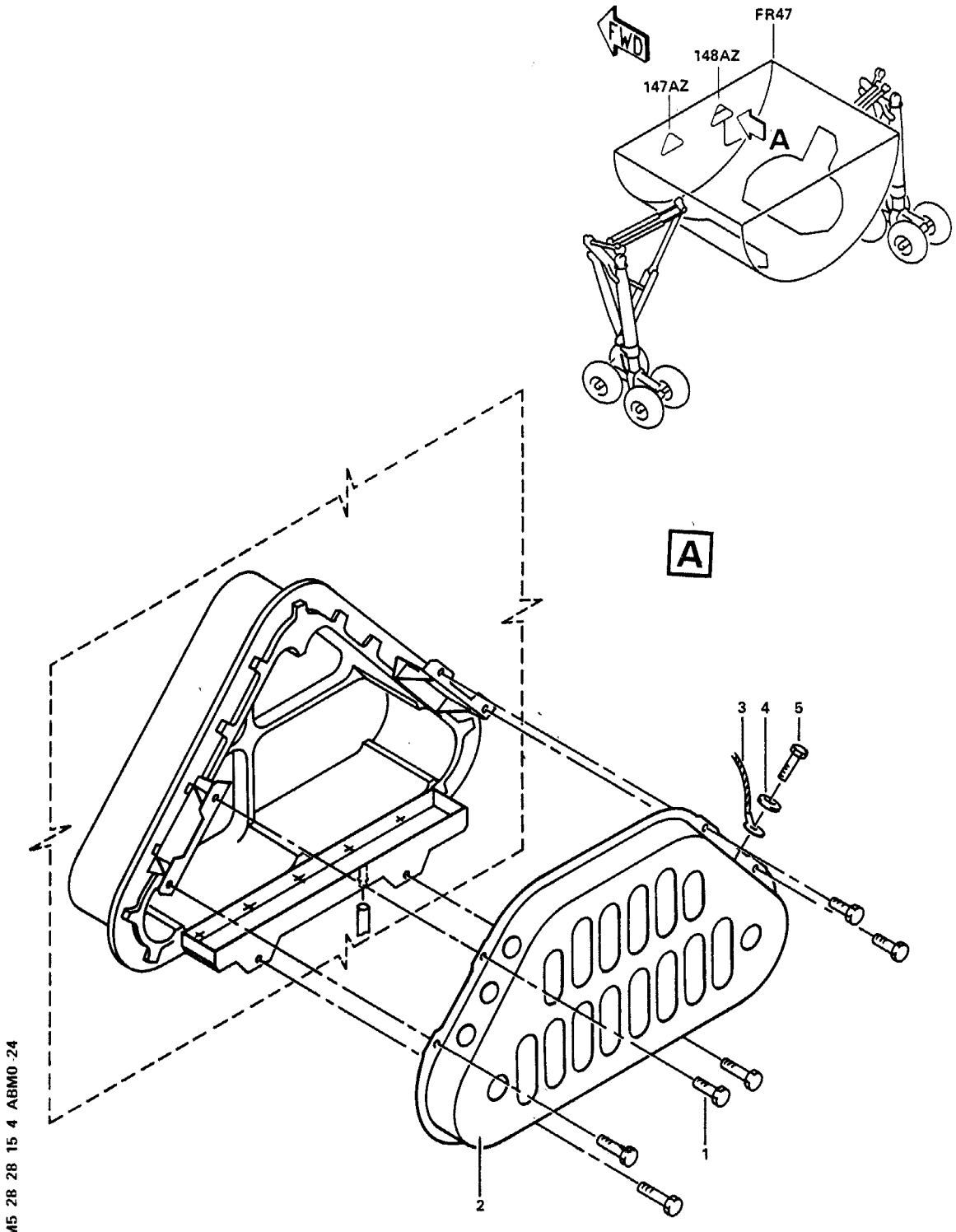
(2)Open appropriate main gear door (Ref. 32-12-11, P. Block 301).
(3)Position access platform.
(4)Removal of fairing
(Ref. Fig. 402)
(a)Remove screw (5), washer (4) and disconnect bonding strip (3).
(b)Remove screws (1) and remove fairing (2).
(5)Place fluid recovery container under pressure switch (2).

B. Removal

(1)Disconnect and cap electrical connector (1).
(2)Remove lockwire between plug (3), sealing valve (5) and tag (6).



ACT Pump Pressure Switch
Figure 401



Fairing
Figure 402

(3)Loosen and remove plug (3).
(4)Remove pressure switch (2).
(5)Remove the two O-rings (4) and discard.
(6)Check for absence of leakage at sealing valve (5). Cap sealing valve.

C. Installation
(1)Remove blanking cap from sealing valve (5).
(2)Smear new O-rings (4) with Material No. 01-001 and install in pressure switch (2).
(3)Install pressure switch (2) on sealing valve (5).
(4)Screw plug (3) onto sealing valve (5) and safety with lockwire between plug (3), sealing valve (5) and tag (6).
(5)Remove any trace of fuel using lint-free cloth.
(6)Remove protective cap and connect electrical connector (1).

R
R D. Test
R (1)Do an operational test of the ACT fuel transfer system (Ref. 28-28-00
R P. Block 501).
R
R E. Close-Up
(1)Installation of fairing (Ref. Fig. 402)
(a)Install fairing (2) on manhole cover 148AZ :
Install screws (1) and tighten.
(b)Install bonding strip (3) on support, install washer (4), screw (5) and tighten.
(2)Remove safety clips and tags and close circuit breakers 64QA, 102QA, 3QH and 4QH.
(3)Remove fluid recovery container.
(4)Make certain that working area is clean and clear of tools and miscellaneous items of equipment.
(5)Close main gear door (Ref. 32-12-11, P. Block 301).
(6)Remove access platform.

ACT TRANSFER VALVE (280238) - REMOVAL/INSTALLATION

WARNING : LANDING GEAR - MAKE CERTAIN GROUND SAFETIES AND CHOCKS ARE IN POSITION.
FLIGHT CONTROLS - MAKE CERTAIN GROUND SAFETIES AND NOTICES ARE IN IN POSITION.
OBSERVE THE SAFETY PRECAUTIONS IN 28-00-00, P. BLOCK 301.
MAKE CERTAIN THAT FIRE FIGHTING EQUIPMENT IS AVAILABLE AND ADEQUATE.
BEFORE POWER IS SUPPLIED TO THE AIRCRAFT MAKE CERTAIN THAT ELECTRICAL CIRCUITS UPON WHICH WORK IS IN PROGRESS ARE ISOLATED.

1. Equipment and Materials

ITEM	DESIGNATION
A.	Access Platform 2.5 m (8 ft)
B.	Circuit Breaker Safety Clips
C.	Container
D.	O-Rings
E. Material No. 01-001	Fuel (Ref. 20-31-00)
F. Material No. 16-001	Structure Paints (Ref. 20-31-00)
Referenced Procedures	
- 28-00-00, P. Block 301	Fuel
- 28-10-00, P. Block 301	Storage
- 28-11-29, P. Block 401	Center Tank Manhole Cover
- 28-28-17, P. Block 401	ACT Transfer Valve Actuator
- 32-12-11, P. Block 301	Main Gear Main Door - Ground Door(s) Opening
- 28-25-00, P. Block 301	Refuel/Defuel System

2. Procedure

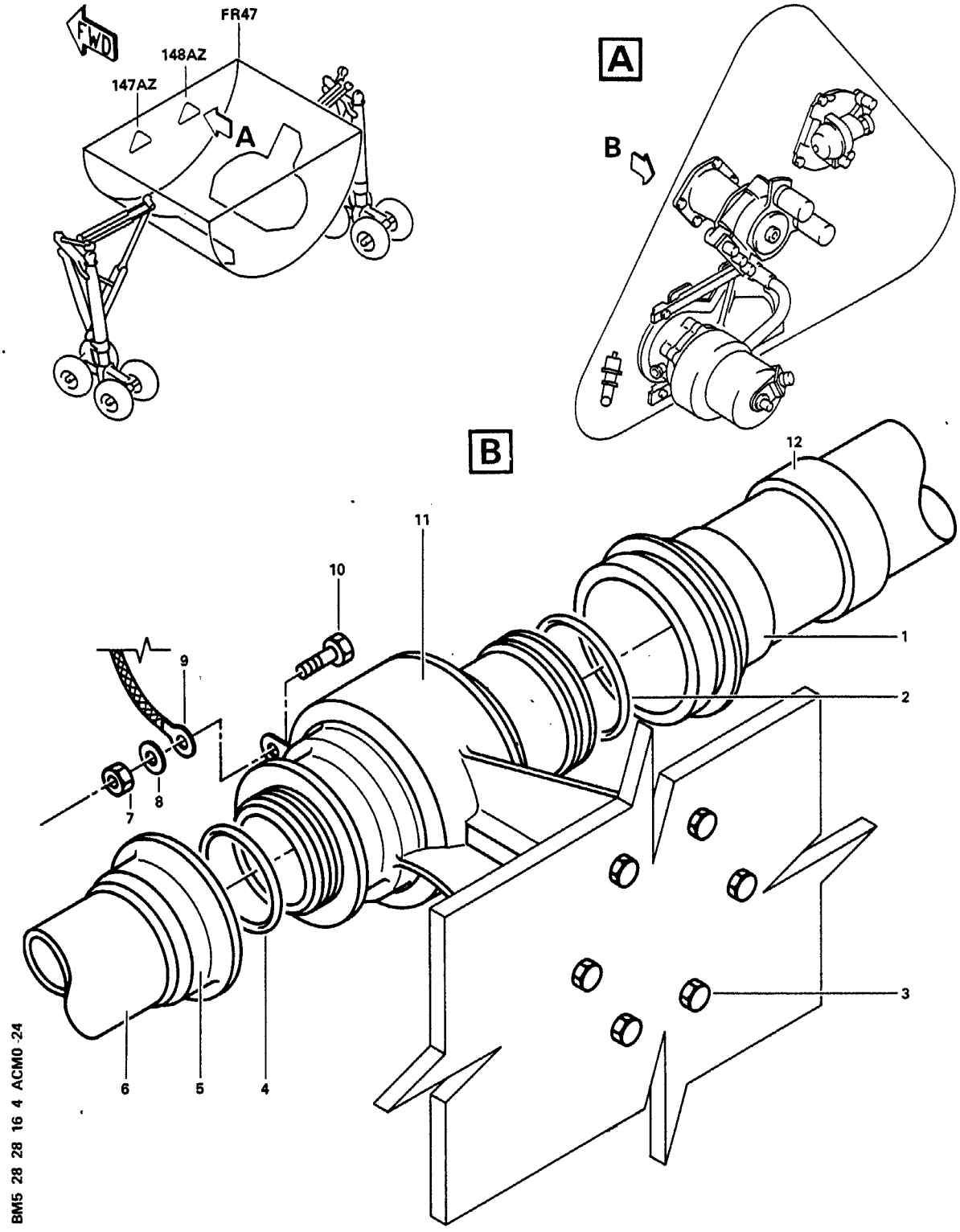
(Ref. Fig. 401)

A. Job Set-Up

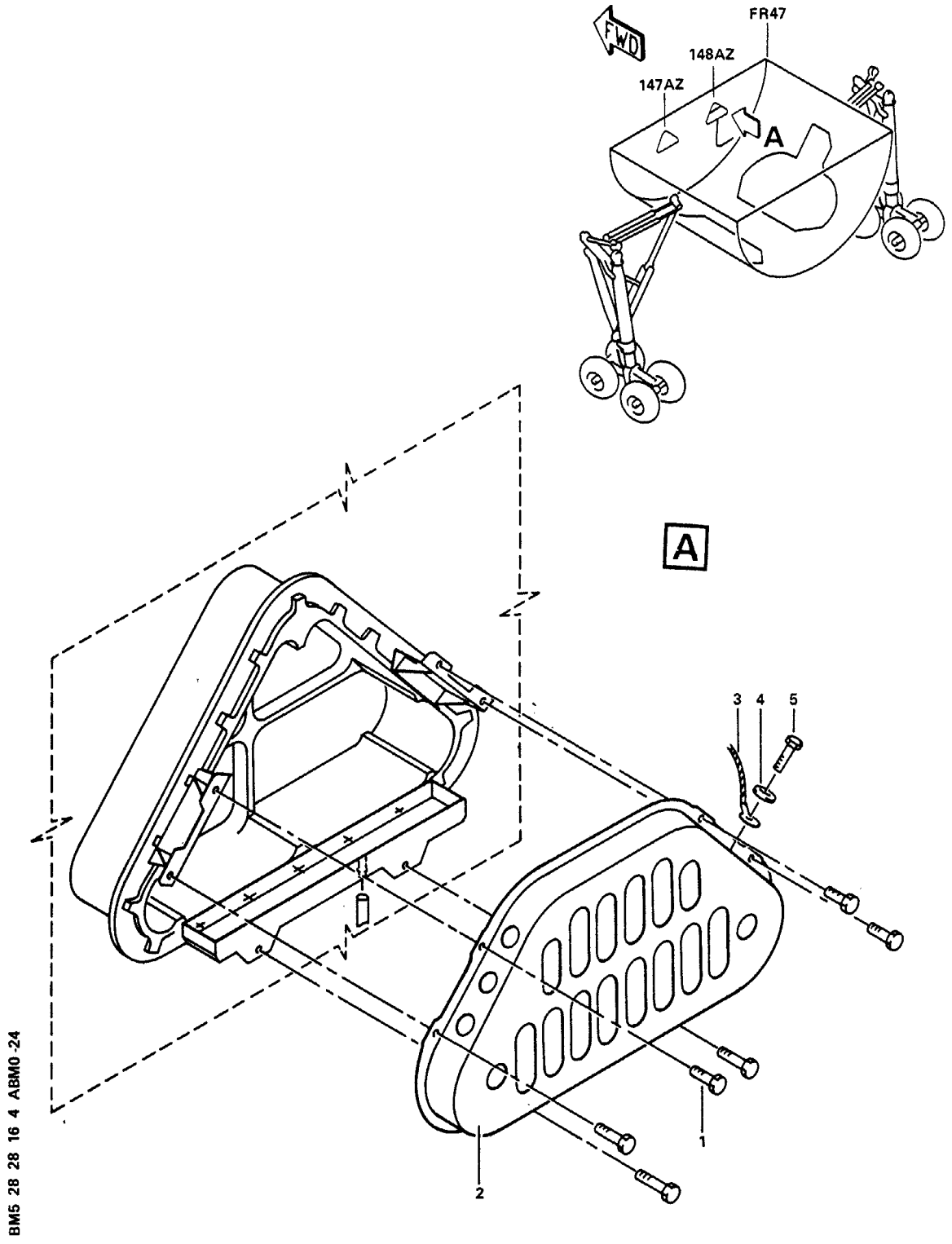
(1)Open, safety and tag the following circuit breakers :

PANEL	SERVICE	IDENT.	LOCATION
132VU	FUEL/CTR TK/R/PUMP/CTL	64QA	323/M59
132VU	FUEL/CTR TK/R/PUMP/WARN	102QA	322/N59
132VU	FUEL/AUX TK/VENT & PRESS VALVE	3QH	325/K57
132VU	FUEL/AUX TK/XFR VALVE/MOTOR 1	4QH	325/K58
132VU	FUEL/FUELLING/XFR/VALVE	2QU	321/P55

(2)Defuel center tank (Ref. 28-25-00, P. Block 301).
(3)Open right main gear door (Ref. 32-12-11, P. Block 301).
(4)Position access platform.
(5)Removal of fairing
(Ref. Fig. 402)
(a)Remove screw (5), washer (4) and disconnect bonding strip (3).
(b)Remove screws (1) and remove fairing (2).
(6)Remove manhole cover 147AZ (Ref. 28-11-29, P. Block 401).



ACT Transfer Valve
Figure 401



Fairing
Figure 402

(7)Gain access to center tank and observe prescribed safety precautions (Ref. 28-00-00, P. Block 301 and 28-10-00, P. Block 301).
(8)Place fluid recovery container under valve.
(9)Remove auxiliary transfer valve actuator (Ref. 28-28-17, P. Block 401).

B. Removal
(1)Unscrew sleeve (1) and disconnect line (12).
(2)Remove O-ring (2) and discard.
(3)Unscrew sleeve (5) and disconnect line (6).
(4)Remove O-ring (4) and discard.
(5)Remove nut (7) and washer (8).
(6)Remove screw (10) and bonding strip (9).
(7)Remove screws (3).
(8)Remove auxiliary transfer valve (11).

C. Installation
NOTE : Take care not to damage O-Rings.
(1)Install valve (11) on mounting base.
(2)Install screws (3).
(3)Install screw (10) and bonding strip (9).
(4)Install washer (8) and nut (7).
(5)Smear new O-ring (4) with Material No. 01-001 and install in appropriate groove in line (6).
(6)Connect line (6) and screw sleeve (5).
(7)Smear new O-ring (2) with Material No. 01-001 and install in appropriate groove in line (12).
(8)Connect line (12) and screw sleeve (1).
(9)Apply a coat of paint with material No. 16-001 on screws.

D. Close-Up
(1)Install auxiliary transfer valve actuator (Ref. 28-28-17, P. Block 401).
(2)Remove safety clips and tags and close circuit breakers 64QA, 102QA, 3QH, 4QH and 2QU.
(3)Remove fluid recovery container.
(4)Make certain that working area is clean and clear of tools and miscellaneous items of equipment.
(5)Install manhole cover 147AZ (Ref. 28-11-29, P. Block 401).
(6)Refuel center tank (Ref. 12-11-28, P. Block 1).
(7)Installation of fairing (Ref. Fig. 402)
(a)Install bonding strip (3) on support. Install washer (4), screw (5) and tighten.
(b)Install fairing (2) on manhole cover 148AZ ; install screws (1) and tighten.
(8)Remove access platform.
(9)Close main gear door (Ref. 32-12-11, P. Block 301).

R
R Ref. MMEL Sect. 1-28, Item 45
R

WARNING : LANDING GEAR - MAKE CERTAIN THAT GROUND SAFETIES AND WHEEL CHOCKS ARE IN POSITION.
FLIGHT CONTROLS - MAKE CERTAIN THAT GROUND SAFETIES AND NOTICES ARE IN POSITION.
OBSERVE SAFETY PRECAUTIONS IN 28-00-00, P. BLOCK 301.
MAKE CERTAIN THAT THE FIRE EQUIPMENT IS AVAILABLE, ADEQUATE AND NEAR TO THE WORK AREA BEFORE YOU START THE MAINTENANCE OPERATIONS.
MAKE SURE THAT THE ELECTRICAL CIRCUITS UPON WHICH THE WORK IS IN PROGRESS ARE ISOLATED BEFORE POWER IS SUPPLIED TO THE AIRCRAFT.

R
R CAUTION : USE THIS PROCEDURE IN ACCORDANCE WITH THE REQUIREMENTS OF THE MMEL.
R

1. Deactivation

A. Reason for the Job
(1)To make certain that the inoperative valve is in the shut position.

B. Equipment and Materials

ITEM	DESIGNATION
A.	Access Platform 2.5 m (8 ft).
B.	Warning Notice informing the crew that the ACT transfer valve is locked SHUT mechanically.
C.	Warning placard prohibiting use of ACT Refuel/Defuel valve switch in NORM and OPEN positions.
D. D97B00-001	Actuator - Mechanical
E.	Circuit Breaker Safety Clips and Tags.
F.	Lockwire, Corrosion Resistant Steel 0.8 mm (0.032 in.).
Referenced Procedures	
- 20-28-11, P. Block 1	Electrical Bonding
- 28-00-00, P. Block 301	Fuel - General
- 28-25-00, P. Block 301	Refuel/Defuel System
- 28-28-16, P. Block 401	Valve - ACT Transfer
- 28-28-17, P. Block 401	Actuator - ACT Transfer Valve
- 32-12-11, P. Block 301	Door - Main Gear Main

C. Procedure
(1)Job set-up
(a)In the cockpit, on overhead panel 430VU, make certain that additional center tank pushbutton switch (19HQ) is released-out.
(b)Open, safety and tag the following circuit breakers :

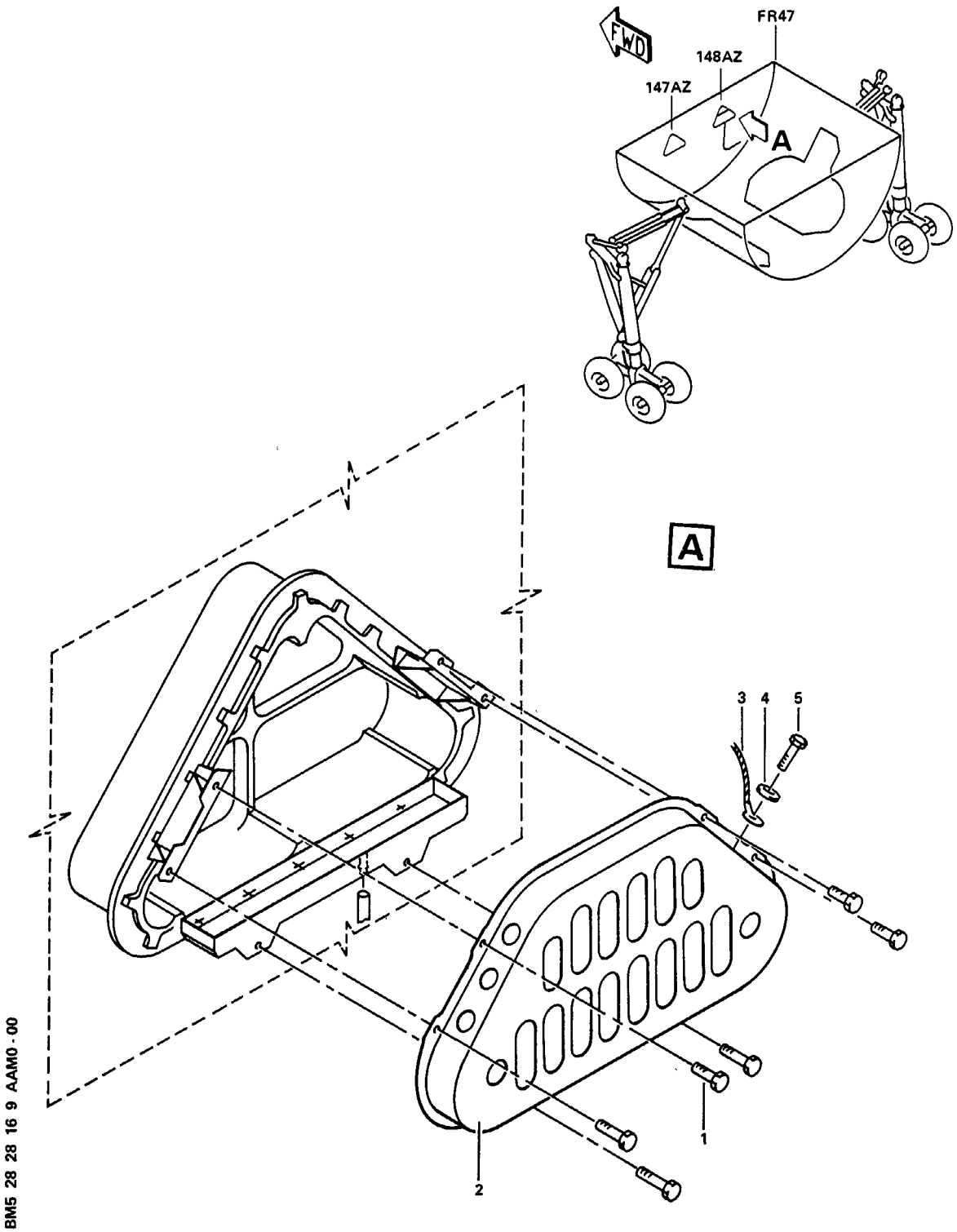
PANEL	SERVICE	IDENT.	LOCATION
FUEL - ACT PUMP CTL XFR VALVE MOTOR 1		4QH	325/K58 132VU
FUEL - ACT PUMP CTL XFR VALVE MOTOR 2		5QH	325/K59 132VU

(c)Defuel center tank (Ref. 28-25-00, P. Block 301).
(d)Open RH main landing gear main door (Ref. 32-12-11, P. Block 301).
(e)Position access platform.
(f)Removal of fairing on manhole cover 148AZ.
(Ref. Fig. 901)
1 Remove screw (5), washer (4) and disconnect bonding strip (3).
2 Remove screws (1) and remove fairing (2).
3 Place fluid recovery container under ACT transfer valve actuator.

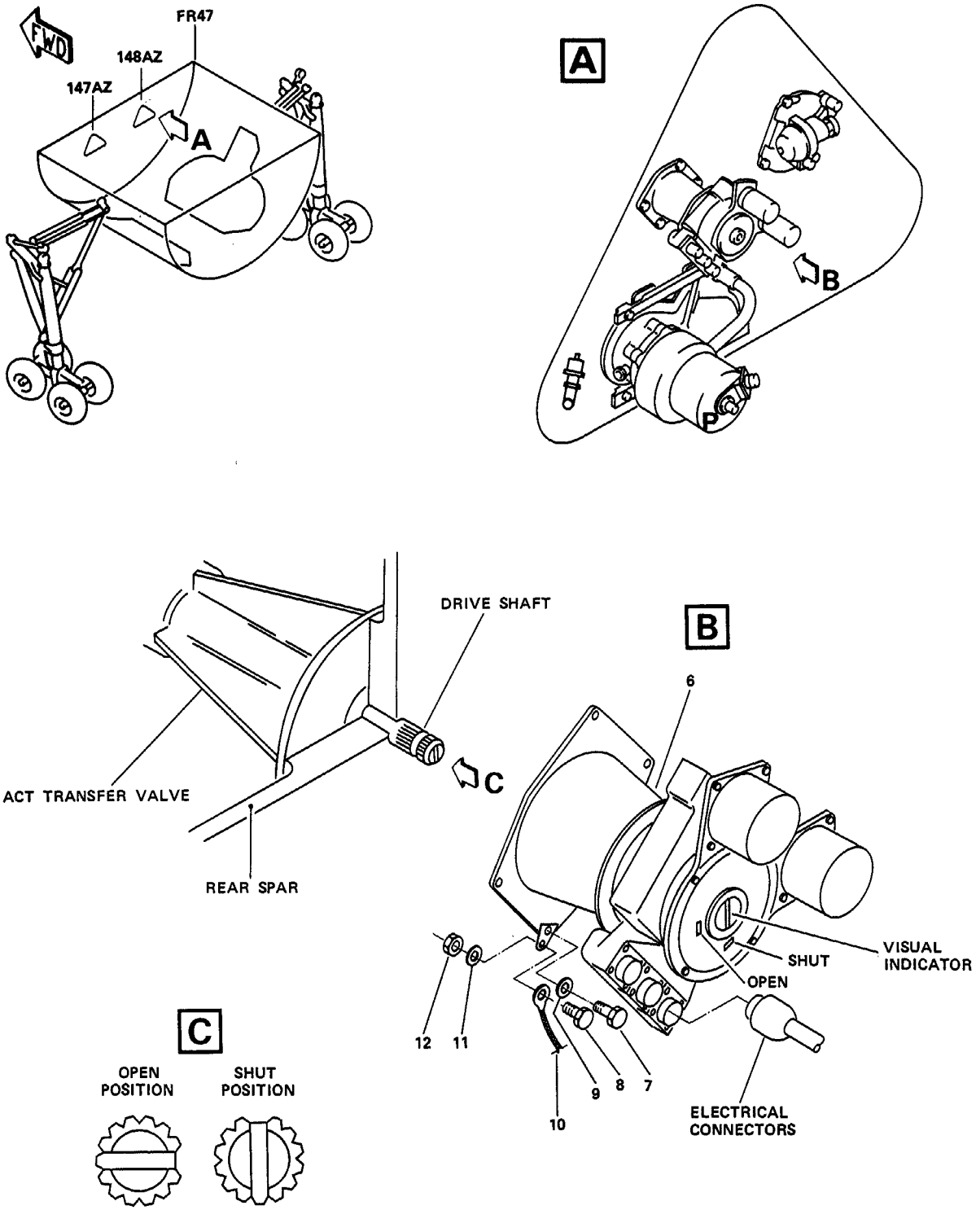
(2)Deactivation
(Ref. Fig. 902)
(a)Make certain that visual indicator on actuator shows SHUT.
(b)Disconnect, cap and stow electrical connectors 21QH-A, 21QH-B and 21QH-C from the actuator.
(c)Do this step if visual indicator on actuator does not show SHUT position.
1 Remove ACT transfer valve actuator (6) (Ref. 28-28-17, P. Block 401).
CAUTION : DURING THE FOLLOWING OPERATIONS, TAKE CARE NOT TO DAMAGE SHAFT SPLINES.
2 Install mechanical actuator P/N D97B00-001 using bolts (7) and washers (9).
3 Manually operate mechanical actuator control lever to rotate the valve drive shaft to SHUT position.
NOTE : If valve is jammed in the OPEN position or will not shut fully, the valve must be replaced (Ref. 28-28-16, P. Block 401).
4 Make certain that the position of the actuator spindle corresponds to that of the valve shaft. If necessary, manually operate actuator to obtain correct position.
5 Remove mechanical actuator P/N D97B00-001.

6 Install ACT transfer valve actuator (Ref. 28-28-17, P. Block 401) but leave electrically disconnected.
Make certain that electrical connectors are capped and stowed.
7 Secure bonding strap (10) to the ACT transfer valve actuator bonding tag using bolt (8), washer (11) and nut (12) (Ref. 20-28-11, P. Block 1).

(3)Close-up
(a)Make certain that working area is clean and clear of tools and miscellaneous equipments.
(b)Remove access platform.
(c)Close RH main landing gear door (Ref. 32-12-11, P. Block 301).
(d)Place a warning notice in the flight compartment telling that ACT transfer valve is deactivated.
(e)Open access door 144DR.
(f)Deactivate ACT Refuel/Defuel valve by placing switch (75QU) on panel



ACT Transfer Valve - Deactivation
Figure 901



ACT Transfer Valve - Deactivation
Figure 902

110VU in SHUT position and attach a warning placard prohibiting use of NORM and OPEN positions.

(g) Close access door 144DR.

(h) Make an appropriate entry in the aircraft technical log.

2. Reactivation

A. Make the ACT transfer valve fully operational as follows :

(1) Trouble shoot to identify the cause of ACT transfer valve malfunction and if necessary replace defective component as follows :

(a) ACT transfer valve fault - replace the valve (Ref. 28-28-16, P. Block 401).

(b) ACT transfer valve actuator fault - replace the actuator (Ref. 28-28-17, P. Block 401).

(2) Open access door 144DR.

(3) On panel 110VU, remove warning placard and place ACT Refuel/Defuel valve switch in NORM position and guarded.

(4) Close access door 144DR.

(5) Remove warning notice from flight compartment.

(6) Remove safety clips and tags and close circuit breakers 4QH and 5QH.

(7) Make an appropriate entry in the aircraft technical log.

WARNING : LANDING GEAR - MAKE CERTAIN GROUND SAFETIES AND CHOCKS ARE IN POSITION.
FLIGHT CONTROLS - MAKE CERTAIN GROUND SAFETIES AND NOTICES ARE IN IN POSITION.
OBSERVE THE SAFETY PRECAUTIONS IN 28-00-00, P. BLOCK 301.
MAKE CERTAIN THAT FIRE FIGHTING EQUIPMENT IS AVAILABLE AND ADEQUATE.
BEFORE POWER IS SUPPLIED TO THE AIRCRAFT MAKE CERTAIN THAT ELECTRICAL CIRCUITS UPON WHICH WORK IS IN PROGRESS ARE ISOLATED.

1. Equipment and Materials

ITEM	DESIGNATION
A.	Access Platform 2.5 m (8.3 ft)
B.	Circuit Breaker Safety Clips
Referenced Procedures	
- 28-10-00, P. Block 301	Storage
- 28-00-00, P. Block 301	Fuel
- 32-12-11, P. Block 301	Main Gear Main Door - Ground Door(s) Opening

2. Procedure

(Ref. Fig. 401)

A. Job Set-Up

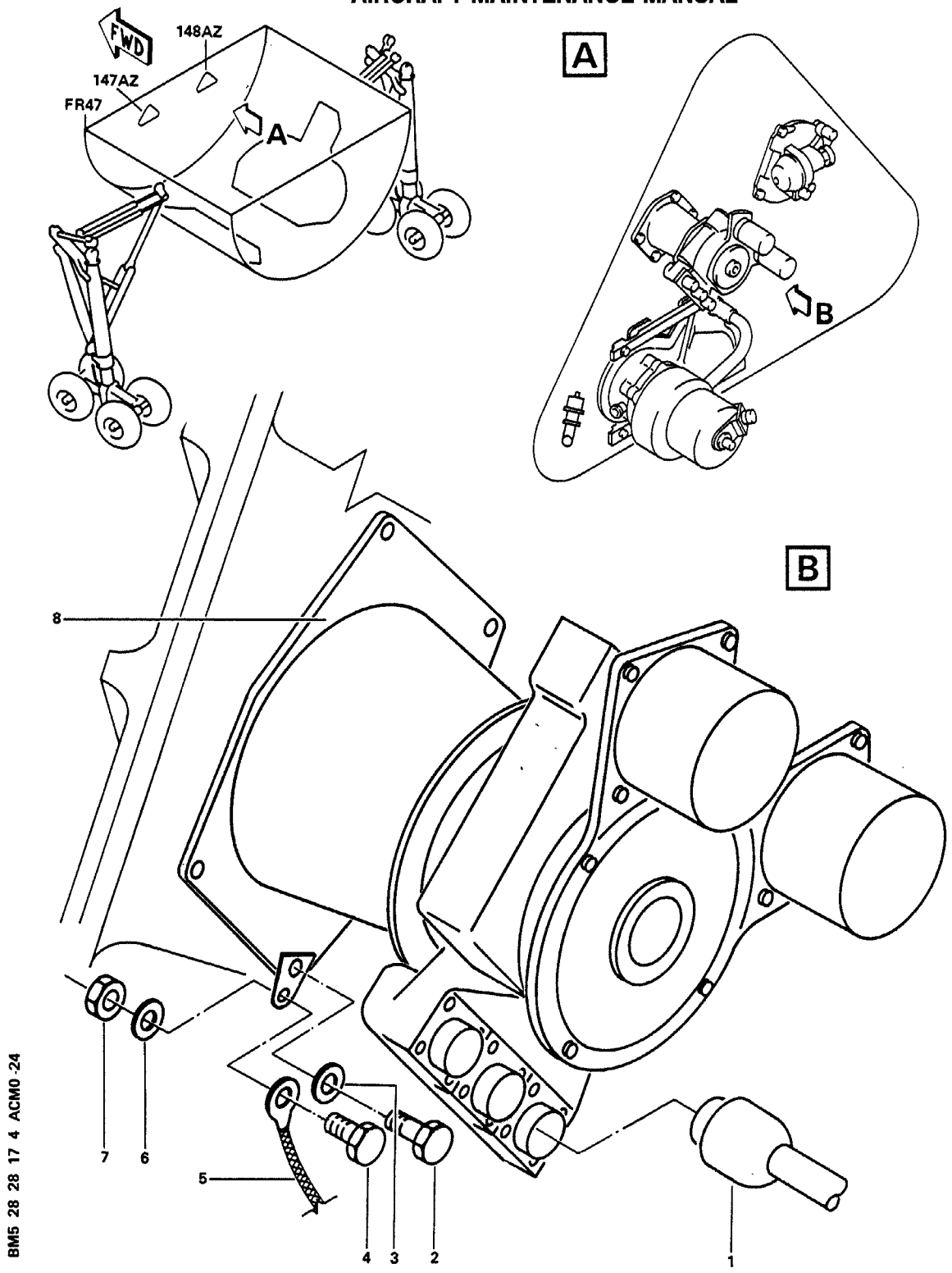
(1)Open, safety and tag the following circuit breakers :

PANEL	SERVICE	IDENT.	LOCATION
132VU	FUEL/CTR TK/R/PUMP/CTL	64QA	323/M59
132VU	FUEL/CTR TK/R/PUMP/WARN	102QA	323/N59
132VU	FUEL/AUX TK/VENT & PRESS VALVE	3QH	323/K57
132VU	FUEL/AUX TK/XFR VALVE/MOTOR1	4QH	323/K58
132VU	FUEL/FUELLING/XFR VALVE	2QU	323/P55

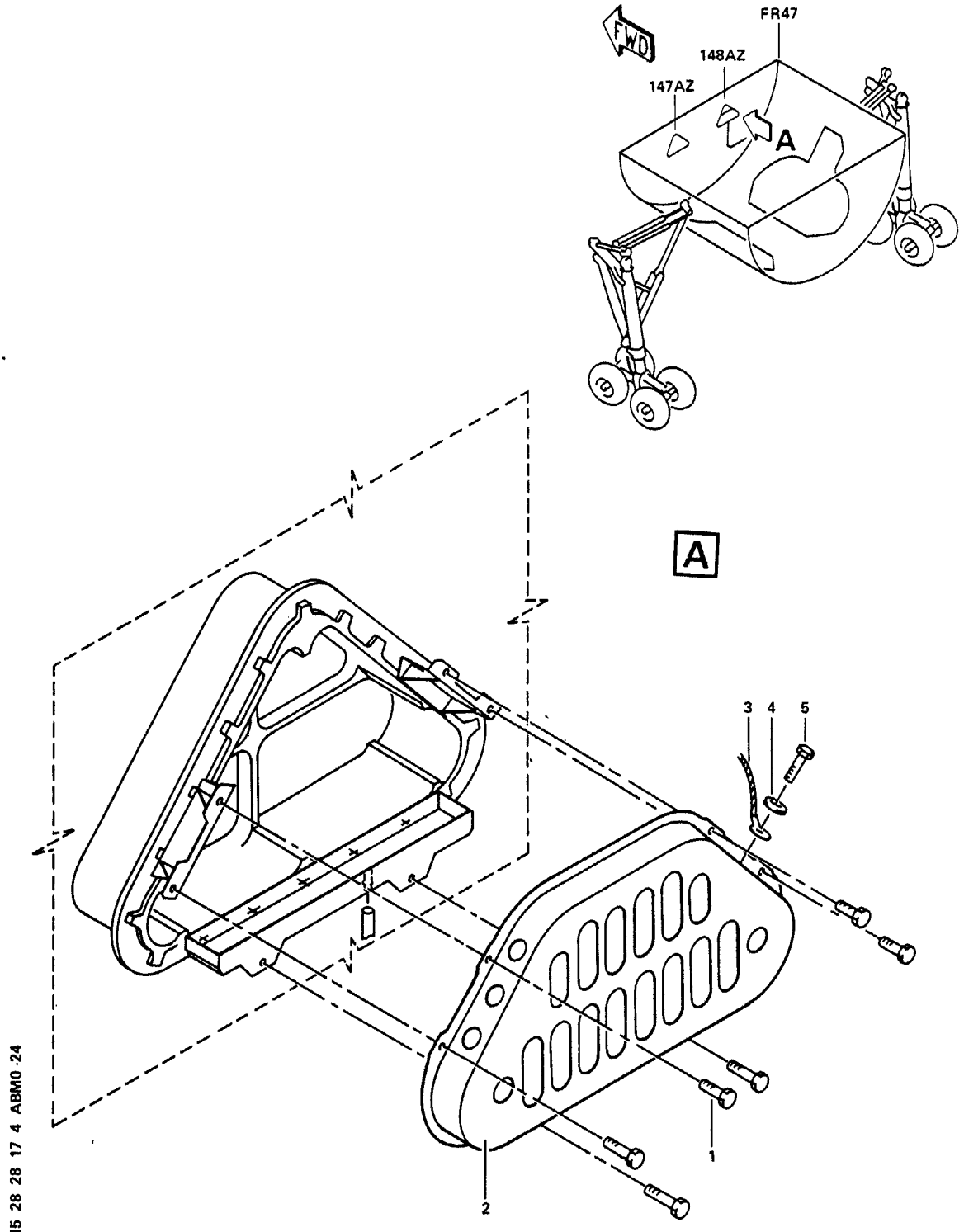
(2)Open right main gear door (Ref. 32-12-11, P. Block 301).
(3)Position access platform.
(4)Removal of fairing.
(Ref. Fig. 402)
(a)Remove screw (5), washer (4) and disconnect bonding strip (3).
(b)Remove screws (1) and remove fairing (2).
(5)Place fluid recovery container under actuator.

B. Removal

(1)Disconnect and cap electrical connectors (1).
(2)Remove nut (7), washer (6) and screw (4).
(3)Remove bonding strip (5).
(4)Remove screws (2) and washers (3).
(5)Remove actuator (8).



ACT Transfer Valve Actuator
Figure 401



Fairing
Figure 402

C. Installation
(1)Install actuator (8) on mounting base.
(2)Install washers (3) and screws (2).
(3)Install bonding strip (5) on support.
(4)Install screw (4), washer (6) and nut (7).
(5)Remove protective cap and connect electrical connectors (1).

D. Close-Up
(1)Installation of fairing (Ref. Fig. 402)
(a)Install fairing (2) on manhole cover 148AZ
Install screw (1) and tighten.
(b)Install bonding strip (3) on support. Install washer (4), screw (5) and tighten.
(2)Remove safety clips and tags and close circuit breakers 64QA, 102QA, 3QH, 4QH and 2QU.
(3)Remove fluid recovery container.
(4)Make certain that working area is clean and clear of tools and miscellaneous items of equipment.
(5)Close main gear door (Ref. 32-12-11, P. Block 301).
(6)Remove access platform.

PRESSURE REDUCING VALVE 280261 - REMOVAL/INSTALLATION

WARNING : OBEY THE SAFETY PRECAUTIONS IN 28-00-00, P. BLOCK 301 AND 28-10-00, P. BLOCK 301.
MAKE SURE THAT THE FIRE FIGHTING EQUIPMENT IS AVAILABLE AND NEAR TO THE WORK AREA BEFORE THE MAINTENANCE OPERATIONS ARE STARTED.

1. Equipment and Materials

ITEM	DESIGNATION
A.	Access Platform, 2.7 m (9 ft.)
B.	Low-Pressure Air Supply with Gage
C.	Air Pressure Gage, 0 to 30 psi (0 to 2.07 bar)
D.	Blanking Caps
E. Material No. 09-002	Sealants (Ref. 20-31-00)

Referenced Procedures

- 20-28-11, P. Block 1	Electrical Bonding
- 28-00-00, P. Block 301	Fuel - General
- 28-10-00, P. Block 301	Storage
- 28-28-24, P. Block 401	Air Filter
- 52-30-00, P. Block 1	Cargo Compartment Doors

**ON A/C 101-200,

Post SB 28-2105 For A/C 101-200,

Post SB 28-2108 For A/C 101-200,

Referenced Procedures

- 20-28-11, P. Block 1	Electrical Bonding
- 25-21-00, P. Block 401	Passenger Compartment Seats
- 28-00-00, P. Block 301	Fuel - General
- 28-10-00, P. Block 301	Storage
- 28-28-24, P. Block 401	Air Filter
- 52-30-00, P. Block 1	Cargo Compartment Doors

**ON A/C 101-200,

2. Procedure

A. Job Set-Up
(1)Put the access platform in position.
(2)Open the door of the AFT cargo compartment (Ref. 52-30-00, P. Block 1).

B. Removal
(Ref. Fig. 401)

**ON A/C 101-200,

Post SB 28-2105 For A/C 101-200,

Post SB 28-2108 For A/C 101-200,

(Ref. Fig. 402)

**ON A/C 101-200,

(1)Not applicable.
(2)Remove the panel section (1) of the sidewall lining installed aft of FR54.3.

**ON A/C 101-200,

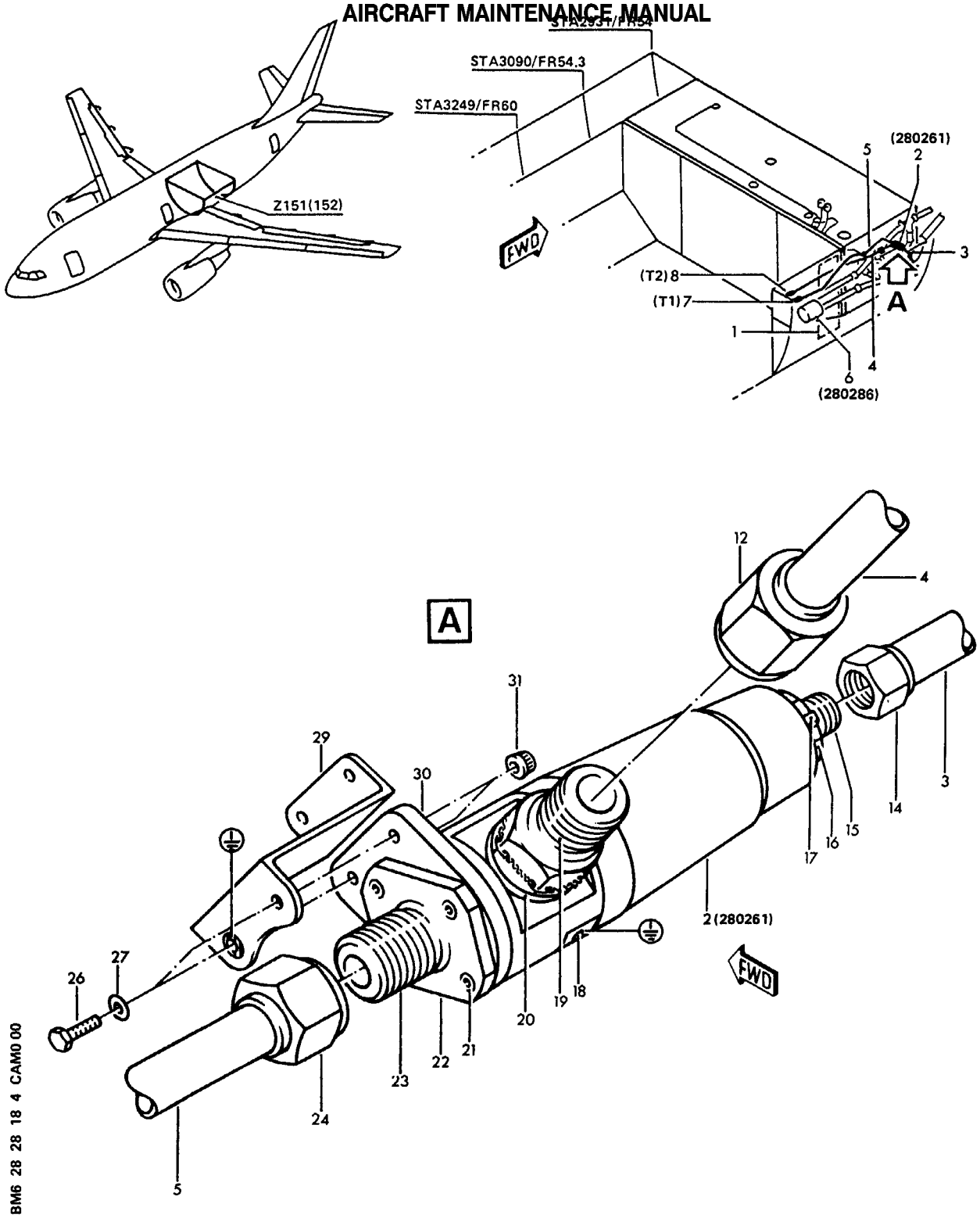
Post SB 28-2105 For A/C 101-200,

Post SB 28-2108 For A/C 101-200,

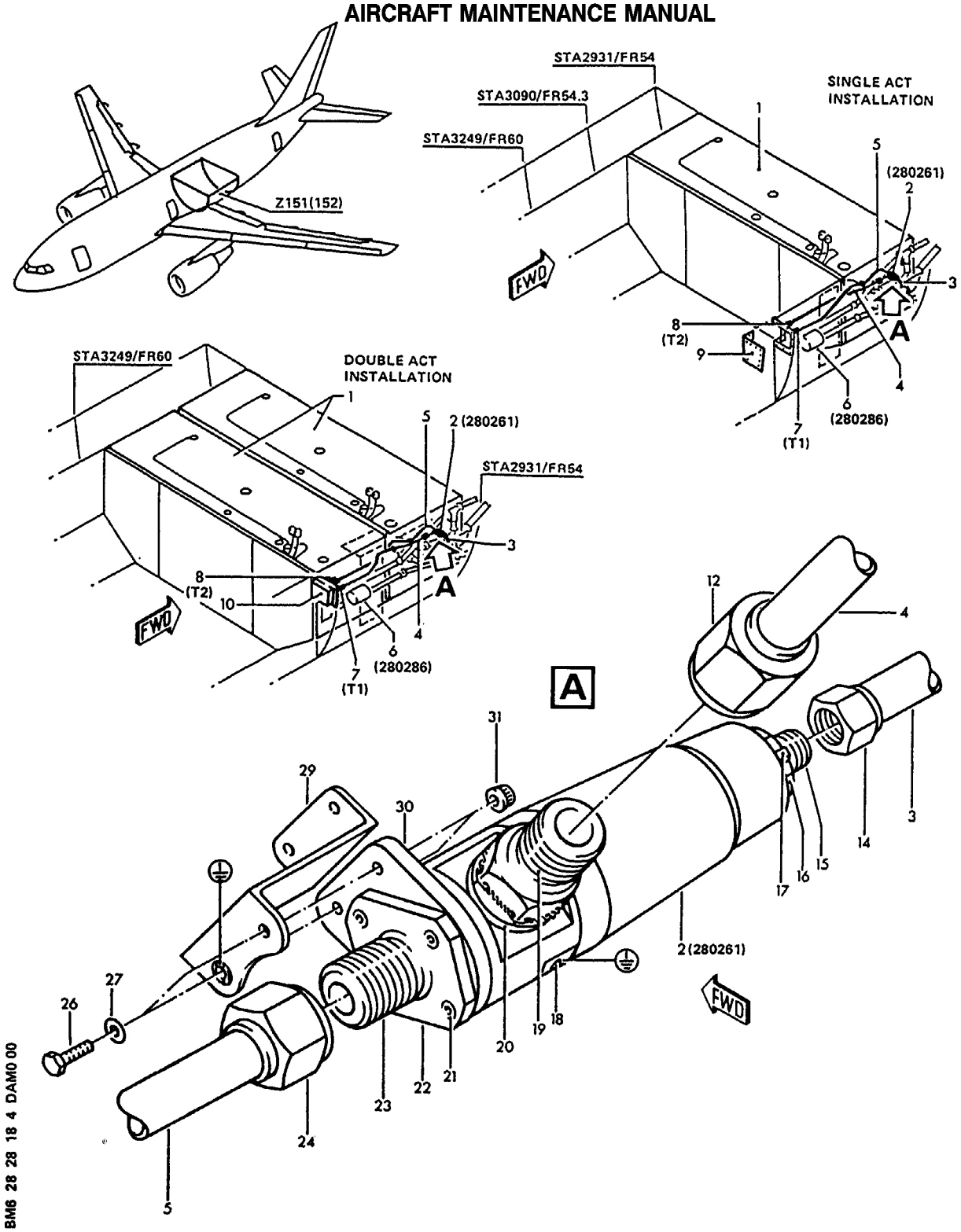
(1)Do this step if the aircraft has the single ACT (1) installation.
(a)Remove the panel section of the right-hand sidewall lining, aft of FR54.3.
(2)Do this step if the aircraft has the double ACT (1) installation.
(a)Remove the right-hand outer floor panel between FR54.2 and FR58 in the passenger compartment.
1 Remove the relevant passenger compartment seats (Ref. 25-21-00, P. Block 401).
2 Remove the right-hand floor panel between FR54.2 and FR58.

**ON A/C 101-200,

(3)Disconnect the union nut (14) at the connection of the vent pipe (3) and the vent fitting (15) of the vent valve (2).
(4)Move the union nut (14) away from the vent fitting (15).
NOTE : Do not disconnect the lockwasher (17) and remove the locknut (16) from the vent fitting (15) at this time.



Pressure Reducing Valve 280261
Figure 401



Pressure Reducing Valve 280261
Figure 402

(5)Disconnect the union nut (12) at the connection of the air pipe (4) and the inlet fitting (19) of the valve (2).
NOTE : Do not:
- cut and remove the lockwire at the inlet fitting (19),
- remove the inlet fitting (19) and the joint washer (20) from the valve (2), unless a repair or a new installation is necessary.

(6)Move the union nut (12) away from the inlet fitting (19).
(7)Disconnect the union nut (24) at the connection of the air pipe (5) and the outlet fitting (23) of the valve (2).
NOTE : Do not:
- remove the socket screws (21) and the adapter (22) from the valve (2),
- disconnect the bonding strap (28) from the bonding clamp (25),
- remove the bonding clamp (25) from the air pipe (5) unless a repair or a new installation is necessary.

(8)Move the union nut (24) away from the outlet fitting (23).
CAUTION : HOLD THE VALVE (2) IN POSITION BEHIND THE SIDEWALL LINING AT FR54.2.
(9)Remove the nuts (31) from the screws (26) at the connection of the clamp bracket (30) and the support bracket (29).
(10)Hold the valve (2) and remove the screws (26), the washer (27) and the bonding strap (28) from the support bracket (29).
(11)Remove the valve (2) from behind the sidewall lining.
(12)Put blanking caps on the open ends of:
- the vent pipe (3),
- the air pipes (4),(5),

behind the sidewall lining.
(13)Put blanking caps on the open ends of:
- the vent fitting (15),
- the inlet fitting (19),
- the outlet fitting (23),

of the valve (2).
NOTE : Do not move the bleed screw (18) in the body of the valve (2).

C. Preparation for Installation (Ref. Fig. 401)
(1)Do a visual check behind the sidewall lining.
(a)Make sure that:
- the vent pipe (3),
- the air pipes (4),(5),
- the support bracket (29)
have no corrosion, show no damage and are correctly attached to the aircraft structure.
(b)Make sure that the bonding point on the support bracket (29) is:
- clean,
- clear of paints or other contaminants,
for a diameter of 12 mm (0.5 in.).
(c)Make sure that the self-sealing couplings T1 (7) and T2 (8) are correctly installed on the air pipes.
(d)Do an inspection of the adjacent structure and look for:
- corrosion,
- damage,
- signs of fuel leakage.
(2)Do a check of the replacement pressure reducing valve (2).
(a)Make sure that the pressure reducing valve (2) has been serviced in accordance with the relevant documents.
(b)Make sure that there is a bead of sealant (Material No. 09-002) at the connection of the vent fitting (15), the locknut (16) and the lockwasher (17). Replace the sealant (Material No. 09-002) as necessary.
(3)Make sure that the air filter (6) is clean. Replace the cartridge of the air filter (6), if necessary (Ref. 28-28-24, P. Block 401).
D. Installation (Ref. Fig. 401)

**ON A/C 101-200,

Post SB 28-2105 For A/C 101-200,

Post SB 28-2108 For A/C 101-200,

C. Preparation for Installation (Ref. Fig. 402)
(1)Do this step if the aircraft has the single ACT (1) installation.
(a)Remove the panel section (9) from the sidewall at the cargo door position, fwd of FR60.
(2)Do this step if the aircraft has the double ACT (1) installation.
(a)Remove the panel section (10) from the sidewall lining and the sidewall at the cargo door position, fwd of FR60.
(3)Examine the area behind the sidewall lining at FR54.3.
(a)Make sure that:
- the vent pipe (3),
- the air pipes (4),(5),
- the support bracket (29)
have no corrosion or damage and are correctly attached to the aircraft

structure.
(b)Make sure that the bonding point on the support bracket (29) is clean and clear of contamination for a diameter of 12.5 mm (0.5 in.).

(c)Make sure that the air filter (6) is clean. Replace the cartridge of the air filter (6), if necessary (Ref. 28-28-24, P. Block 401).
(d)Examine the adjacent area for:
- corrosion,
- damage,
- signs of fuel leakage.

(4)Examine the area behind the sidewall lining at the cargo door, fwd of FR60.
(a)Make sure that the self-sealing couplings T1 (7) and T2 (8) are correctly installed on the air pipes.
(b)Examine the adjacent area for:
- corrosion,
- damage,
- signs of fuel leakage.

(5)Examine the replacement valve (2).
(a)Make sure that the valve (2) is serviced in accordance with the relevant vendor documents.
(b)Make sure that the bead of sealant (Material No. 09-002) at the connection of the vent fitting (15), the locknut (16) and the lock-washer (17) is complete. Replace the sealant (Material No. 09-002) if necessary.

D. Installation (Ref. Fig. 402)

**ON A/C 101-200,

(1)Remove the blanking caps from:
- the vent pipe (3),
- the air pipes (4),(5),

behind the sidewall lining at FR54.3.
(2)Remove the blanking caps from:
- the vent fitting (15),
- the inlet fitting (19),
- the outlet fitting (23)

of the valve (2).
CAUTION : HOLD THE VALVE (2) IN POSITION BEHIND THE SIDEWALL LINING AT FR54.2.
(3)Put the valve (2) in position (laterally) behind the sidewall lining at FR54.2.
(4)Put the clamp bracket (30) of the valve (2) in position at the rear interface of the support bracket (29).
(5)Install the screw (26), the washer (27) and the nut (31) at the connection of the support bracket (29) and the clamp bracket (30).
(6)Tighten the nut (31) by hand.
(7)Put the bonding strap (28) from the bonding clamp (25) in position at the support bracket (29).
(8)Install the screw (26) and the nut (31) and attach the bonding strap (28) at the connection of the support bracket (29) and the clamp

bracket (30) (Ref. 20-28-11, P. Block 1).
(9)Tighten the nut (31) by hand.
(10)Put the union nut (24) of the air pipe (5) on the outlet fitting (23) of the valve (2).
(11)Tighten the union nut (24) by hand.
(12)Put the union nut (12) of the air pipe (4) on the inlet fitting (19) of the valve (2).
(13)Tighten the union nut (12) by hand.
(14)Put the union nut (14) of the vent pipe (3) on the vent fitting (15) of the valve (2).

CAUTION : MAKE SURE THAT THE AIR PIPES (4),(5) AND THE VENT PIPE (3) ARE NOT STRESSED.

(15)Tighten the union nut (14).
(16)Fully tighten the union nut (12).
(17)Fully tighten the union nut (24).
(18)Fully tighten the nuts (31).

E. Test (Ref. Fig. 401)
(1)Do a functional test of the valve (2).
(a)Connect a low-pressure air supply with a gage to the self-sealing coupling T1 (7), at FR60.
(b)Connect an air pressure gage to the self-sealing coupling T2 (8), aft of FR60.

**ON A/C 101-200,

Post SB 28-2105 For A/C 101-200,

Post SB 28-2108 For A/C 101-200,

E. Test (Ref. Fig. 402)
(1)Do a functional test of the valve (2).
(a)Connect a low-pressure air supply with a gage to the self-sealing coupling T1 (7), aft of FR59.
(b)Connect an air pressure gage to the self-sealing coupling T2 (8), aft of FR59.
NOTE : You can get access to the couplings T1 (7) and T2 (8) at the cargo door position, fwd of FR60.

**ON A/C 101-200,

(c)Make sure that:
1. The air shut-off valve 280260 is in the open position.
2. The transfer valve is closed.
3. The refuel valve is closed.
(d)Turn on the air supply and get a pressure indication of 10 psi (0.68 bar) on the gage at the coupling T1 (7).
(e)Make sure that the pressure indication on the gage at the coupling T2 (8) is between 5 and 6.5 psi (0.345 and 0.448 bar).
(f)Make sure that there is no leakage from the connections of:
- the vent pipe (3) to the vent fitting (15),
- the air pipe (4) to the inlet fitting (19),
- the air pipe (5) to the outlet fitting (23)
of the valve (2).
(g)Turn off the air supply.
(h)Disconnect the air supply with the gage from the coupling T1 (7).
(i)Let the air pressure out of the system at the coupling T1 (7).
(j)Disconnect the gage from the coupling T2 (8).

F. Close-Up
(1)Make sure that the work area behind the sidewall lining is clean and clear of tools and other items.
(2)Install the panel section of the sidewall lining aft of FR54.3.

(3)Close the door of the AFT cargo compartment (Ref. 52-30-00, P. Block 1).

(4)Remove the access platform.

**ON A/C 101-200,

Post SB 28-2105 For A/C 101-200,

Post SB 28-2108 For A/C 101-200,

F. Close-Up (Ref. Fig. 402)
(1)Do this step if the aircraft has the single ACT installation.
(a)Make sure that:
- the area behind the sidewall lining at FR54.3,
- the area behind the sidewall at the cargo door, fwd of FR60 is clean and clear of tools and other items.
(b)Install the panel section of the right-hand sidewall lining, aft of FR54.3.
(c)Install the panel section (9) to the sidewall at the cargo door, fwd of FR60.
(2)Do this step if the aircraft has the double ACT installation.
(a)Make sure that:
- the area behind the sidewall lining at FR54.3,
- the area behind the sidewall at the cargo door, fwd of FR60 is clean and clear of tools and other items.
(b)Install the right-hand outer floor panel between FR54.2 and FR58 in the passenger compartment.
(c)Install the relevant passenger compartment seats (Ref. 25-21-00, P. Block 401).
(d)Install the panel section (10) to the sidewall at the cargo door, fwd of FR60.
(3)Make sure that the work area is clean and clear of tools and other items.
(4)Close the AFT cargo-compartment door (Ref. 52-30-00, P. Block 1).
(5)Remove the access platform.

AIR SHUT-OFF VALVE - REMOVAL/INSTALLATION

WARNING : OBEY THE SAFETY PRECAUTIONS IN 28-00-00, P. BLOCK 301 AND 28-10-00, P. BLOCK 301.
MAKE SURE THAT THE FIRE FIGHTING EQUIPMENT IS AVAILABLE AND NEAR TO THE WORK AREA, BEFORE YOU START THE MAINTENANCE OPERATIONS.
MAKE SURE THAT THE ELECTRICAL CIRCUITS, ON WHICH THE WORK IS IN PROGRESS, ARE ISOLATED BEFORE YOU SUPPLY POWER TO THE AIRCRAFT.

1. Equipment and Materials

ITEM	DESIGNATION
A.	Access Platform, 2.7 m (9 ft.)
B.	Blanking Caps
C.	Adhesive Tape
D.	Lint-Free Cloth
E.	Circuit Breaker Safety Clips and Tags
F.	Fluorescent - Lamp, Explosion Proof
G.	O-Ring
H. Material No. 04-012	Common Greases (Ref. 20-31-00)
I. Material No. 11-002	Cleaning Agents (Ref. 20-31-00)
Referenced Procedures	
- 20-28-11, P. Block 1	Electrical Bonding
- 28-00-00, P. Block 301	Fuel - General
- 28-10-00, P. Block 301	Storage
- 52-30-00, P. Block 1	Cargo Compartment Doors

2. Procedure

A. Job Set-Up
(1)Put the access platform in position.
(2)Open the AFT cargo-compartment door (Ref. 52-30-00, P. Block 1).

(3)Open, safety and tag the following circuit breaker:

PANEL	SERVICE	IDENT.	LOCATION
132VU	FUEL ACT VENT AND PRESS VALVE	3QH	325/K57

(4)Remove the panel section (1) of the right-hand side wall lining aft of FR54.3

B. Removal

**ON A/C 101-200,

Post SB 28-2105 For A/C 101-200,

Post SB 28-2108 For A/C 101-200,

AIR SHUT-OFF VALVE - REMOVAL/INSTALLATION

WARNING : OBEY THE SAFETY PRECAUTIONS IN 28-00-00, P. BLOCK 301 AND 28-10-00, P. BLOCK 301.
MAKE SURE THAT THE FIRE FIGHTING EQUIPMENT IS AVAILABLE AND NEAR TO THE WORK AREA, BEFORE YOU START THE MAINTENANCE OPERATIONS.
MAKE SURE THAT THE ELECTRICAL CIRCUITS, ON WHICH THE WORK IS IN PROGRESS, ARE ISOLATED BEFORE YOU SUPPLY POWER TO THE AIRCRAFT.

1. Equipment and Materials

ITEM	DESIGNATION
A.	Access Platform, 2.7 m (9 ft.)
B.	Blanking Caps
C.	Circuit Breaker Safety Clip and Tag
D.	Adhesive Tape
E.	Lint-Free Cloth
F.	O-Ring
G. Material No. 04-012	Common Greases (Ref. 20-31-00)
H. Material No. 11-002	Cleaning Agents (Ref. 20-31-00)
Referenced Procedures	
- 20-28-11, P. Block 1	Electrical Bonding
- 25-21-00, P. Block 401	Passenger Compartment Seats
- 28-00-00, P. Block 301	Fuel - General
- 28-10-00, P. Block 301	Storage
- 52-30-00, P. Block 1	Cargo Compartment Doors

2. Procedure

A. Job Set-Up
(1)Make sure that the aircraft is statically grounded.
(2)Put the access platform in position.
(3)Open, safety and tag the following circuit breaker:

PANEL	SERVICE	IDENT.	LOCATION
132VU	FUEL ACT VENT AND PRESS VALVE	3QH	325/K57

(4)Do this step if the aircraft has the single additional-center-tank (ACT) installation.

(a)Open the AFT cargo-compartment door (Ref. 52-30-00, P. Block 1).

(b)Remove the panel section of the right-hand sidewall lining, aft of FR54.3.

(5)Do this step if the aircraft has the double ACT installation.
(a)Remove the right-hand outer floor panel between FR54.2 and FR58 in the passenger compartment.
1 Remove the relevant passenger compartment seats (Ref. 25-21-00, P. Block 401).
2 Remove the right-hand floor panel between FR54.2 and FR58.

B. Removal

**ON A/C 101-200,

(Ref. Fig. 401)

**ON A/C 101-200,

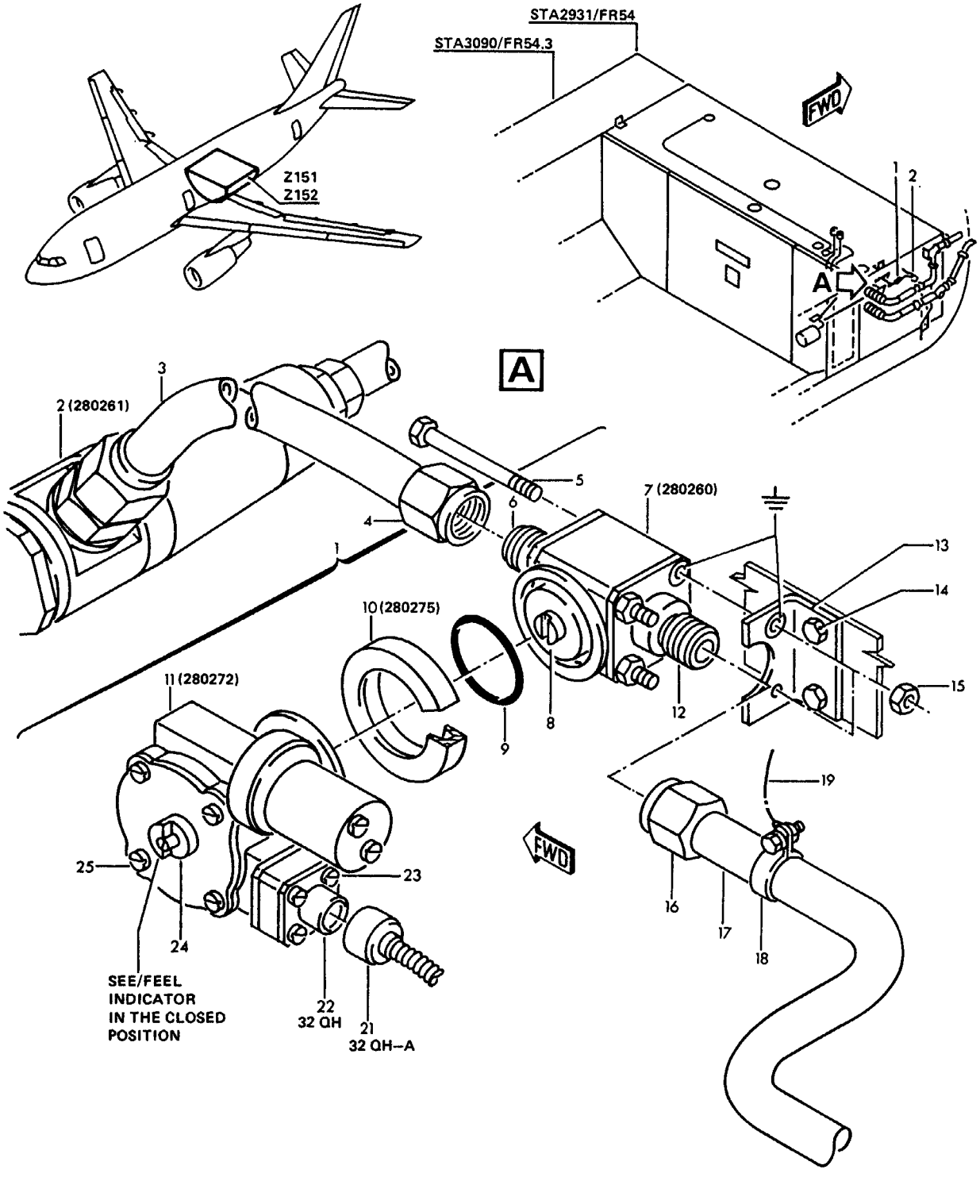
Post SB 28-2105 For A/C 101-200,

Post SB 28-2108 For A/C 101-200,

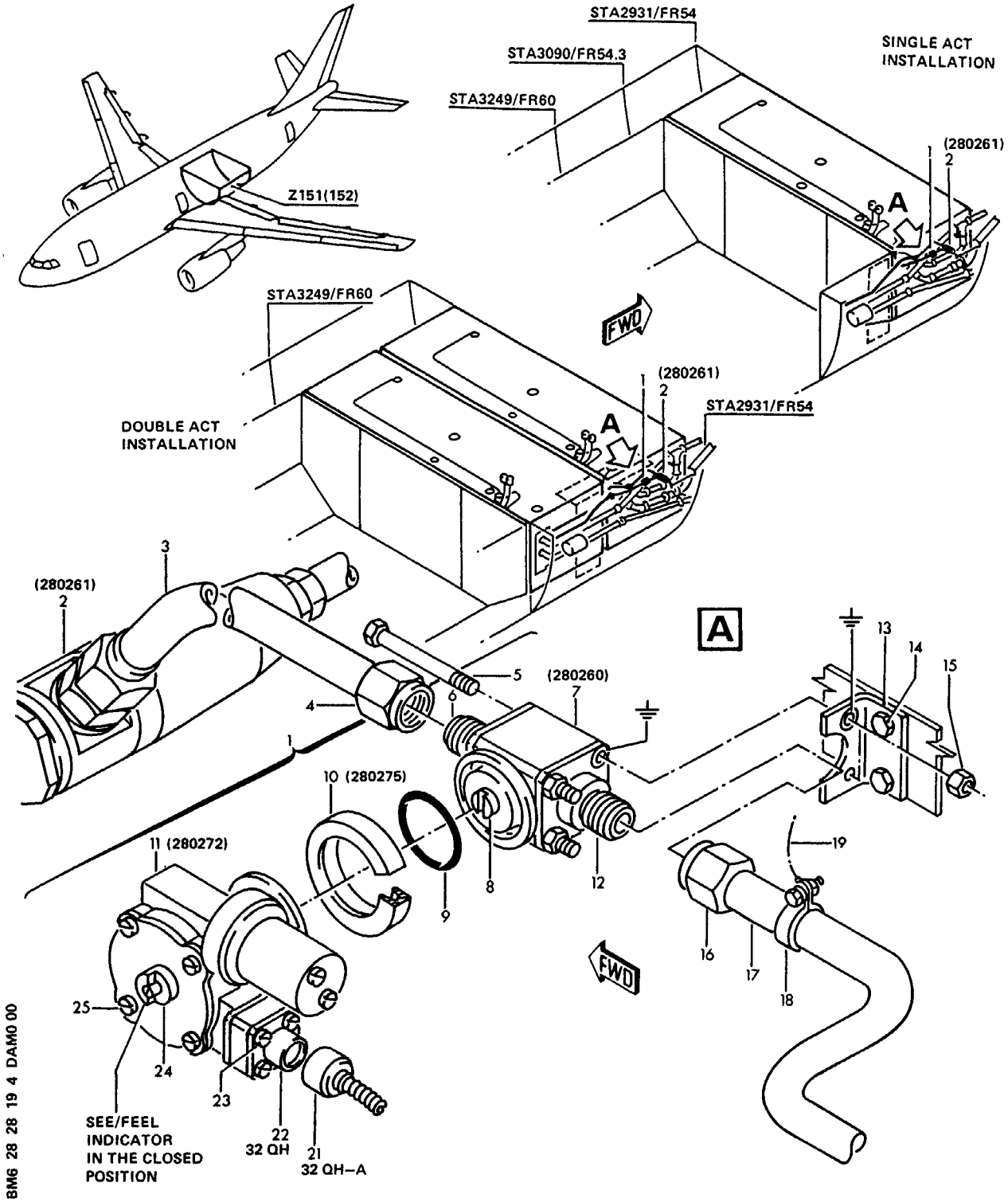
(Ref. Fig. 402)

**ON A/C 101-200,

(1)Removal of the Actuator (11) from the Shut-Off Valve Assembly (1).
(a)Disconnect the electrical connector 32QH-A (21) from the receptacle 32QH (22) of the actuator (11).
NOTE : Do not remove the screws (23) from the actuator (11) unless a repair or a new installation of the receptacle 32QH (22) is necessary.
(b)Disconnect the V-clamp (10) at the connection of the actuator (11) and the shut-off valve (7).
(c)Remove the actuator (11) and the V-clamp (10) from the shut-off valve (7).
(d)Remove the V-clamp (10) and the actuator (11) from behind the sidewall lining.
(e)Put a blanking cap on the electrical connector 32QH-A (21) behind the sidewall lining.
(f)Put a blanking cap on the receptacle 32QH (22) of the actuator (11).
(g)Put adhesive tape or a blanking cap on the see/feel indicator (24) of the actuator (11).
(h)Put adhesive tape or a blanking cap on the drive-shaft spigot of the actuator (11).
NOTE : Do not remove the screws (25) and disconnect the face plate from the actuator (11).
(i)Remove and discard the O-ring (9) from the interface of the shut-off valve (7).
(j)Put adhesive tape or a blanking cap on the input shaft (8) of the shut-off valve (7).
(2)Removal of the Shut-Off Valve (7).



Air Shut-Off Valve 280260 and Actuator 280272
Figure 401



Air Shut-Off Valve 280260 and Actuator 280272
Figure 402

(a)Remove the actuator (11) (Ref. step 2.B.(1)).
(b)Disconnect the union nut (16) at the connection of the air pipe (17) to the stub pipe (12) of the shut-off valve (7).
(c)Disconnect the union nut (4) at the connection of the air pipe (3) to the stub pipe (6) of the shut-off valve (7).
CAUTION : HOLD THE SHUT-OFF VALVE (7) IN POSITION AT THE SUPPORT BRACKET (13).
(d)Remove the nuts (15) from the screws (5) at the connection of the shut-off valve (7) to the support bracket (13).
NOTE : Identify the nut (15) removed from the screw (5) at the bonding point, for installation in the same position.
(e)Hold the shut-off valve (7) and move the screws (5) through the support bracket (13).
(f)Remove the shut-off valve (7) from behind the sidewall lining.
(g)Temporarily install the nuts (15) on the screws (5) in the shut-off valve (7).
NOTE : Make sure that you install the nut (15), identified in step (d), on the screw (5) at the bonding point.
(h)Put blanking caps on the stub pipes (6),(12) of the shut-off valve (7).
(i)Put blanking caps on the ends of the air pipes (3),(17) behind the sidewall lining.
NOTE : Do not release the screws (14) and remove the support bracket (13) unless a repair or a new installation is necessary.

C. Preparation for Installation (Ref. Fig. 401)

**ON A/C 101-200,

Post SB 28-2105 For A/C 101-200,

Post SB 28-2108 For A/C 101-200,

C. Preparation for Installation (Ref. Fig. 402)

**ON A/C 101-200,

(1)Examine the replacement components.
(a)Make sure that the replacement components are serviced in accordance with the relevant vendor documents.
(b)Clean the component interfaces with cleaning agent (Material No. 11-002) and a lint-free cloth and let them dry.
(c)Do a visual check of the components and look for:
- corrosion,
- cracks,
- damage.
(d)Make sure that the bonding point on the shut-off valve (7) is clean and clear of paints and other contaminants (Ref. 20-28-11, P. Block 1).

(2)Make sure that the V-clamp (10) is clean and serviceable.
(3)Examine the support bracket (13) of the shut-off valve (7) behind the sidewall lining.
  (a)Do a visual check of the support bracket (13) and look for:
    - corrosion,
    - cracks,
    - damage.
    - correct attachment to the structure.
  (b)Make sure that the bonding point on the support bracket (13) is clean and clear of paint and other contaminants (Ref. 20-28-11, P. Block 1).
(4)Examine the air pipes (3),(17) behind the sidewall lining.
  (a)Do a visual check of the air pipes (3),(17) and look for:
    - corrosion,
    - cracks,
    - damage,
    - correct attachment to the support brackets.
  (b)Make sure that the air pipe (3) is correctly connected to the pressure reducing valve (2).
  (c)Make sure that the air pipe (17) is correctly connected to the T-piece.

(d)Make sure that the bonding clamp (18) is correctly installed on the air pipe (17) (Ref. 20-28-11, P. Block 1).
NOTE : Apply vaseline (Material No. 04-012) between the bonding clamp (18) and the air pipe (17), if necessary.
(e)Make sure that the bonding strap (19) is correctly connected to the bonding clamp (18) (Ref. 20-28-11, P. Block 1).
(f)Make sure that the bonding strap (19) is correctly connected to the aircraft structure (Ref. 20-28-11, P. Block 1).
(5)Make sure that the connector 6084VC1-A (21) is not damaged.
(6)Examine the adjacent area behind the sidewall lining and look for:
- corrosion,
- cracks,
- damage,
- signs of fuel leakage.

D. Installation (Ref. Fig. 401)

**ON A/C 101-200,

Post SB 28-2105 For A/C 101-200,

Post SB 28-2108 For A/C 101-200,

D. Installation (Ref. Fig. 402)

**ON A/C 101-200,

(1)Installation of the Shut-Off Valve (7)
(a)Remove the blanking caps from the ends of the air pipes (3),(17) behind the sidewall lining.
(b)Remove the blanking caps from the ends of the stub pipes (6),(12) of the shut-off valve (7).
(c)Remove the nuts (15) which you temporarily installed on the screws (5) of the shut-off valve (7).
NOTE : Identify the nut (15) removed from the screw (5) for installation in the same position.
CAUTION : HOLD THE SHUT-OFF VALVE (7) IN POSITION AT THE SUPPORT BRACKET (13) BEHIND THE SIDEWALL LINING.
(d)Put the shut-off valve (7) behind the sidewall lining.
(e)Hold the shut-off valve (7) in position at the support bracket (13).
(f)Put the screws (5) of the shut-off valve (7) through the support bracket (13).
(g)Put the nuts (15) on the screws (5) at the connection of the shut-off valve (7) and the support bracket (13).
NOTE : Make sure that you install the nut (15), identified in step (c), on the screw (5) at the bonding point.
(h)Tighten the nuts (15) by hand.
(i)Put the union nut (4) of the air pipe (3) on the stub pipe (6) of the shut-off valve (7).

(j)Tighten the union nut (4) by hand.
(k)Put the union nut (16) of the air pipe (17) on the stub pipe (12) of the shut-off valve (7).
(l)Tighten the union nut (16).
(m)Fully tighten the union nut (4).
(n)Fully tighten the nuts (15).
NOTE : Make sure that the air pipes (3),(17) are not stressed.
(o)Install the actuator (11) (Ref. step. 2.D.(2)).
(2)Installation of the Actuator (11).
(a)Remove the adhesive tape or the blanking cap from the input shaft (8) of the shut-off valve (7).
NOTE : Make sure that the slot in the input shaft (8) is in the closed position (vertical).
(b)Apply vaseline (Material No. 04-012) to the new O-ring (9).
(c)Put the O-ring (9) in the groove in the interface of the shut-off valve (7).
(d)Remove the adhesive tape or the blanking cap from the drive-shaft spigot of the actuator (11).
NOTE : Make sure that the drive-shaft spigot of the actuator (11) is in the closed position (vertical).
CAUTION : HOLD THE ACTUATOR (11) IN POSITION AT THE SHUT-OFF VALVE (7) BEHIND THE SIDEWALL LINING.
(e)Put the actuator (11) behind the sidewall lining.
(f)Hold the actuator (11) in position at the shut-off valve (7).
(g)Put the V-clamp (10) in position at the connection of the shut-off valve (7) and the actuator (11).
NOTE : Make sure that the drive shaft spigot of the actuator (11) is in the correct position in the input shaft (8) of the shut-off valve (7).
NOTE : Make sure that the O-ring (9) is correctly installed.
(h)Tighten the V-clamp (10).
NOTE : Make sure that the actuator (11) is parallel with the connection of the air pipes (3),(17) to the shut-off valve (7).
(i)Remove the blanking cap from the receptacle 32QH (22) of the actuator (11).
(j)Remove the blanking cap from the electical connector 32QH-A (21).
(k)Connect the electrical connector 32QH-A (21) to the receptacle 32QH (22).
NOTE : Do not install the panel section of the side wall lining aft of FR54.3 at this time.

E. Test
(1)Remove the circuit breaker safety clip and the tag and close the circuit breaker 3QH.
(2)Do a check of the operation of the shut-off valve 280260 and the actuator 280272 by audible and visual methods.
(a)Press the pushbutton switch ACT AUTO on the panel 430VU.
(b)Check the operation of the air shut-off valve 280260 and the actuator 280272.

F. Close-Up

(1)Make sure that no tools or other items are behind the side wall lining.
(2)Install the panel section of the sidewall lining aft of FR54.3.
(3)Make sure that the work area is clean and clear of tools and other items.

(4)Close the AFT cargo-compartment door (Ref. 52-30-00, P. Block 1).
(5)Remove the access platform.

**ON A/C 101-200,

Post SB 28-2105 For A/C 101-200,

Post SB 28-2108 For A/C 101-200,

NOTE : 1. If the aircraft has the single ACT installaion:
- do not install the panel section of the sidewall lining aft of FR54.3, at this time.
2. If the aircraft has the double ACT installation:
- do not install the floor panel between FR54.3 and FR58 in the passenger compartment, at this time.

E. Test
(1)Remove the circuit breaker safety clip and the tag and close the circuit breaker 3QH.
(2)Do a check of the operation of the shut-off valve 280260 and the actuator 280272, by audible and visual procedures.
(a)Press the pushbutton switch ACT AUTO on the panel 430VU.
(b)Check the operation of the shut-off valve 280260 and the actuator 280272.

F. Close-Up
(1)Make sure that no tools or other items are behind the sidewall lining.
(2)Do this step if the aircraft has the single ACT installation.
(a)Install the panel section of the sidewall lining aft of FR54.3.
(b)Make sure that the work area is clean and clear of tools and other items.

(c)Close the AFT cargo-compartment door (Ref. 52-30-00, P. Block 1).
(3)Do this step if the aircraft has the double ACT installation.
(a)Install the right-hand outer floor panel between FR54.2 and FR58 in the passenger compartment.
(b)Install the relevant passenger compartment seats (Ref. 25-21-00, P. Block 401).
(4)Remove the access platform.

AIR SHUT-OFF VALVE - DEACTIVATION/REACTIVATION

R Ref: MMEL Sect. 1-28, Item 47

WARNING : USE THIS PROCEDURE IN ACCORDANCE WITH THE REQUIREMENTS OF THE MMEL.

WARNING : OBEY THE SAFETY PRECAUTIONS IN 28-00-00, P. BLOCK 301 AND 28-10-00, P. BLOCK 301.
MAKE SURE THAT THE FIRE FIGHTING EQUIPMENT IS AVAILABLE AND NEAR TO THE WORK AREA, BEFORE YOU START THE MAINTENANCE OPERATIONS.
MAKE SURE THAT THE ELECTRICAL CIRCUITS ON WHICH THE WORK IS IN PROGRESS, ARE ISOLATED BEFORE YOU SUPPLY POWER TO THE AIRCRAFT.

1. Deactivation

A. Reason for the job

(1)To make sure that the inoperative valve is in the closed position.
or
(2)To make sure that the inoperative valve is in the open position.

B. Equipment and Materials

ITEM	DESIGNATION
A.	Access Platform, 2.7 m (9 ft.)
B.	Warning Notice, to tell the Crew that the Air Shut-Off Valve is locked CLOSED (OPEN) Mechanically
C.	Circuit Breakers Safety Clip and Tag
D.	Blanking Caps

Referenced Procedures

- 28-00-00, P. Block 301	Fuel - General
- 28-10-00, P. Block 301	Storage
- 28-28-19, P. Block 401	Air Shut-Off Valve
- 52-30-00, P. Block 1	Cargo Compartment Doors

C. Procedure
(1)Job Set-Up
(a)Make sure that the aircraft is statically grounded.
(b)Put the access platform in position.
(c)Open the AFT cargo compartment door (Ref. 52-30-00, P. Block 1).

(d)Open, safety and tag the circuit breaker:

PANEL	SERVICE	IDENT.	LOCATION
132VU	FUEL ACT VENT AND PRESS VALVE	3QH	325/K57

(2)Removal

**ON A/C 101-200,

Post SB 28-2105 For A/C 101-200,

Post SB 28-2108 For A/C 101-200,

Referenced Procedures
- 25-21-00, P. Block 401 Passenger Compartment Seats

- 28-00-00, P. Block 301 Fuel - General
- 28-10-00, P. Block 301 Storage
- 28-28-19, P. Block 401 Air Shut-Off Valve
- 52-30-00, P. Block 1 Cargo Compartment Doors

C. Procedure
(1)Job Set-Up
(a)Make sure that the aircraft is statically grounded.
(b)Put the access platform in position.
(c)Open, safety and tag the circuit breaker:

PANEL	SERVICE	IDENT.	LOCATION
132VU	FUEL ACT VENT AND PRESS VALVE	3QH	325/K57

(d)Do this step if the aircraft has the single additional-center-tank (ACT) installation:
1 Open the AFT cargo-compartment door (Ref. 52-30-00, P. Block 1).

2 Remove the panel section of the right-hand sidewall lining aft of FR54.3.
(e)Do this step if the aircraft has the double ACT installation:
1 Remove the right-hand outer floor panel between FR54.2 and FR58 in the passenger compartment.
a Remove the relevant passenger compartment seats (Ref. 25-21-00, P. Block 401).
b Remove the right-hand floor panel between FR54.2 and FR58.
(2)Removal

**ON A/C 101-200,

(Ref. Fig. 901)

**ON A/C 101-200,

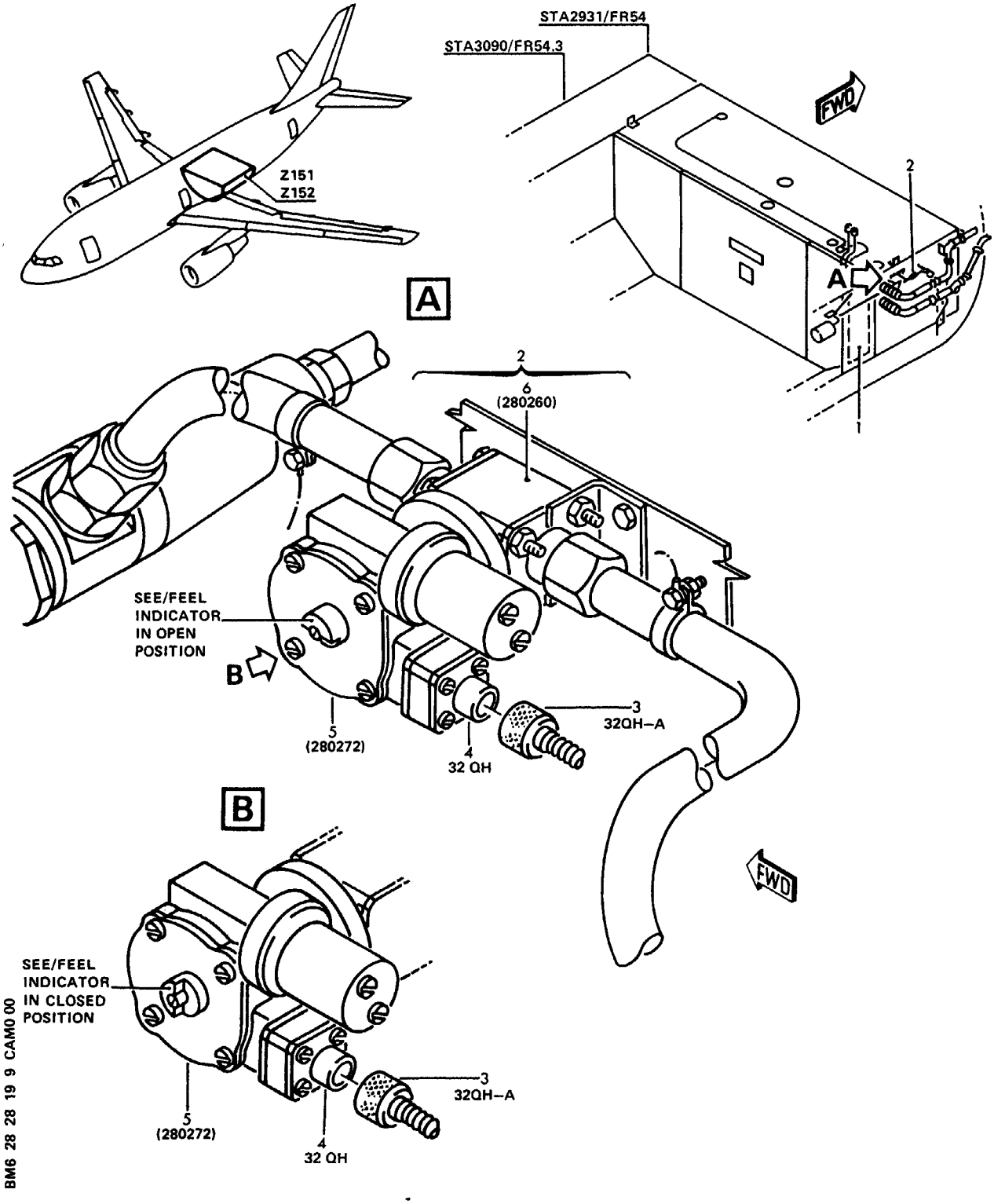
Post SB 28-2105 For A/C 101-200,

Post SB 28-2108 For A/C 101-200,

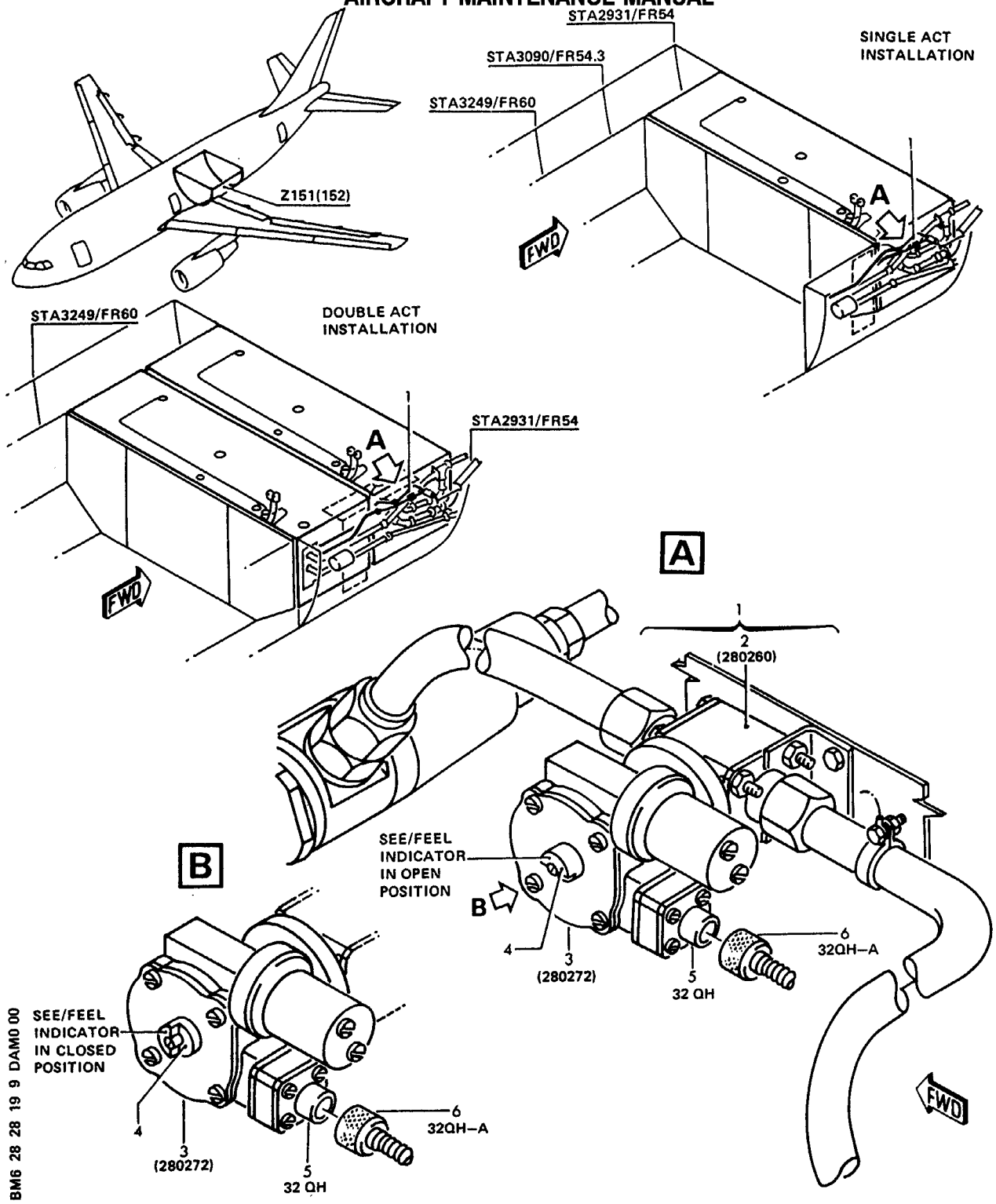
(Ref. Fig. 902)

**ON A/C 101-200,

(a)Remove the panel section (1) of the sidewall lining aft of FR54.3 to get access to the shut-off valve assembly (2).
(b)Do a visual check of the see/feel indicator of the actuator (5) and identify its position.
NOTE : When the see/feel indicator is horizontal, the air shut-off valve (6) is open.
When the see/feel indicator is vertical, the air shut-off valve (6) is closed.
(c)Make a note of the position of the air shut-off valve (6).
(d)Disconnect the electrical connector 32QH-A (3) from the receptacle 32QH (4) of the actuator (5).



Air Shut-Off Valve 280260 - Deactivation
Figure 901



Air Shut-Off Valve 280260 - Deactivation
Figure 902

(e)Put blanking caps on the open electrical connector 32QH-A (3) and the receptacle 32QH (4).
(f)Safety the electrical connector 32QH-A (3) clear of the actuator (5) behind the sidewall lining.

(3)Close-Up
(a)Make sure that the work area is clean and clear of tools and other items.
(b)Install the panel section of the sidewall lining aft of FR54.3.
(c)Remove the safety clip and tag and close the circuit breaker 3QH.
(d)Install the warning notice in the cockpit to tell the crew that the ACT Air Shut-Off Valve is locked in the CLOSED (OPEN) position.
(e)Close the AFT cargo compartment door (Ref. 52-30-00, P. Block 1).
(f)Remove the access platform.

**ON A/C 101-200,

Post SB 28-2105 For A/C 101-200,

Post SB 28-2108 For A/C 101-200,

(a)Do a visual check of the see/feel indicator (4) of the shut-off valve assembly (1) and identify its position.
NOTE : When the see/feel indicator (4) is horizontal, the air shut-off valve (2) is open.
When the see/feel indicator (4) is vertical, the air shut-off valve (2) is closed.
(b)Make a note of the position of the air shut-off valve (2).
(c)Disconnect the electrical connector 32QH-A (6) from the receptacle 32QH (5) of the actuator (3).
(d)Put blanking caps on the open electrical connector 32QH-A (6) and the receptacle 32QH (5).
(f)Safety the electrical connector 32QH-A (6) clear of the actuator (3) behind the sidewall lining.
(3)Close-Up
(a)Make sure that the work area is clean and clear of tools and other items.
(b)Do this step if the aircraft has the single ACT installation:
1 Install the panel section of the sidewall lining aft of FR54.3.
2 Close the AFT cargo-compartment door (Ref. 52-30-00, P. Block 1).
(c)Do this step if the aircraft has the double ACT installation:
1 Install the right-hand outer floor panel between FR54.2 and FR58 in the passenger compartment.
2 Install the relevant passenger compartment seats (Ref. 25-21-00, P. Block 401).
(d)Remove the safety clip and tag and close the circuit breaker 3QH.
(e)Install a warning notice in the cockpit to tell the crew that ACT Air Shut-Off Valve is locked in the CLOSED (OPEN) position.

(f)Remove the access platform.

**ON A/C 101-200,

2. Reactivation

A. Make the Air Shut-Off Valve operational.
(1)Trouble shoot to identify the cause of the shut-off valve malfunction.
(2)Replace the defective component as follows:
(a)Valve fault - replace the air shut-off valve 280260 (Ref. 28-28-19, P. Block 401).
(b)Actuator fault - replace the actuator 280272 (Ref. 28-28-19, P. Block 401).

FILTER AIR - REMOVAL/INSTALLATION

WARNING : OBEY THE SAFETY PRECAUTIONS IN 28-00-00, P. BLOCK 301 AND 28-10-00, P. BLOCK 301.

1. Equipment and Materials

ITEM	DESIGNATION
A.	Access Platform, 2.7 m (9 ft.)
B.	Blanking Caps

Referenced Procedures

- 20-28-11, P. Block 1	Electrical Bonding
- 25-52-00, P. Block 1	Semi-Automatic Cargo Loading
- 28-00-00, P. Block 301	Fuel - General
- 28-10-00, P. Block 301	Storage
- 52-30-00, P. Block 1	Cargo Compartment Doors

2. Procedure

A. Job Set-Up
(1)Make sure that the aircraft is statically grounded.
(2)Put the access platform in position.
(3)Open the AFT cargo-compartment door (Ref. 52-30-00, P. Block 1).
(4)Remove the container or the two half-width containers installed behind the ACT, if necessary (Ref. 25-52-00, P. Block 1).
(5)Remove the access panel 152DX installed at FR59A.

B. Removal
(1)Removal of the Air Filter Cartridge

**ON A/C 101-200,

Post SB 28-2105 For A/C 101-200,

FILTER AIR - REMOVAL/INSTALLATION

WARNING : OBEY THE SAFETY PRECAUTIONS IN 28-00-00, P. BLOCK 301 AND 28-10-00, P. BLOCK 301.

1. Equipment and Materials

ITEM	DESIGNATION
A.	Access Platform, 2.7 m (9 ft.)
B.	Blanking Caps

Referenced Procedures

- 20-28-11, P. Block 1	Electrical Bonding

- 25-52-00, P. Block 1 Semi-Automatic Cargo Loading
- 28-00-00, P. Block 301 Fuel - General
- 28-10-00, P. Block 301 Storage
- 52-30-00, P. Block 1 Cargo Compartment Doors

2. Procedure

A. Job Set-Up
(1)Make sure that the aircraft is statically grounded.
(2)Put the access platform in position.
(3)Open the AFT cargo-compartment door (Ref. 52-30-00, P. Block 1).
(4)Remove the container or the two half-width containers installed behind the ACT, if necessary (Ref. 25-52-00, P. Block 1).
(5)Remove the access panel 152DX (152FX) installed at FR59A.

B. Removal
(1)Removal of the Air Filter Cartridge

**ON A/C 101-200,

(Ref. Fig. 401)

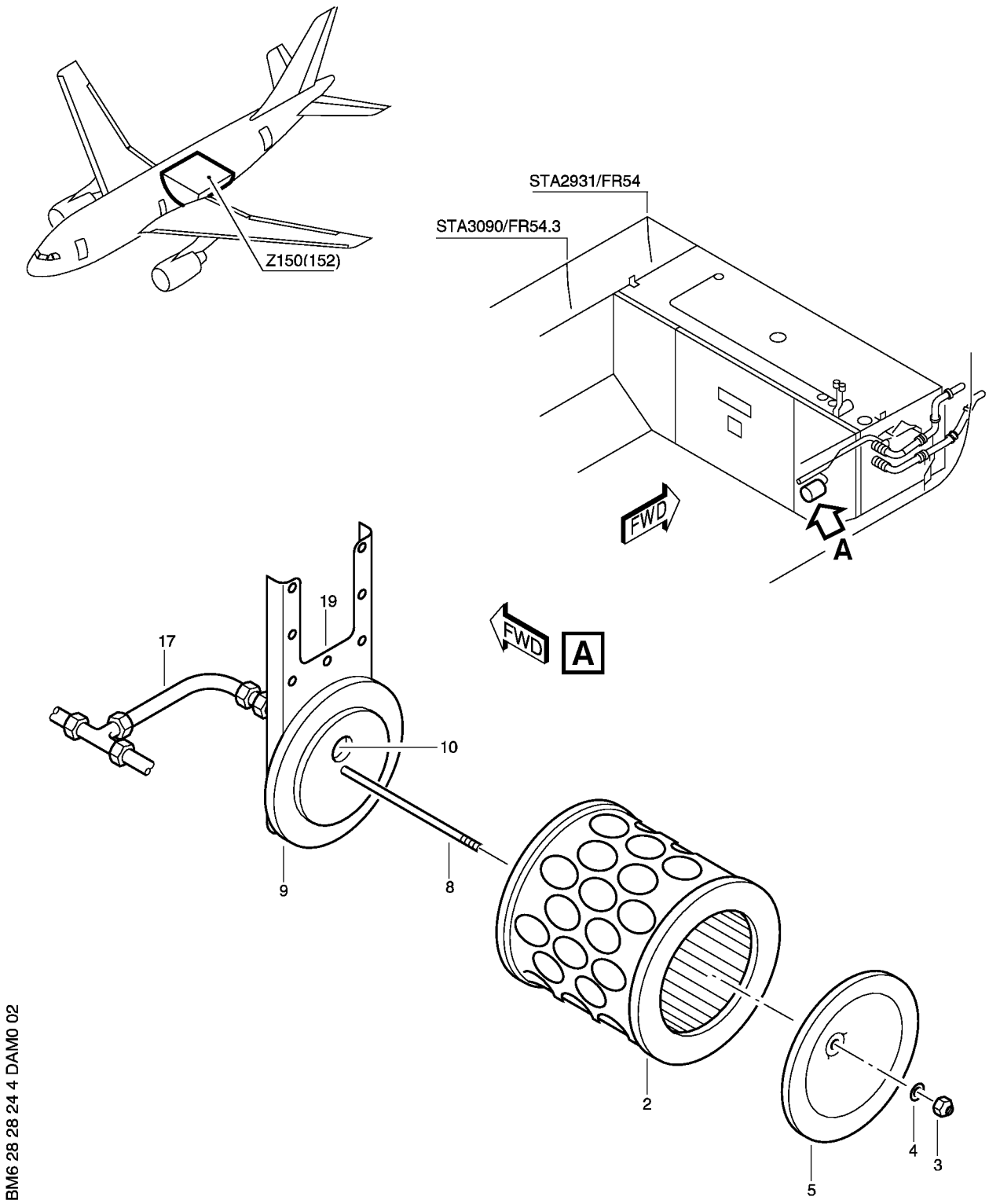
**ON A/C 101-200,

Post SB 28-2105 For A/C 101-200,

(Ref. Fig. 402)

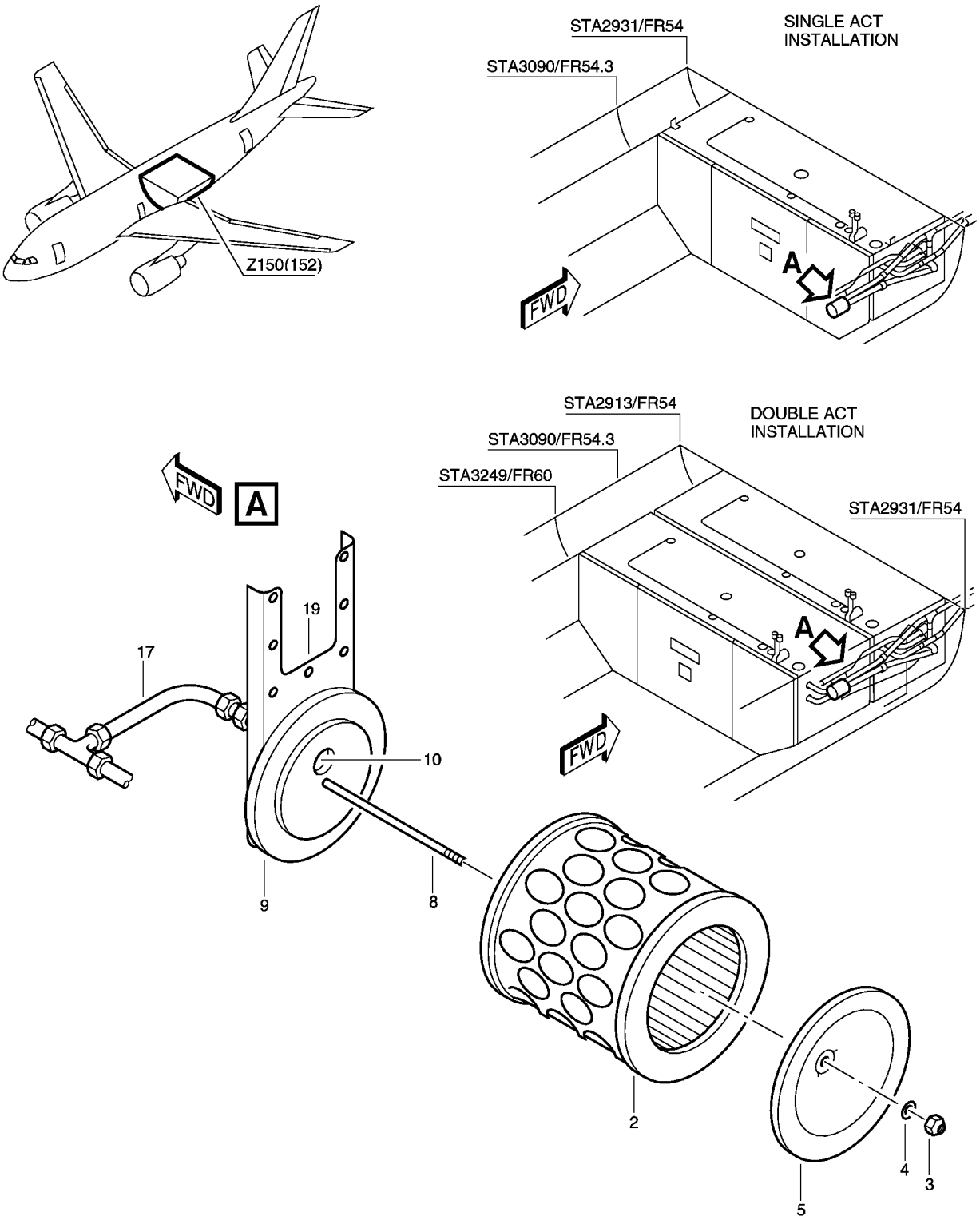
**ON A/C 101-200,

(a)Remove the stiff-nut (3) and the washer (4) from the stud (8).
(b)Remove the end plate (5).
R (c)Remove the cartridge (2) from the base plate (9).
R (d)Remove the cartridge (2) from behind the sidewall lining.
R (e)Put a blanking cap on the union (10) at the base plate (9).



Air Filter - Cartridge
Figure 401

R



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Air Filter - Cartridge
Figure 402

R

(2)Removal of the Air Filter Assembly
(Ref. Fig. 403)

**ON A/C 101-200,

Post SB 28-2105 For A/C 101-200,

(Ref. Fig. 404)

**ON A/C 101-200,

(a)Disconnect the union nut (14) from the union (15) at the support bracket (19).
CAUTION : HOLD THE AIR FILTER ASSEMBLY (1) IN POSITION BEHIND THE SIDEWALL LINING.
(b)Hold the air filter assembly (1) and remove the stiff-nuts (28) and the washers (27) from the studs (25).
(c)Remove the bonding strap (10).
NOTE : Identify the stiff-nuts (28) and the washers (27) removed from the bonding points so that you can install them in the same positions.
(d)Move the air filter assembly (1) away from the support bracket (19).
(e)Remove the air filter assembly (1) from behind the sidewall lining.
(f)Put a blanking cap on the air pipe (17) at the union (15).
(g)Remove the non-return valve (13) from the base plate (9) of the air filter assembly (1).
(h)Put a blanking cap on the union side of the non-return valve in the base plate (9) of the air filter assembly (1).

R C. Preparation for Installation (Ref. Fig. 401, 403)

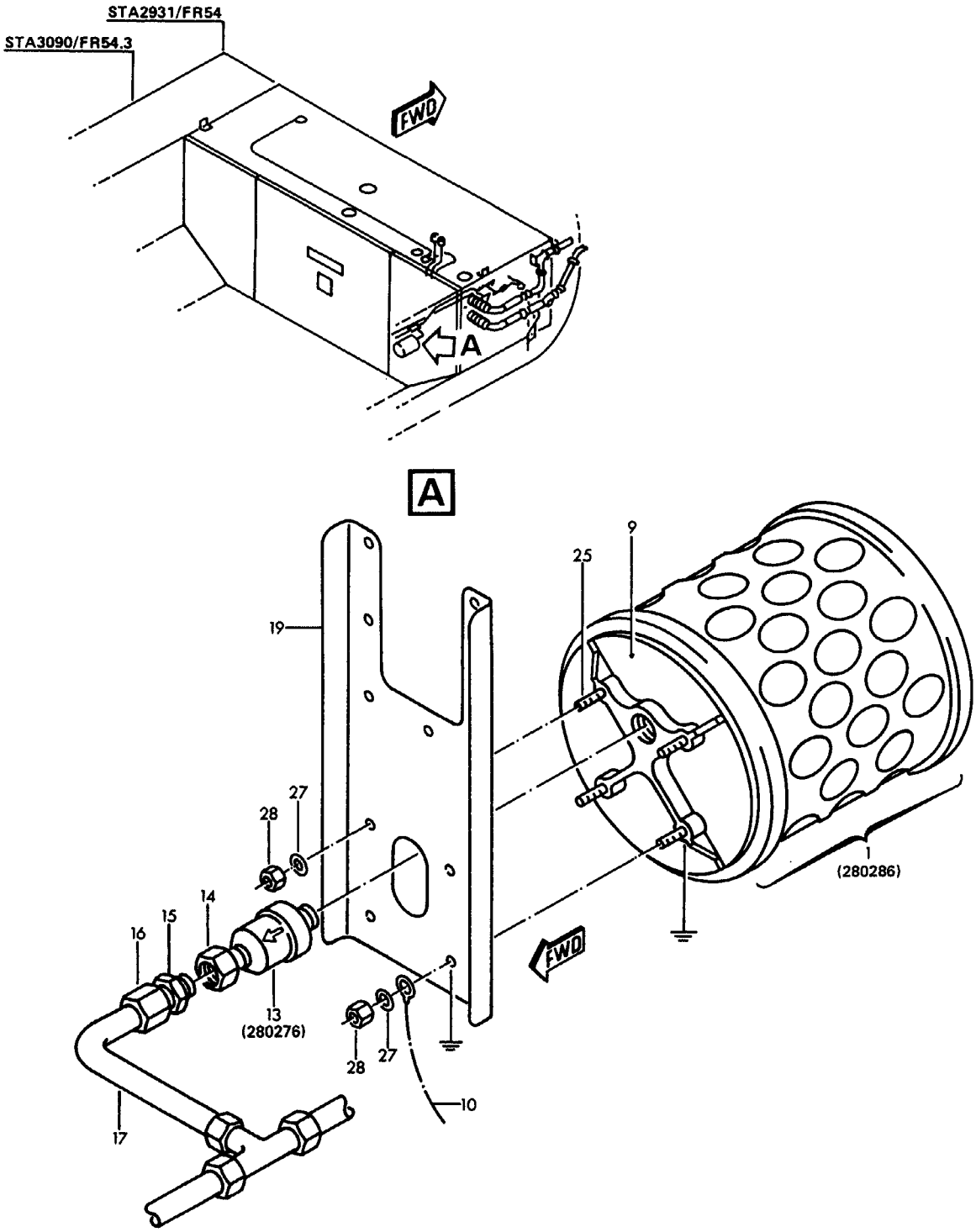
**ON A/C 101-200,

Post SB 28-2105 For A/C 101-200,

R C. Preparation for Installation (Ref. Fig. 402, 404)

**ON A/C 101-200,

(1)Do this step if you are to replace the air filter cartridge (2) only.
(a)Make sure that:
- the stiff nut (3) is serviceable,
- the end plate (5) has no damage,
- the stud (8) has no damage,
- the stud (8) is correctly attached to the base plate (9),
- the non-return valve (13) is correctly attached to the base plate (9),
- the base plate (9) has no damage,
- the base plate (9) is correctly attached to the support bracket (19),



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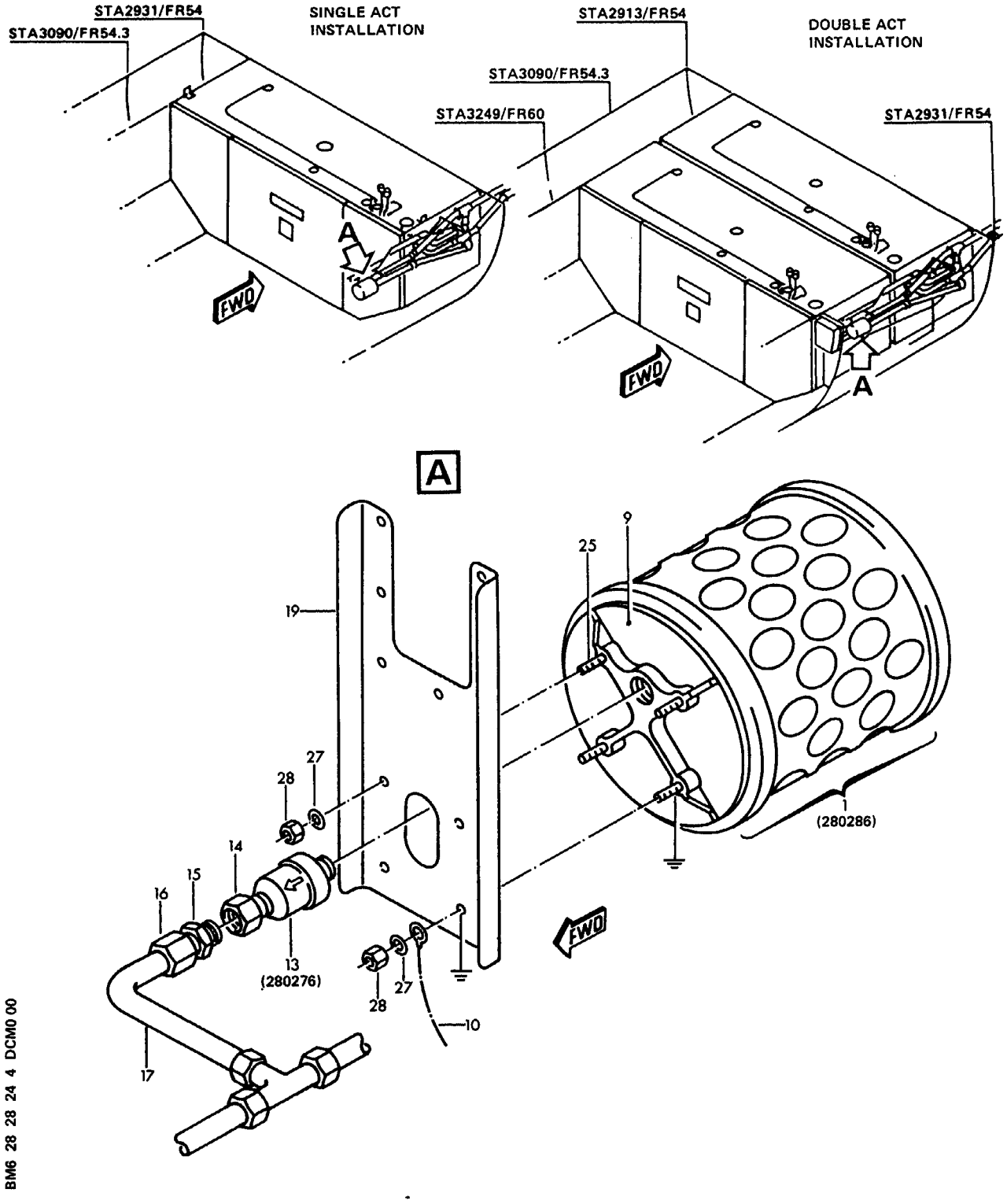
Air Filter 280286 - Complete
Figure 403



Air Filter 280286 - Complete
Figure 404

- the air pipe (17) is correctly attached to the non-return valve (13) at the base plate (9).

(b)Do a visual check of the adjacent area behind the sidewall lining and look for:
- corrosion,
- damage,
- signs of fuel leakage.

(2)Do this step if you are to replace the air filter assembly (1).

(a)Make sure that:
- the non-return valve (13) has no damage,
- the air pipe (17) has no damage,
- the union nut (16) is tight on the union (15),
- the support bracket (19) has no damage,
- the support bracket (19) is correctly attached to the aircraft structure.
- the stiff-nuts (28) are serviceable.

(b)Do a visual check of the adjacent area behind the sidewall lining and look for:
- corrosion,
- damage,
- signs of fuel leakage.

D. Installation

(1)Installation of the Air Filter Cartridge (Ref. Fig. 401)

**ON A/C 101-200,

Post SB 28-2105 For A/C 101-200,

D. Installation

(1)Installation of the Air Filter Cartridge (Ref. Fig. 402)

**ON A/C 101-200,

(a)Remove the blanking cap from the union (10) at the base plate (9).

R (b)Put the replacement cartridge (2) behind the sidewall lining.

R (c)Put the cartridge (2) over the stud (8).

R (d)Put the end plate (5) on the stud (8).

R (e)Install the washer (4) and the stiff-nut (3) on the stud (8).

R NOTE : Make sure that the end plate (5) is correctly installed.

(2)Installation of the Air Filter Assembly (Ref. Fig. 403)

**ON A/C 101-200,

Post SB 28-2105 For A/C 101-200,

(2)Installation of the Air Filter Assembly (Ref. Fig. 404)

**ON A/C 101-200,

(a)Remove the blanking cap from the union location in the base plate (9) of the air filter assembly (1) and from the non-return valve (13).
(b)Install the non-return valve (13) in the base plate (9).
(c)Remove the blanking cap from the union nut (15) of the air pipe (17) behind the sidewall lining.
CAUTION : HOLD THE AIR FILTER ASSEMBLY (1) IN POSITION BEHIND THE SIDEWALL LINING.
(d)Put the air filter assembly (1) in position behind the sidewall lining.
(e)Hold the air filter assembly (1) and put the studs (25) through the support bracket (19).
NOTE : Make sure that the thread for the non-return valve (13) is in good position through the support bracket (19).
(f)Install the bonding strap (10).
(g)Install the washers (27) and the stiff-nuts (28) on the studs (25).
NOTE : Make sure that the washers (27) and the stiff-nuts (28), identified in REMOVAL, are installed at the bonding points.
(h)Connect the non-return valve (13) to the union (15).
(i)Tighten the union nut (14) on the union (15).
NOTE : Make sure that the air pipe (17) is not stressed.

E. Test
Not applicable.

F. Close-Up
(1)Make sure that no tools or other items have been left behind the side-wall lining.
(2)Install the access panel 152DX at FR59A.
(3)Install the container or the two-half width containers behind the ACT, if necessary (Ref. 25-52-00, P. Block 1).
(4)Make sure that the work area is clean and clear of tools and other items.
(5)Close the AFT cargo compartment door (Ref. 52-30-00, P. Block 1).
(6)Remove the access platform.

**ON A/C 101-200,

Post SB 28-2105 For A/C 101-200,

F. Close-Up
(1)Make sure that no tools or other items have been left behind the side-wall lining.
(2)Do this step if the aircraft has the single ACT installation.
(a)Install the access panel 152DX at FR59A.
(b)Install the container or the half-width containers behind the ACT, if necessary (Ref. 25-52-00, P. Block 1).
(c)Make sure that the work area is clean and clear of tools and other items.

(d)Close the AFT cargo compartment door (Ref. 52-30-00, P. Block 1).
(e)Remove the access platform.

(3)Do this step if the aircraft has the double ACT installation.
(a)Install the access panel 152FX at FR59A.
(b)Install the container or the half-width containers behind the ACT, if necessary (Ref. 25-52-00, P. Block 1).
(c)Make sure that the work area is clean and clear of tools and other items.
(d)Close the AFT cargo-compartment door (Ref. 52-30-00, P. Block 1).
(e)Remove the access platform.

FUEL INLET VALVE AND ACTUATOR - ADDITIONAL CENTER TANK - REMOVAL/INSTALLATION

R **WARNING** : THIS PROCEDURE USES A FUEL SYSTEM ITEM THAT IS IN A CATEGORY KNOWN
R AS A CRITICAL DESIGN CONFIGURATION CONTROL LIMITATION (CDCCL).
R CDCCL IDENTIFIES AN ITEM THAT CAN BE THE SOURCE OF A POSSIBLE FUEL
R TANK IGNITION. YOU MUST KEEP ALL CDCCL ITEMS IN THE APPROVED
R CONFIGURATION. DAMAGE, WEAR OR CHANGES TO A CDCCL ITEM CAN CAUSE
R A POSSIBLE FUEL TANK EXPLOSION.

R **WARNING** : MAKE SURE THAT THE FIRE FIGHTING EQUIPMENT IS AVAILABLE AND ADEQUATE.

R **WARNING** : MAKE SURE THAT YOU ISOLATE THE ELECTRICAL CIRCUITS UPON WHICH WORK
R IS IN PROGRESS.

R **WARNING** : OBEY THE FUEL SAFETY PROCEDURES. THIS CAN PREVENT INJURY AND DAMAGE.

R **WARNING** : DO NOT GET AIRCRAFT FUEL:
R - IN YOUR MOUTH
R - IN YOUR EYES
R - ON YOUR SKIN FOR A LONG TIME.

R **WARNING** : DO NOT GET YOUR CLOTHES SOAKED WITH FUEL.
R AIRCRAFT FUEL IS POISONOUS AND CAN GO THROUGH YOUR SKIN INTO YOUR
R BODY. IF YOU ARE CONTAMINATED, WASH WITH CLEAN WATER AND IF NECESSARY,
R GET MEDICAL HELP.

1. Equipment and Materials

ITEM	DESIGNATION
A.	Access Platform, 2.7 m (9 ft.)
B.	Fluorescent Lamp - Explosion Proof
C. 98A28108001000	Water Drain Adapter
D.	Blanking Caps
E.	Drainage Containers
F.	O-Rings
G.	Circuit Breaker Safety Clips and Tags
H.	Adhesive Tape
R J.	Warning Notices
R K. Material No. 04-012	Common Greases (Ref. 20-31-00)

Referenced Procedures

- 12-11-28, P. Block 301	Fuel Tank Replenishing
- 20-28-11, P. Block 1	Electrical Bonding
- 28-00-00, P. Block 301	Fuel - General
R	
- 28-11-00, P. Block 301	Tanks
- 28-11-36, P. Block 601	Additional Center Tank
- 28-11-37, P. Block 401	Manhole Cover - Additional Center Tank
- 28-11-38, P. Block 601	Bladder Tank

- 28-11-39, P. Block 401 Water Drain Valve - Additional Center Tank
- 28-25-00, P. Block 301 Refuel/Defuel System
- 28-28-00, P. Block 501 Additional Center Tank Transfer System
- 52-30-00, P. Block 1 Cargo Compartment Doors

**ON A/C 101-200,

Post SB 28-2105 For A/C 101-200,

Referenced Procedures

- 12-11-28, P. Block 301	Fuel Tank Replenishing
- 20-28-11, P. Block 1	Electrical Bonding
- 25-21-00, P. Block 401	Passenger Compartment Seats
- 28-00-00, P. Block 301	Fuel - General
R - 28-11-00, P. Block 301	Tanks
- 28-11-36, P. Block 401	Additional Center Tank
- 28-11-36, P. Block 601	Additional Center Tank
- 28-11-37, P. Block 401	Manhole Cover - Additional Center Tank
- 28-11-38, P. Block 601	Bladder Tank
- 28-11-39, P. Block 401	Water Drain Valve - Additional Center Tank
- 28-25-00, P. Block 301	Refuel/Defuel System
- 28-28-00, P. Block 501	Additional Center Tank Transfer System
- 52-30-00, P. Block 1	Cargo Compartment Doors

**ON A/C 101-200,

2. Procedure

**ON A/C 101-200,

Post SB 28-2105 For A/C 101-200,

2. Procedure
NOTE : If two additional center tanks (ACT) are installed:
(1) The installation of the fuel inlet valve 280288 in the fwd ACT and 280296 in the aft ACT is the same.
(2) The installation of the actuator 280290 on the fwd ACT and 280298 on the aft ACT is the same.
(3) The removal/installation of the fuel inlet valve and the actuator from one ACT only is given.

**ON A/C 101-200,

A. Job Set-Up
R (1)Obey the fuel safety procedures (Ref. 28-00-00, P. Block 301).
R (2)Make sure that the aircraft is statically grounded.
R (3)Put the access platform in position.
R (4)Open the AFT cargo-compartment door (Ref. 52-30-00, P. Block 1).
R (5)Open, safety and tag the circuit breakers:

PANEL	SERVICE	IDENT.	LOCATION
132VU	FUEL/FUELLING/CTL & REFUEL VALVE	1QU	321/P56
132VU	FUEL/FUELLING/XFR VALVE	2QU	321/P55

R (6)Put the warning notices in position on:
- the refuel/defuel panel 110VU
- the fuelling panel 430VU
to tell persons not to operate the MODE SELECTOR switch.

**ON A/C 101-200,

Post SB 28-2105 For A/C 101-200,

R (7)Do this step if you are to remove:
- the fuel inlet valve 280288 only,
- the fuel inlet valve 280288 and the actuator 280290 from the fwd ACT when two ACT are installed.
(a)Remove the aft ACT (Ref. 28-11-36, P. Block 401).
R (8)Do this step if you are to remove the actuator 280290 only from the fwd ACT, when two ACT are installed.

(a) Get access to the actuator 280290 through the maintenance cover for the fuel inlet valve 280288.

1 Remove the cover from the right-hand floor panel in the AFT passenger compartment, aft of FR54.2.

a Remove the relevant passenger compartment seats (Ref. 25-21-00, P. Block 401).

b Remove the carpet.

c Remove the cover from the right-hand floor panel and get access to the fuel inlet valve maintenance cover.

2 Remove the maintenance cover from the ceiling panel of the AFT cargo compartment.

**ON A/C 101-200,

B. Removal
(Ref. Fig. 401)

**ON A/C 101-200,

Post SB 28-2105 For A/C 101-200,

(Ref. Fig. 402)

**ON A/C 101-200,

(1)Removal of the Fuel Inlet Valve Actuator 280290

**ON A/C 101-200,

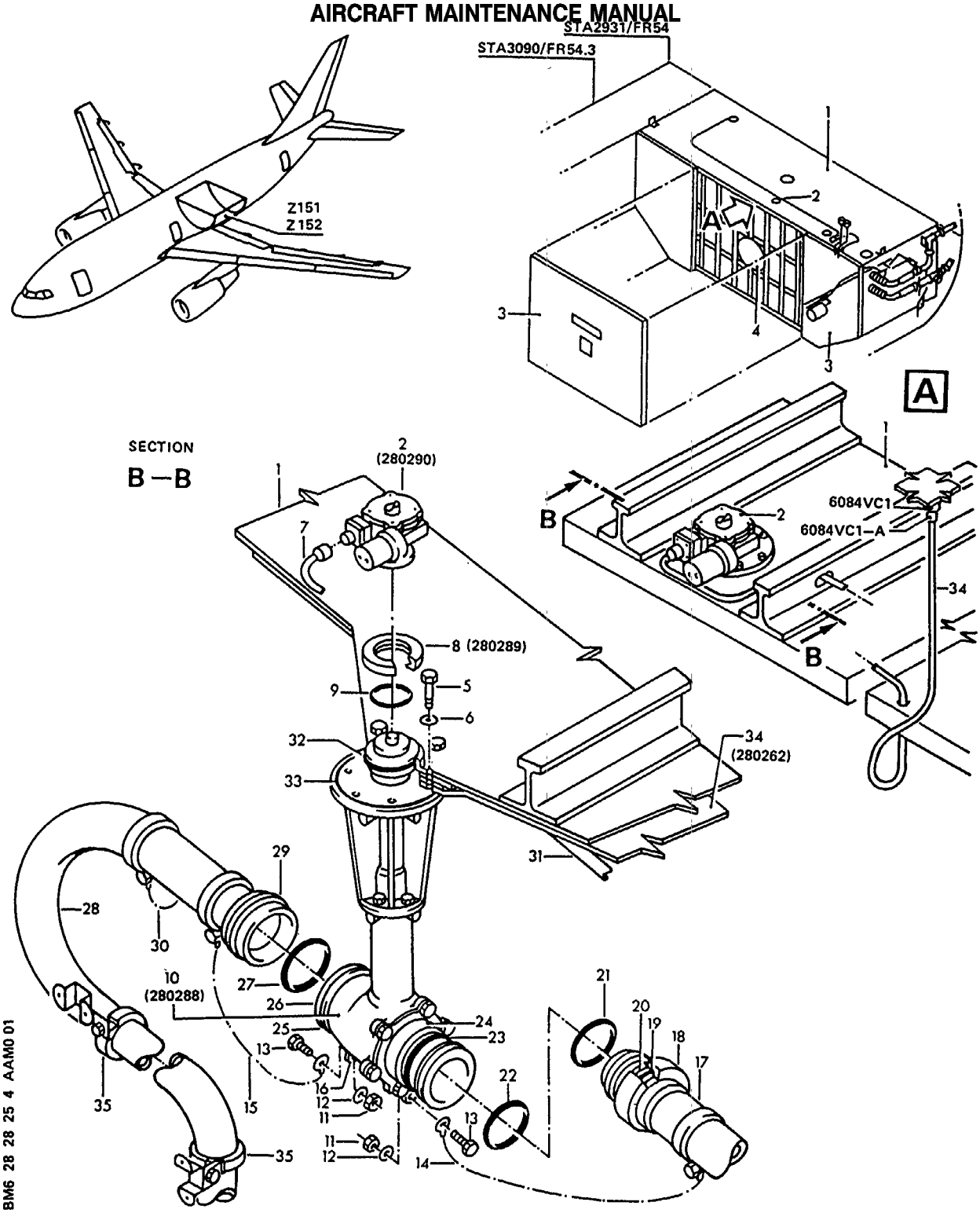
Post SB 28-2105 For A/C 101-200,

(1)Removal of the Actuator 280290 (280298)

**ON A/C 101-200,

(a)Disconnect the quick-release fasteners and remove the center section of the heat shield (3), if necessary.
(b)Disconnect the electrical connector 43QH-A (7) from the receptacle of the actuator (2).
(c)Put blanking caps on the receptacle of the actuator (2) and the electrical connector 43QH-A (7).
NOTE : Do not disconnect the connection 6084VC1-A (6084VC2-A) from the plug 6084VC1 (6084VC2) in the ceiling panel.
(d)Disconnect the V-clamp (8) at the flange connection of the actuator (2) and the fuel inlet valve (10).
(e)Remove the V-clamp (8).
(f)Remove the actuator (2).
(g)Remove and discard the O-ring (9) from the interface of the fuel inlet valve (10).
(h)Put adhesive tape in position to protect:
- the drive shaft spigot at the interface of the actuator (2),
- the see/feel indicator on the top surface of the actuator (2),
- the input shaft at the interface of the fuel inlet valve (10).

(2)Removal of the Fuel Inlet Valve 280288 (10)
(a)Make the ACT (1) empty (Ref. 28-25-00, P. Block 301).
CAUTION : REMOVE FUEL LEAKAGE IMMEDIATELY.
(b)Drain the remaining fuel from the ACT (1).
1 Put the drainage containers below the water drain valves 280241 and 280244 at the access panels 153DL and 154DR.
2 Disconnect the screws and remove the access panels 153DL and 154DR.



Fuel Inlet Valve 280288 and Actuator 280290
Figure 401

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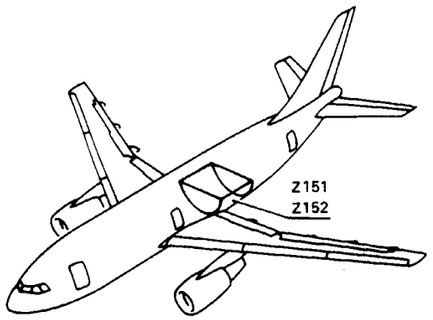

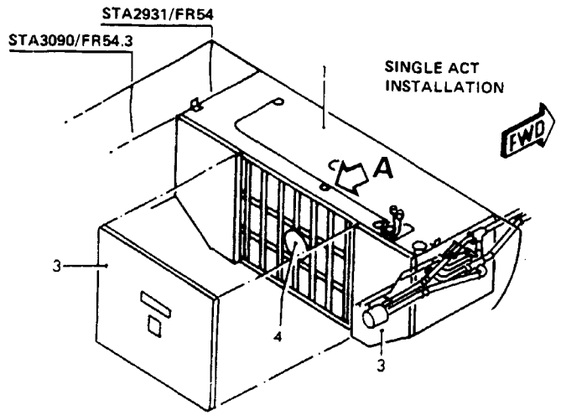

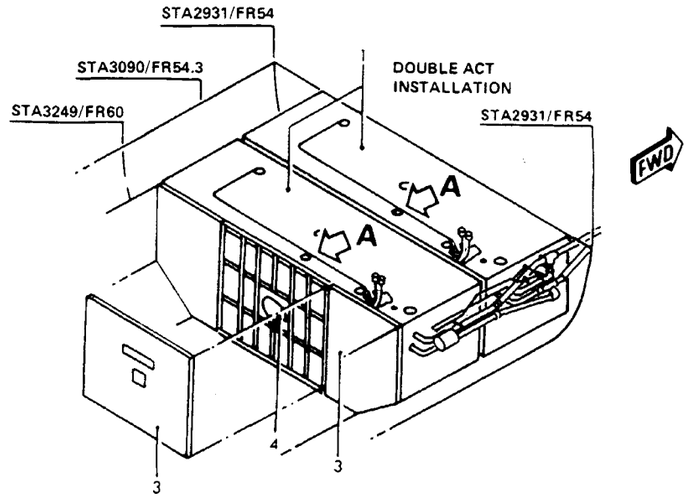

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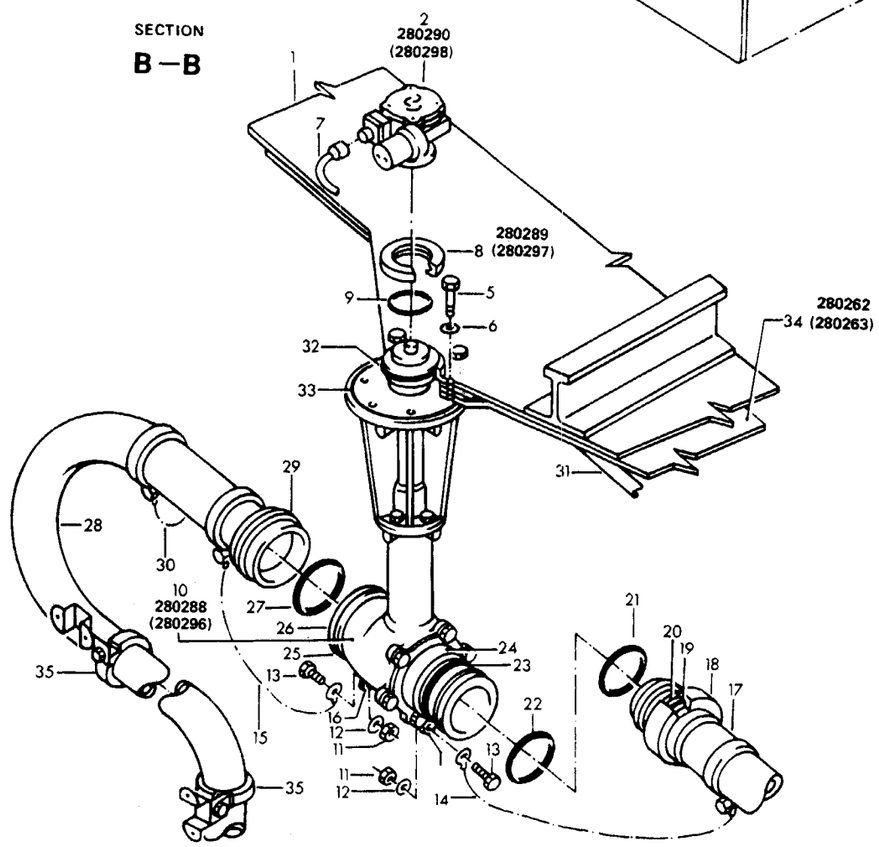

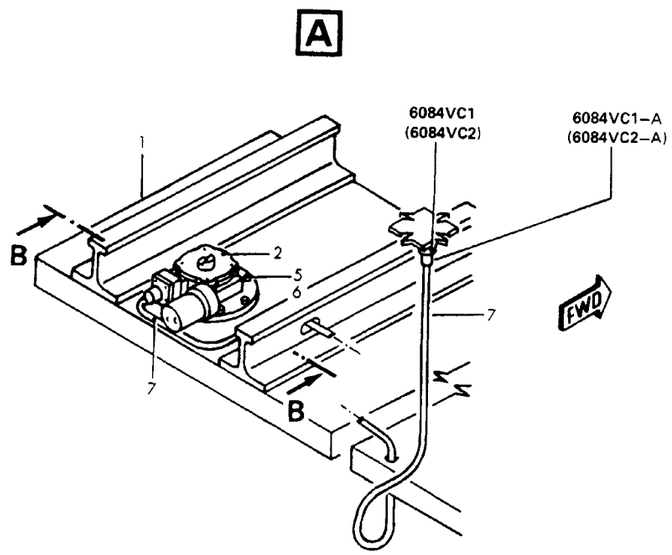

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Fuel Inlet Valve and Actuator
Figure 402

NOTE : Do not disconnect the safety cords from the access panels 153DL and 154DR at this step.

4 Put the flange PN 98A28108001200 of the water drain adapter PN 98A28108001000, in position at one of the drain openings.

5 Connect the flange PN 98A28108001200 to the aircraft skin with the quick-release fasteners.

6 Put the thrust rod PN 98A28108001100 of the water drain adapter PN 98A28108001000 through the flange PN 98A28108001200.

7 Use the thrust rod PN 98A28108001100 to lift the water drain valve 280241 (280244) and drain the fuel into the drainage container.

8 Remove the thrust rod PN 98A28108001100.

9 Disconnect the quick-release fasteners and remove the flange PN 98A28108001200.

10 Do the steps 4 thru 9 again at the other water drain valve 280244 (280241).

11 Remove the drainage containers.

NOTE : Do not connect the access panels 153DL and 154DR to the aircraft skin at this time.

**ON A/C 101-200,

Post SB 28-2105 For A/C 101-200,

(2)Removal of the Fuel Inlet Valve 280288 (280296) (10)
(a)Make the ACT (1) empty (Ref. 28-25-00, P. Block 301).
CAUTION : REMOVE FUEL LEAKAGE IMMEDIATELY.
(b)Drain the remaining fuel from the ACT (1).
1 Put the drainage containers in position below the water drain valves 280241 (280242) and 280244 (280243) at the access panels 153DL (153EL) and 154DR (154ER).
2 Disconnect the screws and remove the access panels 153DL (153EL) and 154DR (154ER) from the aircraft skin.
NOTE : Do not disconnect the safety cords from the access panels 153DL (153EL), 154DR (154ER) at this step.
3 Put the flange PN 98A28108001200 of the water drain adapter PN 98A28108001000 in position at one of the drain openings.
4 Connect the flange PN 98A28108001200 to the aircraft skin with the quick-release fasteners.
5 Put the thrust rod PN 98A28108001100 of the water drain adapter PN 98A28108001000 through the flange PN 98A28108001200.
6 Use the thrust rod PN 98A28108001100 to lift the valve 280241 (280242) or 280244 (280243) and drain the fuel from the ACT (1).
7 Remove the thrust rod PN 98A28108001100.
8 Disconnect the quick-release fasteners and remove the flange PN 98A28108001200.
9 Do the steps 3 thru 8 again at the other valve 280244 (280243) or 280241 (280242).
10 Remove the drainage containers.
NOTE : Do not connect the access panels 153DL (153EL) and 154DR (154ER) to the aircraft skin at this time.

**ON A/C 101-200,

(c)Remove the actuator (2) from the top surface of the ACT (1) (Ref. step 2.B.(1)).
(d)Disconnect the quick-release fasteners and remove the center section of the heat shield (3), if necessary.
(e)Remove the manhole cover (4) from the rear wall of the ACT (1) (Ref. 28-11-37, P. Block 401).
WARNING : DO NOT GO INTO A FUEL TANK UNTIL IT IS PURGED AND/OR USE THE CORRECT SAFETY EQUIPMENT.
(f)Purge the ACT (1) as necessary (Ref. 28-11-00, P. Block 301).
(g)Use an explosion-proof fluorescent lamp so that you can see the internal area of the ACT (1).
(h)Disconnect the bonding straps (14),(15) from the fuel inlet valve (10).
1 Remove the nuts (11), the washers (12) and the bolts (13).
2 Remove the bonding straps (14),(15) from the bonding brackets (16) of the fuel inlet valve (10).
NOTE : Do not disconnect:
- the bonding strap (14) from the fuel pipe (17),
- the bonding strap (15) from the fuel pipe (28),
- the bonding brackets (16) from the fuel inlet valve (10),
unless a repair or a new installation is necessary.
R (j)Disconnect the fuel inlet valve (10) from the fuel pipe (17).
1 Disconnect the union nut (24) at the connection of the fuel inlet valve (10) and the bush (20).
2 Move the union nut (24), together with the spring retaining ring (23), along the stub pipe of the fuel inlet valve (10).
NOTE : Make sure that the union nut (24) is clear of the O-ring (22) on the stub pipe of the fuel inlet valve (10).
3 Move the union nut (18), together with the spring retaining ring (19) and the bush (20), along the fuel pipe (17).
NOTE : Make sure that the bush (20) is clear of the O-ring (21) on the fuel pipe (17).
NOTE : Do not disconnect the union nut (18) and remove the bush (20) unless a repair or a new installation is necessary.
3 Loosen the nuts at the support clamps (35) on the fuel pipe (28).
R (k)Disconnect the fuel inlet valve (10) from the fuel pipe (28).
1 Loosen the nuts at the support clamps (35) on the fuel pipe (28).
2 Disconnect the union nut (25) at the connection of the fuel inlet valve (10) and the sleeve (29) of the fuel pipe (28).
3 Move the union nut (25), together with the spring retaining ring (26), along the stub pipe of the fuel inlet valve (10).

R (l)Remove the fuel inlet valve (10) from the ACT (1).
CAUTION : HOLD THE FUEL INLET VALVE (10) IN THE ACT (1).
1 Hold the fuel inlet valve (10) in the ACT (1) and remove the bolts (5) and the washers (6) from the top surface of the ACT (1).
2 Move the fuel pipe (28) away from the fuel inlet valve (10).
3 Move the fuel inlet valve (10) away from the fabric flange of the bladder tank (34).
4 Remove the fuel inlet valve (10) from the ACT (1) through the manhole in the rear wall of the ACT (1).
5 Remove and discard the O-rings (22),(27) from the stub pipes of the fuel inlet valve (10).
6 Remove and discard the O-ring (32) from the body interface of the fuel inlet valve (10).
7 Remove and discard the O-ring (33) from the flange interface of the fuel inlet valve (10).
8 Remove and discard the O-ring (21) from the fuel pipe (17) in the ACT (1).

R (m)Put blanking caps on the stub pipes of the fuel inlet valve (10).

R (n)Put blanking caps on the ends of the fuel pipes (17),(28) in the ACT (1).

R (p)Put adhesive tape over the opening for the fuel inlet valve (10) in the top surface of the ACT (1).

R (q)Remove the fluorescent lamp.

R (r)Temporarily install the manhole cover (4) on the rear wall of the ACT (1).

C. Preparation for Installation
(1)Actuator 280290

**ON A/C 101-200,

Post SB 28-2105 For A/C 101-200,

C. Preparation for Installation
(1)Actuator 280290 (280298)

**ON A/C 101-200,

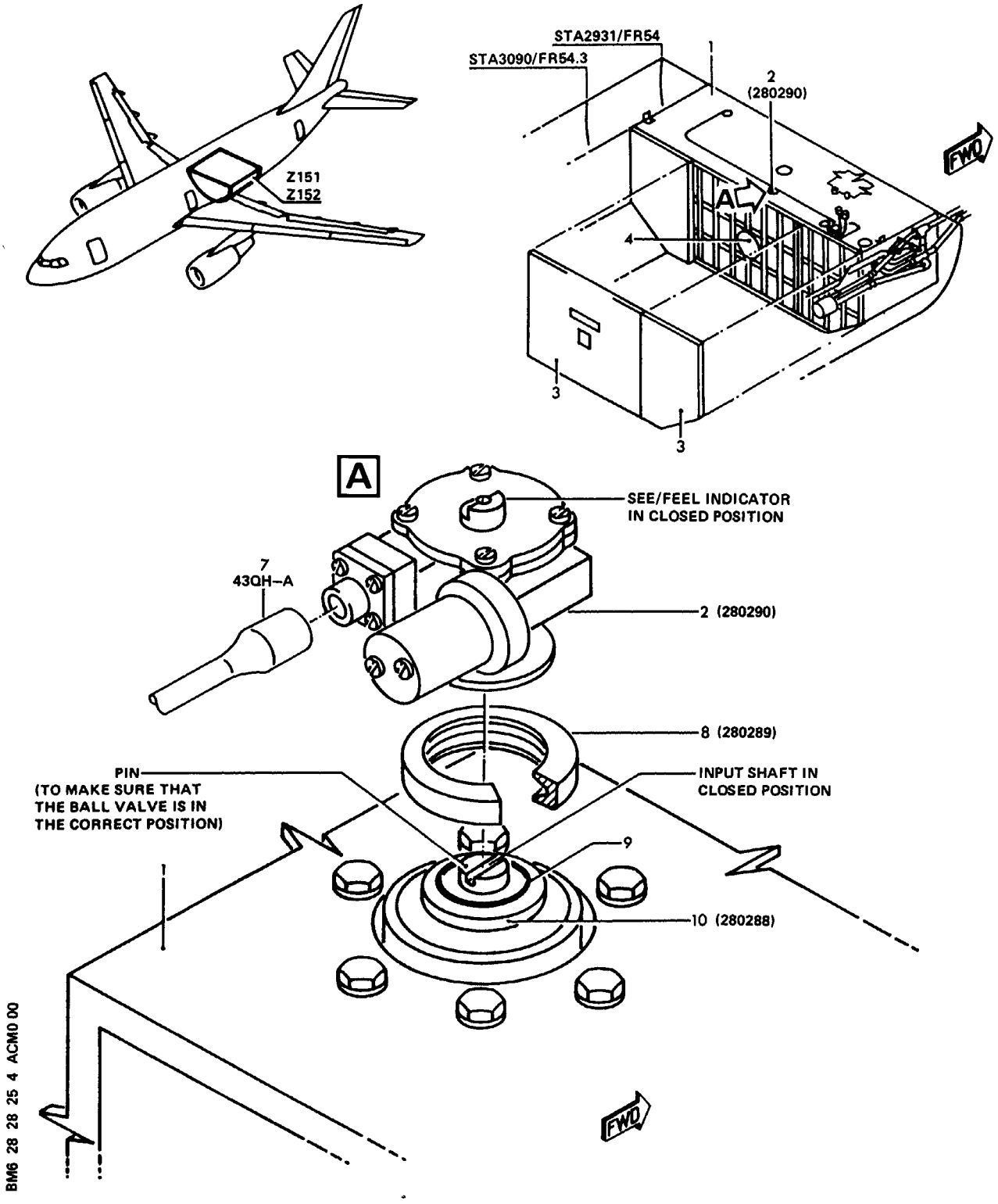
(Ref. Fig. 403)

**ON A/C 101-200,

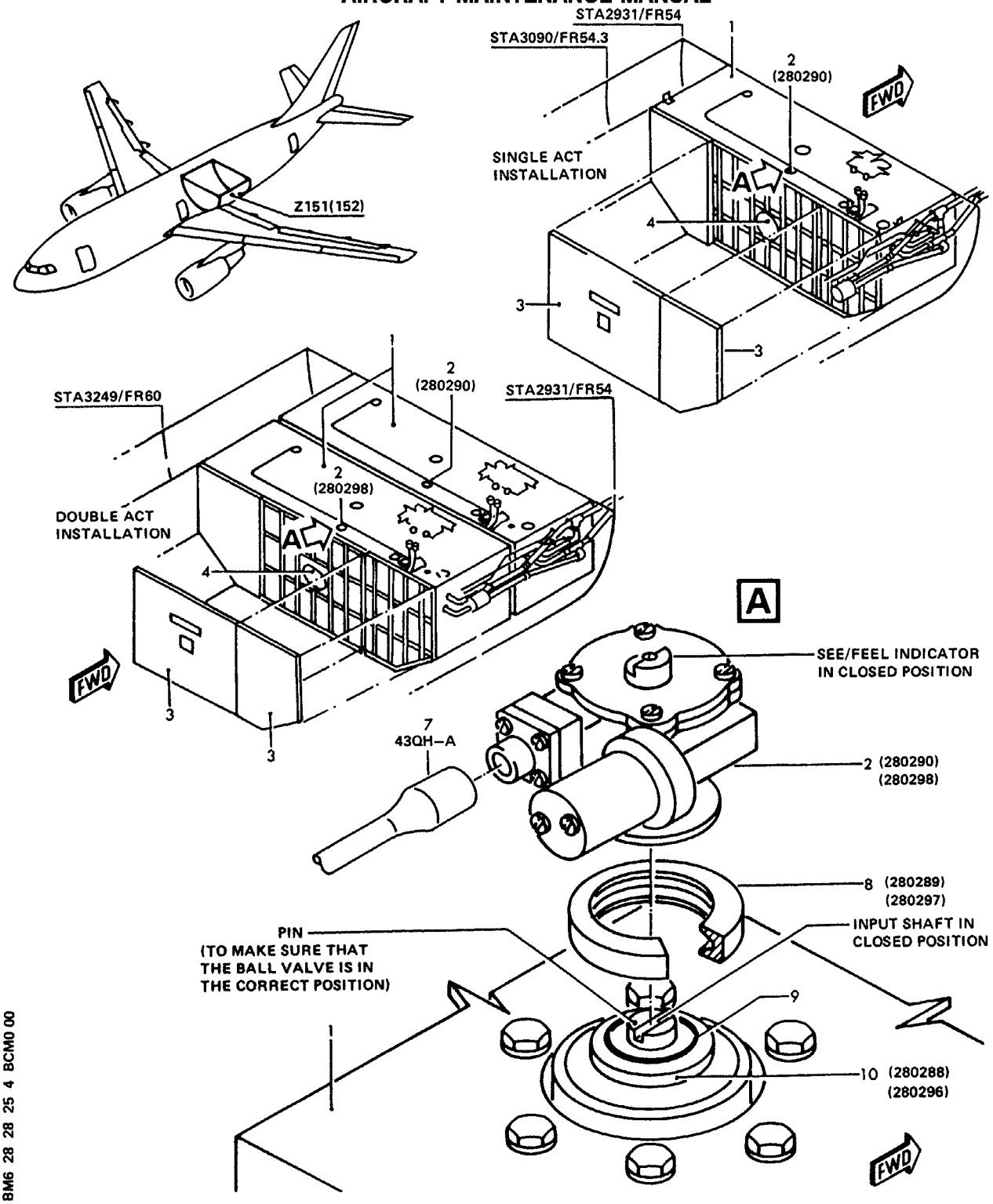
Post SB 28-2105 For A/C 101-200,

(Ref. Fig. 404)

**ON A/C 101-200,



Input Shaft and Indicator - Closed Position
Figure 403



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Closed Position of See/Feel Indicator
and Input Shaft
Figure 404

(a)Make sure that the actuator 280290 is serviceable as specified in the related vendor manual.
(b)Remove the adhesive tape or the protective cap from the see/feel indicator on the top surface of the actuator 280290.
(c)Make sure that the see/feel indicator is in the closed position (Ref. Fig. 403).
(d)Remove the adhesive tape or the protective cap from the drive shaft spigot of the actuator 280290.
(e)Make sure that the V-clamp 280289 has no damage.
(f)Remove the adhesive tape or the protective cap from the input shaft of the fuel inlet valve 280288 (Ref. Fig. 403).
(g)Make sure that the flange of the fuel inlet valve 280288 is clean and has no damage.
(h)Make sure that the electrical harness on the top surface of the ACT is clean and has no damage.

(2)Fuel Inlet Valve 280288
(a)Do the preparation for the installation of the fuel inlet valve actuator 280290 (Ref. step 2.C.(1)).
(b)Remove the manhole cover which was temporarily attached to the rear wall of the ACT.
(c)Examine the ACT (Ref. 28-11-36, P. Block 601) and look for:
- corrosion,
- damage,
- correct attachment of the components,
- signs of fuel leakage.

NOTE : If you find fuel leakage or damage to the bladder tank 280262:
1. Remove the bladder tank 280262.
2. Do an approved leak test.
3. Do an approved repair as necessary.

(d)Examine the internal area of the bladder tank 280262 (Ref. 28-11-38, P. Block 601).
(e)Make sure that the interface of the fabric flange on the bladder tank 280262:
- is clean,
- has no damage.

(f)Make sure that the fuel inlet valve 280288 is serviceable as specified in the related vendor manual.
(g)Remove the preservation from the replacement fuel inlet valve 280288.
(h)Remove the adhesive tape or the protective cap from the input shaft of the fuel inlet valve 280288.
R (j)Make sure that the input shaft of the fuel inlet valve 280288 has no damage.
R (k)Make sure that the drive slot in the input shaft of the fuel inlet valve 280288 is in the closed position.

R WARNING : THIS INSTRUCTION IS APPLICABLE TO A CRITICAL DESIGN CONFIG-
R URATION CONTROL LIMITATION (CDCCL). CAREFULLY OBEY ALL GIVEN
R INSTRUCTIONS WHEN YOU DO THIS STEP. IF YOU DO NOT OBEY THESE
R INSTRUCTIONS, A DANGEROUS CONDITION CAN OCCUR THAT CAN CAUSE
R A POSSIBLE FUEL TANK EXPLOSION.

R (l)Make sure that the bonding lugs on the fuel inlet valve 280288 are clean and have no damage (Ref. 20-28-11, P. Block 1).
R (m)Remove the blanking caps from the stub pipes of the fuel inlet valve 280288.
(m)Make sure that:
- the union nuts (24),(25),
- the spring retaining rings (23),(26)

are correctly installed on the stub pipes of the fuel inlet valve 280288 (Ref. Fig. 401).

**ON A/C 101-200,

Post SB 28-2105 For A/C 101-200,

(a)Make sure that the actuator 280290 (280298) is serviceable as specified in the related vendor manual.
(b)Remove the adhesive tape from the see/feel indicator on the top surface of the actuator 280290 (280298).
(c)Make sure that the see/feel indicator is in the closed position.
(d)Remove the adhesive tape from the drive shaft spigot of the actuator 280290 (280298).
(e)Remove the adhesive tape from the input shaft of the fuel inlet valve 280288 (280296).
(f)Make sure that the input shaft and the flange of the fuel inlet valve 280288 (280296) are clean and have no damage.
(g)Make sure that the V-clamp 280289 (280297) has no damage.
(h)Make sure that the electrical harness on the top surface of the ACT has no damage.

(2)Fuel Inlet Valve 280288 (280296)
(a)Do the preparation for the installation of the fuel inlet valve actuator 280290 (280298) (Ref. step 2C(1)).
(b)Remove the manhole cover which is temporarily attached to the rear wall of the ACT.
(c)Examine the ACT (Ref. 28-11-36, P. Block 601) and look for:
- corrosion,
- damage,
- correct attachment of the components,
- signs of fuel leakage.
(d)Use an explosion-proof fluorescent lamp so that you can see the internal area of the ACT.
(e)Examine the internal area of the bladder tank 280262 (280263) (Ref. 28-11-38, P. Block 601).
(f)Make sure that the interface of the fabric flange on the bladder tank 280262 (280263):
- is clean,
- has no damage.
(g)Make sure that the fuel inlet valve 280288 (280296) is serviceable as specified in the related vendor manual.
(h)Remove the preservation from the replacement fuel inlet valve 280288 (280296), if necessary.
R (j)Remove the adhesive tape from the input shaft of the fuel inlet valve 280288 (280296).
R (k)Make sure that the input shaft of the fuel inlet valve 280288 (280296) has no damage.
R (l)Make sure that the drive slot in the input shaft of the fuel inlet valve 280288 (280296) is in the closed position (Ref. Fig. 404).

R WARNING : THIS INSTRUCTION IS APPLICABLE TO A CRITICAL DESIGN CONFIG-
R URATION CONTROL LIMITATION (CDCCL). CAREFULLY OBEY ALL GIVEN
R INSTRUCTIONS WHEN YOU DO THIS STEP. IF YOU DO NOT OBEY THESE
R INSTRUCTIONS, A DANGEROUS CONDITION CAN OCCUR THAT CAN CAUSE
R A POSSIBLE FUEL TANK EXPLOSION.

R (m)Make sure that the bonding brackets on the fuel inlet valve 280288 (280296) are clean and have no damage (Ref. 20-28-11, P. Block 1).
R (n)Remove the blanking caps from the stub pipes of the fuel inlet valve 280288 (280296).
R (p)Make sure that:
- the union nuts,
- the spring retaining rings,
are correctly installed on the stub pipes of the fuel inlet valve 280288 (280296).

**ON A/C 101-200,

D. Installation (Ref. Fig. 401, 403)
(1)Installation of the Actuator 280290 (2)

**ON A/C 101-200,

Post SB 28-2105 For A/C 101-200,

D. Installation (Ref. Fig. 402, 404)
(1)Installation of the Actuator 280290 (280298) (2)

**ON A/C 101-200,

(a)Apply vaseline (Material No. 04-012) to the new O-ring (9).
(b)Put the O-ring (9) in the groove in the interface of the fuel inlet valve (10).
(c)Put the flange of the actuator (2) in position at the flange of the fuel inlet valve (10).
NOTE : Make sure that:
(1) The slot in the input shaft of the fuel inlet valve (10) is aligned with the spigot of the actuator (2).
(2) The pin on the input shaft of the fuel inlet valve (10) is correctly installed in the drive shaft of the actuator (2).
(d)Put the V-clamp (8) in position at the flange connection of the actuator (2) and the fuel inlet valve (10).
NOTE : Make sure that the O-ring (9) is correctly installed.
(e)Connect the V-clamp (8).
(f)Remove the blanking cap from the receptacle of the actuator (2).
(g)Remove the blanking cap from the electrical connector 43QH-A (7).
(h)Connect the electrical connector 43QH-A (7) to the receptacle of the actuator (2).
NOTE : Make sure that the connection 6084VC1-A of the harness (34) is correctly installed to the plug 6084VC1 in the ceiling panel.
(2)Installation of the Fuel Inlet Valve 280288 (10)

**ON A/C 101-200,

Post SB 28-2105 For A/C 101-200,

NOTE : Make sure that the connection 6084VC1-A (6084VC2-A) of the harness (34) is correctly installed to the plug 6084VC1 (6084VC2) in the ceiling panel.
(2)Installation of the Fuel Inlet Valve 280288 (280296) (10)

**ON A/C 101-200,

(a)Remove the adhesive tape from the opening for the fuel inlet valve (10)

in the top surface of the ACT (1).

(b)Remove the blanking caps from the ends of the fuel pipes (17),(28) in the ACT (1).

(c)Apply vaseline (Material No. 04-012) to the new O-rings (21),(22), (27),(32),(33).

(d)Put the O-ring (21) on the end of the fuel pipe (17).

(e)Put the O-rings (22),(27) on the stub pipes of the fuel inlet valve (10).

(f)Put the O-ring (32) in the groove in the body interface of the fuel inlet valve (10).

(g)Put the O-ring (33) in the groove in the flange interface of the fuel inlet valve (10).

(h)Install the fuel inlet valve (10) in the ACT (1).

CAUTION : HOLD THE FUEL INLET VALVE (10) IN THE ACT (1).

1 Put the fuel inlet valve (10) through the manhole in the rear wall of the ACT (1).

2 Move the fuel pipe (28) away from the fuel inlet valve position.

3 Put the fuel inlet valve (10) in position at the fabric flange of the bladder tank (34).

NOTE : Make sure that the body interface of the fuel inlet valve (10) is correctly installed through the fabric flange.

4 Examine the input shaft of the fuel inlet valve (10) at the top surface of the ACT (1).
a Make sure that:
- the pin is to the center of the ACT (1) to show the correct position of the ball valve,
- the drive slot in the input shaft is in the closed position.

5 Install the bolts (5) and the washers (6) to connect the ACT (1), the fabric flange and the fuel inlet valve (10).

6 Tighten the bolts (5) by hand.

NOTE : Make sure that the O-rings (32),(33) are correctly installed.

R (j)Connect the fuel inlet valve (10) to the fuel pipe (28).

1 Put the sleeve (29) of the fuel pipe (28) on the stub pipe of the fuel inlet valve (10).

2 Move the union nut (25), together with the spring retaining ring (26), along the stub pipe of the fuel inlet valve (10).

3 Put the union nut (25) on the sleeve (29).

4 Tighten the union nut (25) on the sleeve (29) by hand.

NOTE : Make sure that the O-ring (27) is correctly installed.

R (k)Connect the fuel inlet valve (10) to the fuel pipe (17).

1 Move the union nut (18), together with the spring retaining ring (19) and the bush (20), along the fuel pipe (17).

2 Put the bush (20) over the end of the stub pipe of the fuel inlet valve (10).

NOTE : Make sure that the O-rings (21),(22) are correctly installed.

3 Move the union nut (24), together with the spring retaining ring (23), along the stub pipe of the fuel inlet valve (10).

4 Put the union nut (24) over the end of the bush (20).

NOTE : Make sure that the O-ring (22) is correctly installed.

5 Tighten the union nut (24) by hand.

R (l)Fully tighten the bolts (5) at the top surface of the ACT (1).

R (m)Fully tighten the union nut (25) at the connection of the vent valve (10) and the fuel pipe (28).

R (n)Fully tighten the union nut (24) at the connection of the vent valve (10) and the bush (20).

R (p)Fully tighten the nuts at the support clamps (35) on the fuel pipe (28).

R WARNING : THIS INSTRUCTION IS APPLICABLE TO A CRITICAL DESIGN CONFIG-
R URATION CONTROL LIMITATION (CDCCL). CAREFULLY OBEY ALL GIVEN
R INSTRUCTIONS WHEN YOU DO THIS STEP. IF YOU DO NOT OBEY THESE
R INSTRUCTIONS, A DANGEROUS CONDITION CAN OCCUR THAT CAN CAUSE
R A POSSIBLE FUEL TANK EXPLOSION.

R (q)Connect the bonding straps (14),(15) to the fuel inlet valve (10) (Ref. 20-28-11, P. Block 1).

1 Put the bonding straps (14),(15) in position at the bonding brackets (16).

2 Install the bolts (13), the washers (12) and the nuts (11) at the connection of the bonding straps (14),(15) and the bonding brackets (16).

R (r)Install the actuator (2) at the top surface of the ACT (1)

(Ref. step 2.D.(1)).
(s)Remove the fluorescent lamp.
(t)Make sure that there are no tools or other items in the ACT (1).
R (u)Make sure that there are no unwanted objects and materials, tools
R or other equipment in the tank.
R (v)Install the manhole cover (4) on the rear wall of the ACT (1) (Ref. 28-11-37, P. Block 401).

**ON A/C 101-200,

Post SB 28-2105 For A/C 101-200,

R (w)Do this step if it was necessary to remove/install:
- the fuel inlet valve 280288 only,
- the fuel inlet valve 280288 and the actuator 280290 from the fwd ACT when two ACT are installed.

1 Install the aft ACT (1) (Ref. 28-11-36, P. Block 401).

**ON A/C 101-200,

E. Test
(1)Remove the safety clips and tags and close the circuit breakers 1QU, 2QU.
(2)Remove the warning notices from the refuel/defuel panel 110VU and from the fuelling panel 430VU.
(3)Do a functional check of the fuel inlet valve operation and make sure that:
- the fuel inlet valve 280288 operates from the closed position to the open position,
- the see/feel indicator on the top of the actuator 280290 correctly shows the valve open position,
- the fuel inlet valve 280288 operates from the open position to the closed position,
- the see/feel indicator on the top of the actuator 280290 correctly shows the valve closed position.

F. Close-Up
(1)Put the heat shield in position on the rear wall of the ACT.
(2)Connect the heat shield to the ACT with the quick-release fasteners.
(3)Make sure that the work area is clean and clear of tools and other items.
(4)Close the AFT cargo-compartment door (Ref. 52-30-00, P. Block 1).
(5)Remove the access platform.
(6)Refuel the aircraft as required (Ref. 12-11-28, P. Block 301).
NOTE : Keep a minimum of 50 litres (13.21 U.S. gal.) of fuel in the ACT. This will prevent cracks in the inner lining of the bladder tank 280262.
(7)Make sure that there is no leakage from the drain valves 280241 and 280244 (Ref. 28-11-39, P. Block 401).
(8)Put the access panels 153DL and 154DR in position at the aircraft

skin and connect the screws.

**ON A/C 101-200,

Post SB 28-2105 For A/C 101-200,

E. Test
(1)Remove the safety clips and tags and close the circuit breakers 1QU, 2QU.
(2)Remove the warning notices from the refuel/defuel panel 110VU and from the fuelling panel 430VU.
(3)Do a functional check of the fuel inlet valve operation and make sure that:
- the fuel inlet valve 280288 (280296) operates from the closed position to the open position,
- the see/feel indicator on the top of the actuator 280290 (280298) correctly shows the valve open position,
- the fuel inlet valve 280288 (280296) operates from the open position to the closed position,
- the see/feel indicator on the top of the actuator 280290 (280298) correctly shows the valve closed position.

F. Close-Up
(1)Do this step only if it was necessary to remove/install the actuator 280290 only from the fwd ACT, when two ACT are installed.
(a)Make sure that the work area is clean and clear of tools and other items.
(b)Install the fuel inlet valve maintenance cover in the ceiling panel of the AFT cargo-compartment.
(c)Install the cover of the right-hand floor panel aft of FR54.2 in the AFT passenger compartment.
(d)Install the carpet.
(e)Install the relevant passenger-compartment seats (Ref. 25-21-00, P. Block 401).
(2)Put the heat shield in position on the rear wall of the ACT and connect the quick-release fasteners, if necessary.
(3)Make sure that the work area is clean and clear of tools and other items.
(4)Close the AFT cargo-compartment door (Ref. 52-30-00, P. Block 1).
(5)Remove the access platform.

(6)Do this step if you drained the fuel from the ACT.
  (a)Refuel the aircraft as required (Ref. 12-11-28, P. Block 301).
  (b)Make sure that there is no leakage from the drain valves 280241 (280242) and 280244 (280243) (Ref. 28-11-39, P. Block 401).
  (c)Put the access panels 153DL (153EL) and 154DR (154EF) in position at the aircraft skin and connect the screws.
  (d)Remove the containers from below the drain valves 280241 (280242) and 280244 (280243).
    NOTE : Keep a minimum of 50 litres (13.21 U.S. gal.) of fuel in the ACT. This will prevent cracks in the inner lining of the bladder tank 280262 (280263).

FUEL INLET VALVE - ADDITIONAL CENTER TANK - DEACTIVATION/REACTIVATION

R Ref: MMEL Sect. 1-28, Item 51 (52)

WARNING : USE THIS PROCEDURE IN ACCORDANCE WITH THE REQUIREMENTS OF THE MMEL.

WARNING : OBEY THE SAFETY PRECAUTIONS IN 28-00-00, P. BLOCK 301 AND 28-10-00, P. BLOCK 301.
MAKE SURE THAT THE FIRE FIGHTING EQUIPMENT IS AVAILABLE AND NEAR TO THE WORK AREA BEFORE YOU START THE MAINTENANCE OPERATIONS.
MAKE SURE THAT THE ELECTRICAL CIRCUITS ON WHICH THE WORK IS IN PROGRESS ARE ISOLATED BEFORE YOU SUPPLY POWER TO THE AIRCRAFT.

1. Deactivation

A. Reason for the job

(1)To make sure that the inoperative valve is in the closed position.

B. Equipment and Materials

ITEM	DESIGNATION
A.	Access Platform, 2.7 m (9 ft.)
B.	Warning Notice, to tell the Crew that the Fuel Inlet Valve is locked CLOSED Mechanically
C.	Circuit Breaker Safety Clip and Tag
D.	Blanking Cap
E.	Adhesive Tape

Referenced Procedures

- 28-00-00, P. Block 301	Fuel - General
- 28-10-00, P. Block 301	Storage
- 28-28 25, P. Block 401	Fuel Inlet Valve and Actuator - Additional Center Tank
- 52-30-00, P. Block 1	Cargo Compartment Doors

C. Procedure

(1)Job Set-Up

(a)Make sure that the aircraft is statically grounded.

(b)Put the access platform in position.

(c)Open the AFT cargo compartment door (Ref. 52-30-00, P. Block 1).

(d)Open, safety and tag the circuit breakers:

PANEL	SERVICE	IDENT.	LOCATION
132VU	FUEL/FUELLING/CTL & REFUEL VALVE	1QU	321/P56
132VU	FUEL/FUELLING/XFR VALVE	2QU	321/P55

(2)Removal

**ON A/C 101-200,

Post SB 28-2105 For A/C 101-200,

ITEM	DESIGNATION
A.	Access Platform, 2.7 m (9 ft.)
B.	Warning Notice to tell the crew that the Fuel Inlet Valve is locked CLOSED mechanically
C.	Circuit Breaker Safety Clip and Tag
D.	Fluorescent-Lamp, Explosion Proof
E.	Adhesive Tape
F.	Blanking Caps

Referenced Procedures

- 25-21-00, P. Block 401	Passenger Compartment Seats
- 28-00-00, P. Block 301	Fuel - General
- 28-10-00, P. Block 301	Storage
- 28-28 25, P. Block 401	Fuel Inlet Valve and Actuator - Additional Center Tank
- 52-30-00, P. Block 1	Cargo Compartment Doors

C. Procedure
(1)Job Set-Up
(a)Make sure that the aircraft is statically grounded.
(b)Put the access platform in position.
(c)Open, safety and tag the circuit breakers:

PANEL	SERVICE	IDENT.	LOCATION
132VU	FUEL/FUELLING/CTL & REFUEL VALVE	1QU	321/P56
132VU	FUEL/FUELLING/XFR VALVE	2QU	321/P55

(d)Do this step if:
- the aircraft has the single additional-center -tank (ACT) installation, or
- the aircraft has the double ACT installation and the fuel inlet valve 280296 of the aft ACT is to be deactivated.

1 Open the AFT cargo-compartment door (Ref. 52-30-00, P. Block 1).

(e)Do this step if the aircraft has the double ACT installation and the fuel inlet valve 280288 of the fwd ACT is to be deactivated.

NOTE : You can get access through the maintenance cover for the fuel inlet valve 280288.

1 Remove the cover from the right-hand floor panel in the AFT passenger-compartment, aft of FR54.2.
a Remove the relevant passenger-compartment seats (Ref. 25-21-00, P. Block 401).
b Remove the carpet and get access to the cover.
c Remove the cover and get access to the fuel inlet valve maintenance cover.
2 Remove the fuel inlet valve maintenance cover from the ceiling panel of the AFT cargo compartment.

(2)Removal

**ON A/C 101-200,

(Ref. Fig. 901)

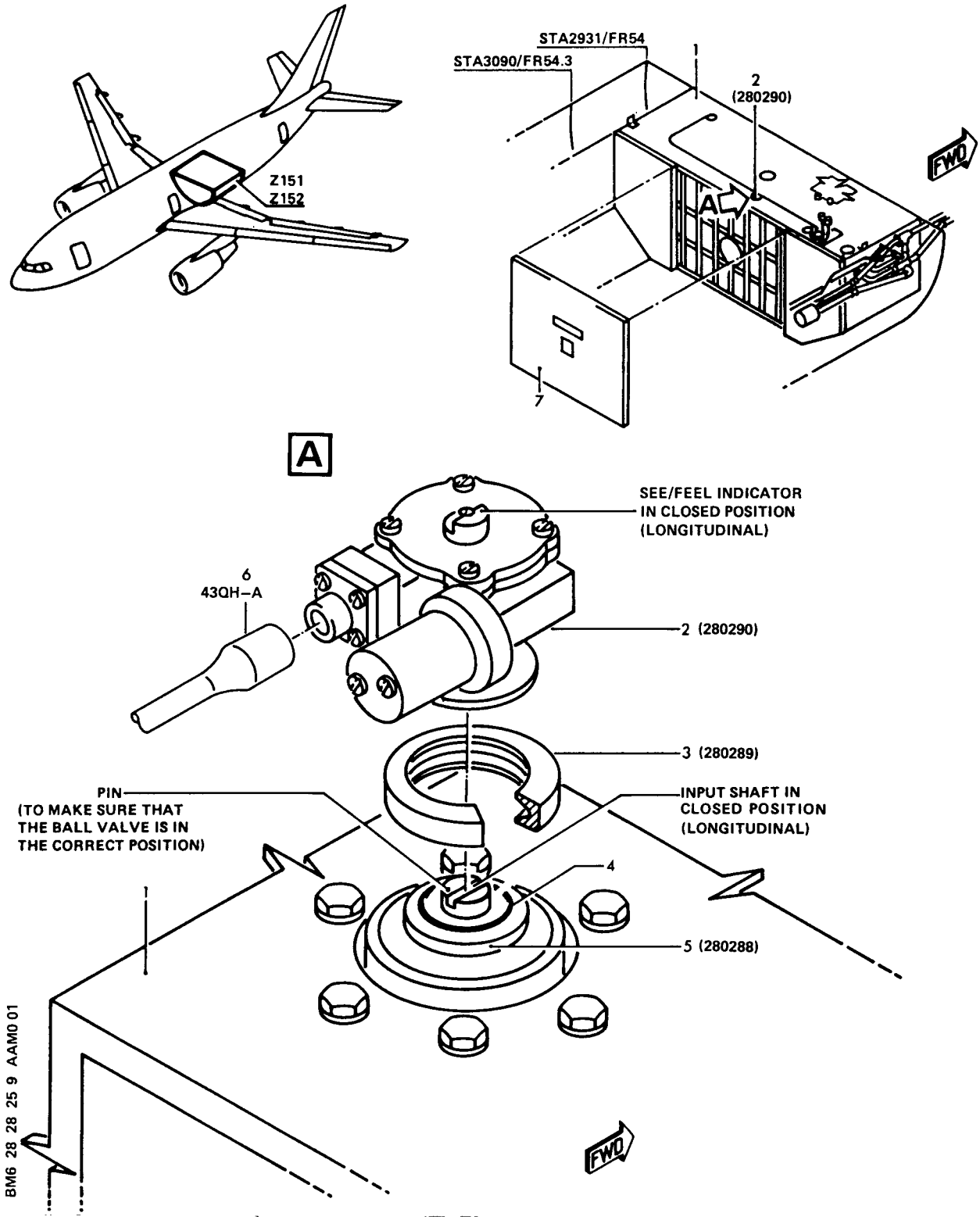
**ON A/C 101-200,

Post SB 28-2105 For A/C 101-200,

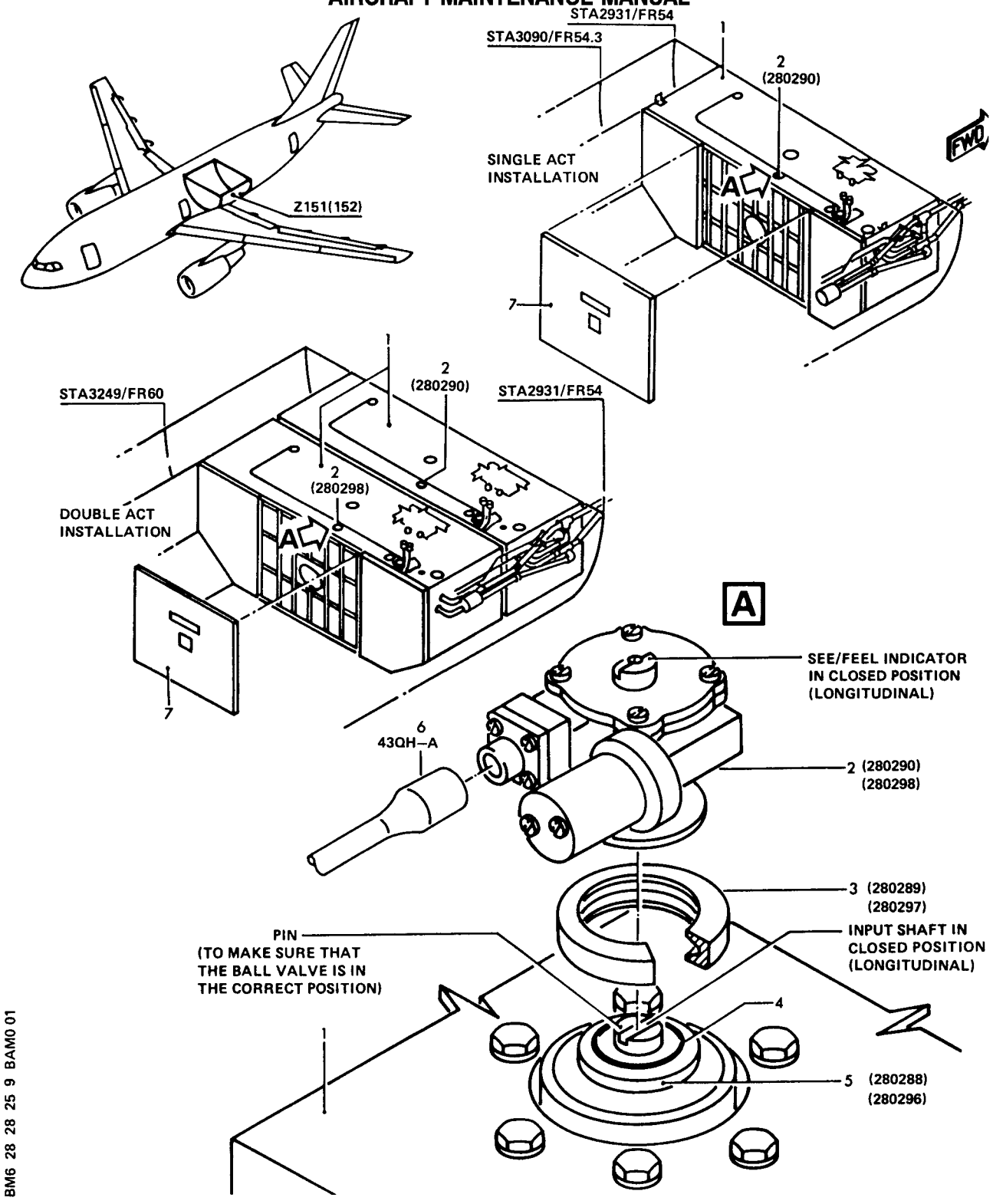
(Ref. Fig. 902)

**ON A/C 101-200,

(a)Disconnect the quick-release fasteners of the center section (7) of the heat shield.
(b)Remove the the center section (7) of the heat shield from the rear wall of the ACT (1).
(c)Disconnect the electrical connector 43QH-A (6) from the receptacle of the actuator (2).



Fuel Inlet Valve 280288 - Deactivation
Figure 901



Fuel Inlet Valve 280288 (280296) - Deactivation
Figure 902

(d)Put a blanking cap on the electrical connector 43QH-A and safety it to the harness.

(e)Do a visual check of the see/feel indicator of the actuator (2) and identify its position.

NOTE : Rhe see/feel indicator must be in the longitudinal position to indicate that the fuel inlet valve (5) is closed.

(f)Do this step if the see/feel indicator of the actuator (2) is not in the closed position.

1 Remove the actuator (2) (Ref. 28-28-25, P. Block 401).

2 Remove and discard the O-ring (4) from the interface of the fuel inlet valve (5).

3 Manually turn the input shaft of the fuel inlet valve (5) to the closed position.

NOTE : The slot in the end of the input shaft must be longitudinal.

4 Stop the input shaft mechanically and safety it in the closed position.

5 Put adhesive tape over the input shaft and the interface of the fuel inlet valve (5) for protection.

NOTE : Do not install the actuator (2).

6 Stow the actuator (2) and the V-clamp (3).

(h)Put the center section (7) of the heat shield in position on the rear wall of the ACT (1).

(i)Connect the center section (7) of the heat shield to the ACT (1) with the quick-release fasteners.

(3)Close-Up

(a)Make sure that the work area is clean and clear of tools and other items.

(b)Remove the safety clips and tags and close the circuit breakers 1QU, 2QU.

(c)Install the temporary warning notice in the cockpit to tell the crew that:
"The ACR Fuel Inlet Valve is locked in the CLOSED position".

(d)Close the AFT cargo compartment door (Ref. 52-30-00, P. Block 1).

(e)Remove the access platform.

2. Reactivation

A. Make the Fuel Inlet Valve operational.
(1)Trouble shoot to identify the cause of the fuel inlet valve malfunction.
(2)Replace the defective component as follows:
(a)Valve fault - replace the vent valve 280288 (Ref. 28-28-25, P. Block 401).
(b)Actuator fault - replace the actuator 280290 (Ref. 28-28-25, P. Block 401).

**ON A/C 101-200,

Post SB 28-2105 For A/C 101-200,

(a)Do this step if:
- the fuel inlet valve 280288 (5) of the single ACT (1) installation, or
- the fuel inlet valve 280296 (5) of the aft ACT (1) in the double ACT (1) installation,

is to be deactivated.
1 Disconnect the quick-release fasteners of the center section (7) of the heat shield.
2 Remove the center section (7) of the heat shield from the rear wall of the ACT (1).
3 Disconnect the electrical connector 43QH-A (6) from the receptacle of the actuator (2).
4 Put the blanking cap on the electrical connector 43QH-A and safety it to the harness.
5 Do a visual check of the see/feel indicator of the actuator (2) and identify its position.
NOTE : The see/feel indicator must be in the longitudinal position to indicate that the fuel inlet valve 280288 (5) is closed.

(b)Do this step if the fuel inlet valve 280288 (5) of the fwd ACT (1) in the double ACT (1) installation is to be deactivated.
1 Get access to the actuator (2) through the opening for the fuel inlet valve maintenance panel in the AFT passenger compartment.
2 Use an explosion proof fluorescent lamp so that you can see the work area.
3 Disconnect the electrical connector 43QH-A (6) from the receptacle of the actuator (2).
4 Do a visual check of the see/feel indicator of the actuator (2) and identify its position.
NOTE : The see/feel indicator must be in the longitudinal position to indicate that the fuel inlet valve (5) is closed.

(c)Do this step if the see/feel indicator of the actuator (2) is not in the closed position.
1 Disconnect the electrical connector 43QH-A (6) from the receptacle of the actuator (2).
2 Put a blanking cap on the electrical connector 43QH-A (6) and safety

it to the harness.
3 Disconnect the V-clamp (3) at the flange connection of the actuator (2) and the fuel inlet valve (5).
4 Remove the V-clamp (3).
5 Remove the actuator (2).
6 Remove and discard the O-ring (4) from the interface of the fuel inlet valve (5).
7 Manually turn the input shaft of the fuel inlet valve (5) to the closed position.
NOTE : The slot in the end of the input shaft must be longitudinal.
8 Stop the input shaft mechanically and safety it in the closed position.
9 Put adhesive tape over the input shaft and the interface of the fuel inlet valve (5).
10 Stow the actuator (2) and the V-clamp (3).

(d)Do this step if:
- the fuel inlet valve 280288 (5) of the single ACT (1) installation, or
- the fuel inlet valve 280296 (5) of the aft ACT (1) in the double ACT (1) installation,

is deactivated.
1 Put the center section (7) of the heat shield in position on the rear wall of the ACT (1).
2 Connect the center section (7) of the heat shield to the ACT (1) with the quick-release fasteners.

(3)Close-Up

(a)Do this step if:
- the aircraft has the single ACT installation, or
- the aircraft has the double ACT installation and the fuel inlet valve 280296 of the aft ACT is deactivated.

1 Make sure that the work area is clean and clear of tools and other items.
2 Remove the safety clips and tags and close the circuit breakers 1QU, 2QU.
3 Install a temporary warning notice in the cockpit to tell the crew that:
"The ACT Fuel Inlet Valve is locked in the CLOSED position".

4 Close the AFT cargo-compartment door (Ref. 52-30-00, P. Block 1).
5 Remove the access platform.

(b)Do this step if the aircraft has the double ACT installation and the fuel inlet valve 280288 of the fwd ACT is deactivated.
1 Make sure that the work area is clean and clear of tools and other items.
2 Install the fuel inlet valve maintenance cover in the ceiling panel of the AFT cargo compartment.
3 Install the cover in the right-hand floor panel, aft of FR54.2, in the AFT passenger-compartment.
4 Install the carpet.
5 Install the relevant passenger-compartment seats (Ref. 25-21-00, P. Block 401).

6 Remove the safety clip and tag and close the circuit breakers 1QU, 2QU.

7 Install a temporary warning notice in the cockpit to tell the crew that:
- "The ACT Fuel Inlet Valve is locked in the CLOSED position".

8 Remove the access platform.

INDICATING - DESCRIPTION AND OPERATION

1. General

**ON A/C 001-100,

The fuel quantity indicating systems are:
- quantity indication (capacitance)
- refuel/defuel quantity selection and indication
- manual magnetic level indication
- tank fuel level warning.

**ON A/C 101-200,

The fuel quantity indicating systems are:
- quantity indication (capacitance)
- refuel/defuel quantity selection and indication
- manual magnetic level indication
- tank fuel level warning
- tank temperature indicating.

A tank fuel temperature system provides indication of fuel temperatures on the ECAM MEMO page. The fuel temperature sensor is positioned in the left outer fuel tank.

**ON A/C ALL

The primary fuel quantity indication system is a computerized, capacitance type, fuel gaging system. It controls refuel/defuel panel quantity preselection, indication and automatic shut off together with flight deck fuel quantity indication (Ref. 28-42-00, P. Block 1).

Magnetic level indicators are provided in every wing tank as an alternative fuel quantity indication for use on the ground. All the indicators are located in the aircraft undersurface and are read in conjunction with fuel tabular data (Ref. 12-11-28, P. Block 301).
The trim tank magnetic level indicator is not calibrated for fuel quantity indication. Calibration sensors signal the CGCC so that FQI data can be validated (Ref. 28-46-00, P. Block 1).

A continuous input from the FQI system is used by the CGCC to calculate CG (Ref. 28-42-00, P. Block 1).
A level warning system provides indication when fuel is at certain levels within the tanks. High level (tank full) indication and overflow (into vent-surge tank) indication are refuelling warnings. Outer tanks fuel low level warning is a flight indication.

FUEL QUANTITY INDICATING SYSTEM - DESCRIPTION AND OPERATION

1. General

R **ON A/C 001-100,

(Ref. Fig. 001)

**ON A/C 101-200,

(Ref. Fig. 002)

**ON A/C 001-100,

(Ref. Fig. 001)

**ON A/C 101-200,

(Ref. Fig. 002)

R **ON A/C ALL

The system includes a Fuel Quantity Indicating (FQI) computer. The computer receives analogue inputs from the probes in the fuel tanks and discrete
R inputs from the fuel system controls and other systems in the aircraft.

R The computer gives discrete and ARINC 429 data outputs to provide:
- continuous indication of individual and total fuel tank quantity at the overhead fuel panel on the flight deck
- indication of individual and total fuel tank quantity at the refuel/defuel panel
R - control of refueling to give automatic shut off at a preselected fuel quantity with correct distribution of fuel load
- continuous system monitoring and a system test facility with its Built in Test Equipment (BITE)
- fuel quantity data to the Center of Gravity Control Computer (CGCC)
R (Ref. 31-46)
- fuel quantity data to the ECAM system display (fuel page) (Ref. 31-57), Flight Management Computers (FMC's) (Ref. 34-60) and the Aircraft Integrated Data System (AIDS) (Ref. 31-30).

R When the aircraft is on the ground or in flight, the accuracy of the FQI
R system is +/- 1% of the maximum tank capacity and +/- 1% of the actual fuel
R quantity.

R The Graph (Ref. Fig. 003) shows:
R - the FQI errors measured on the ground
R - all the FQI errors are within the design requirement

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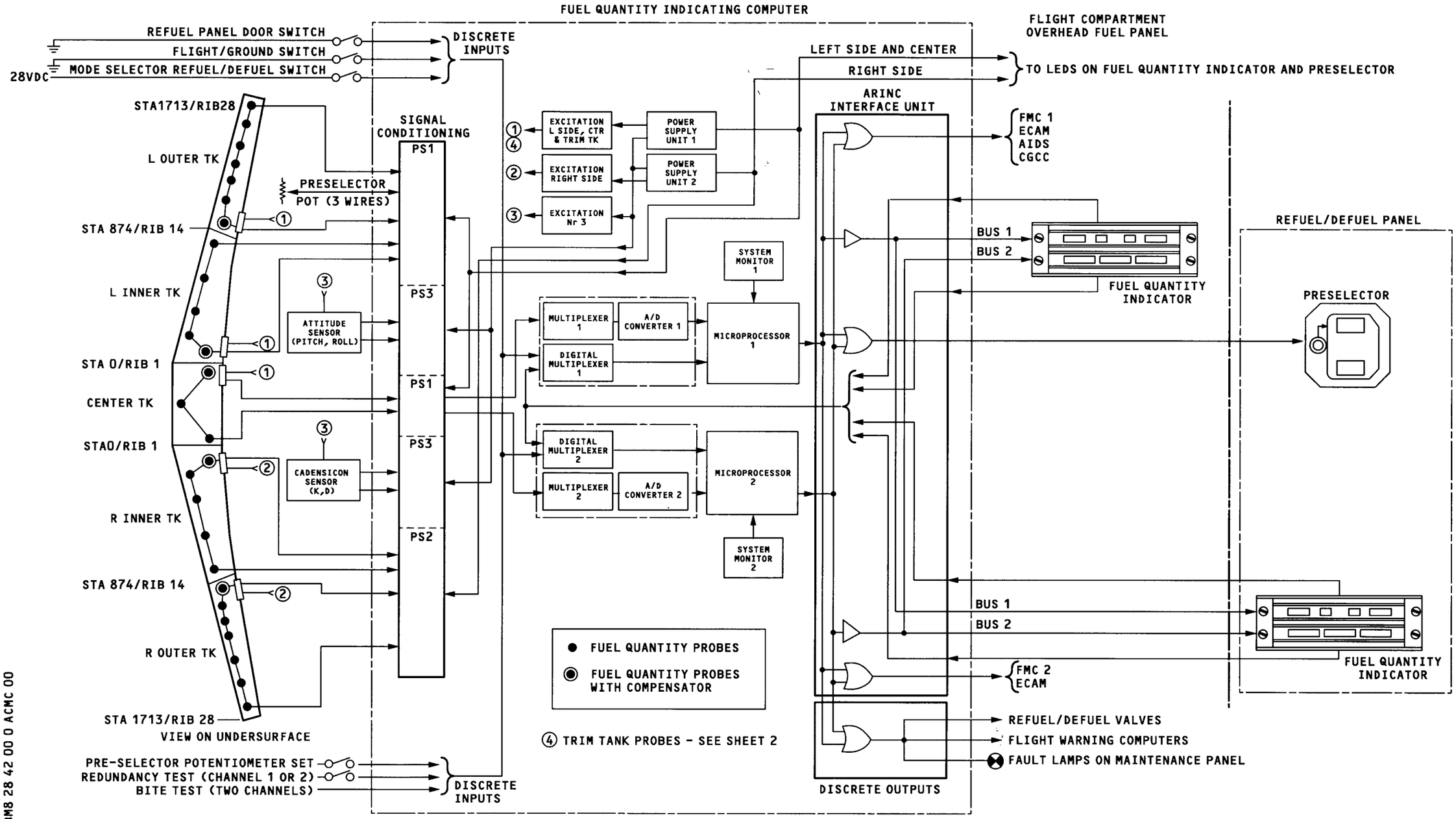

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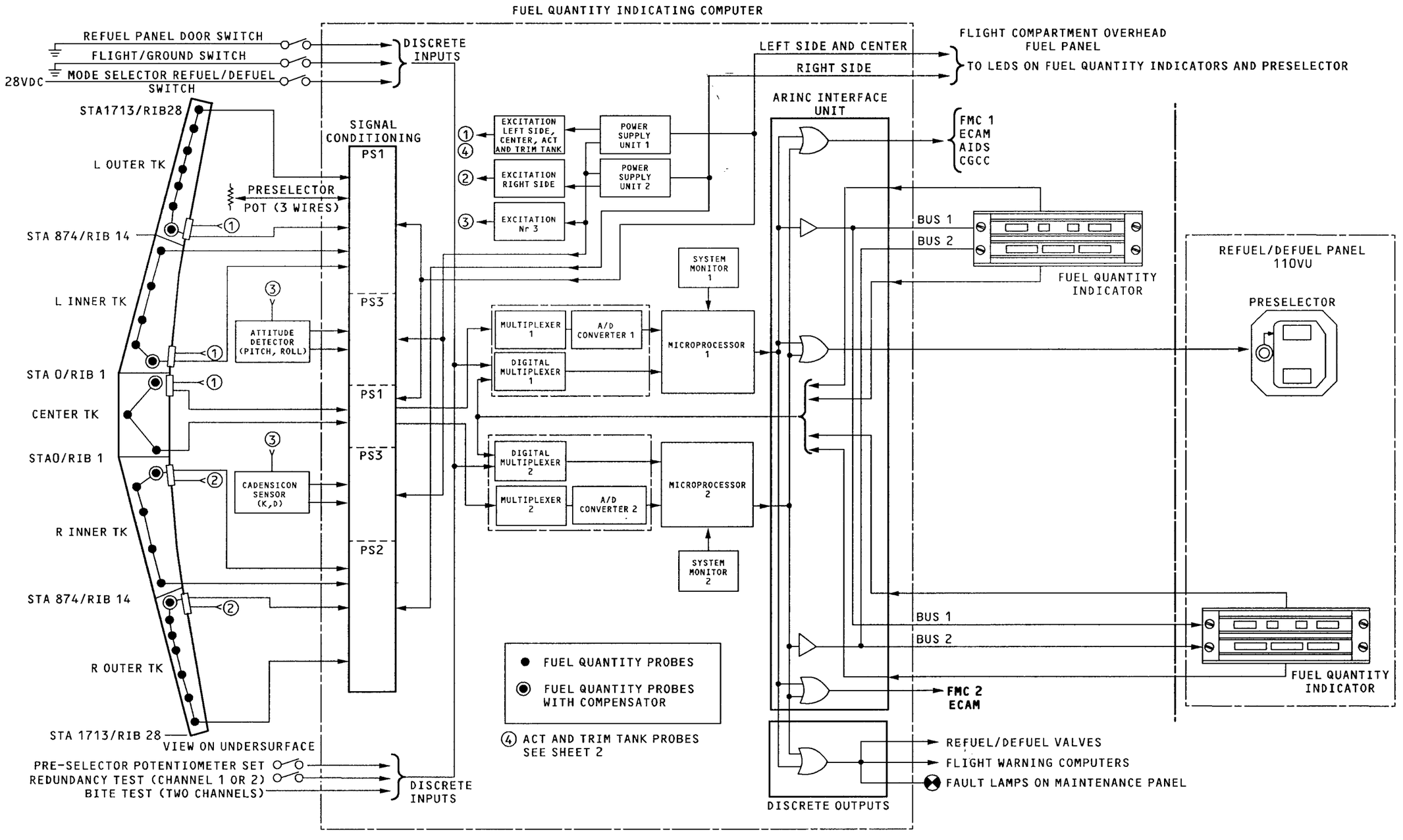
Fuel Quantity Indicating System
(Sheet 1/2)
Figure 001



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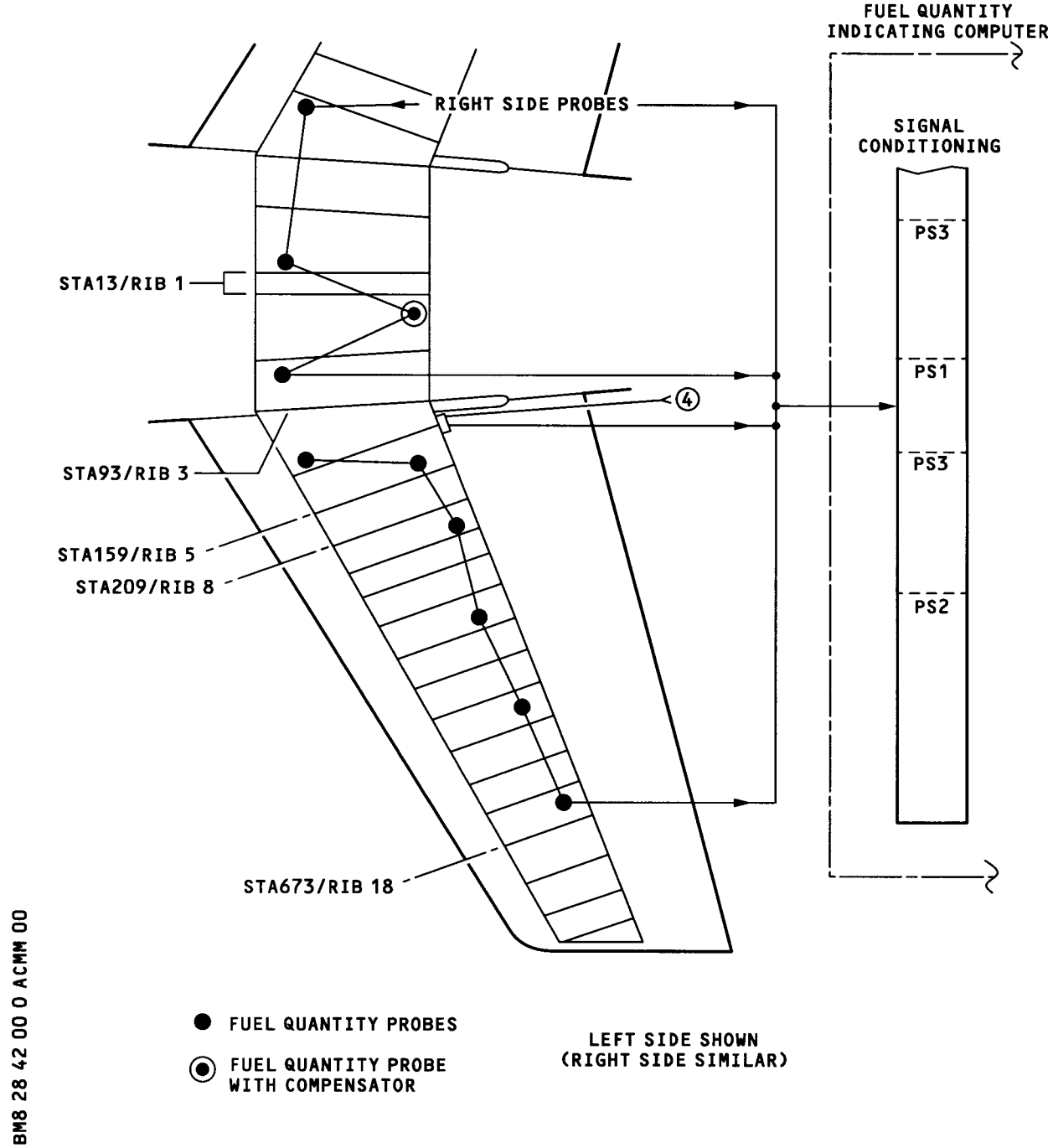
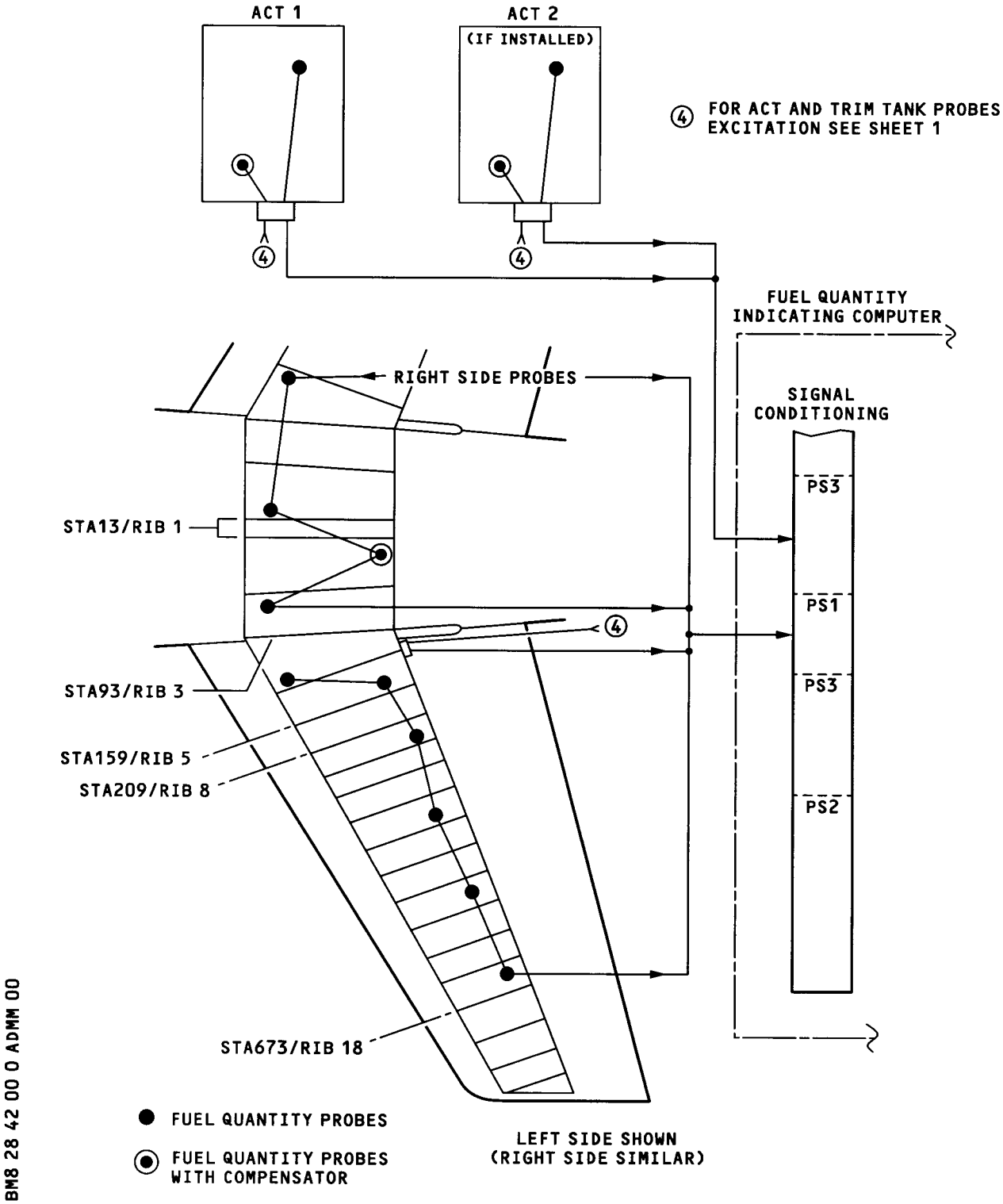
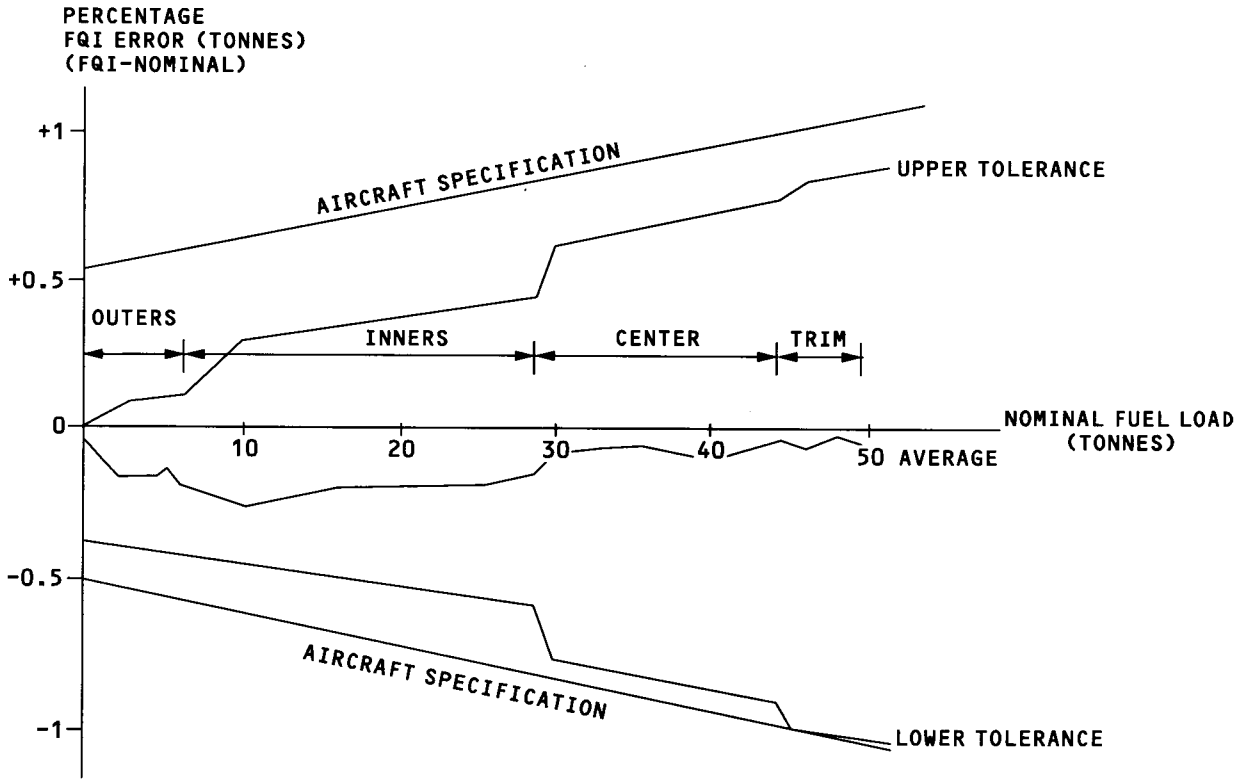
Fuel Quantity Indicating System
(Sheet 1/2)
Figure 002



Fuel Quantity Indicating System
(Sheet 2/2)
Figure 001



Fuel Quantity Indicating System
(Sheet 2/2)
Figure 002



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NOTE: GROUND CONFIGURATION ONLY.

Graph of Average FQI Errors - Ground Configuration
Figure 003

R - the total fuel on board quantity is higher than the useable fuel quantity
R indicated on the FQI.

R Each tank FQI will read zero at or before the tank is empty.

R Magnetic level indicator sticks (MLI's) are installed in each fuel tank.
R The MLI's can be used on the ground to calculate/confirm the fuel levels in
R the tanks.
R The accuracy of the MLI's is +/- 5% (Ref. 28-43-00, P. Block 001).

R The fuel flow (FF) and fuel used (FU) system (Ref. 73-31-00, P. Block 001)
R is separate to the fuel quantity system.
R The accuracy of the fuel flow meter is +/- 1%.
R The accuracy of the FU indication (which is an integration of the FF) is
R estimated to be better than +/- 1.5%.

R The APU fuel consumption is not included in the FU indication. It is always
R less than 185 kg/h (408 lb/h).

2. Component Location

**ON A/C 001-100,

(Ref. Fig. 004)

**ON A/C 101-200,

(Ref. Fig. 005)

**ON A/C 101-200,

Post SB 28-2105 For A/C 101-200,

R Post SB 28-2126 For A/C 104-104,

(Ref. Fig. 006)

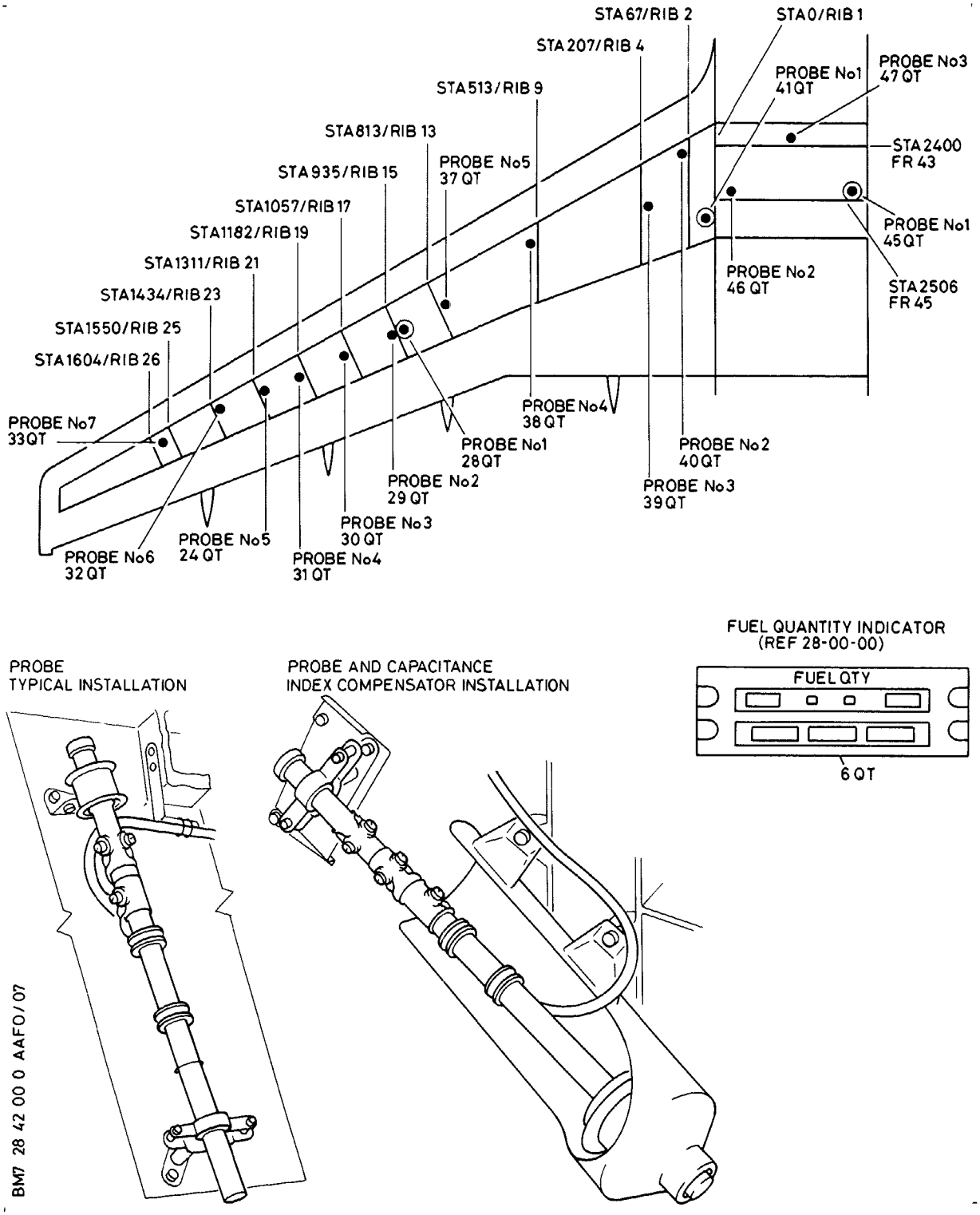
**ON A/C ALL

(Ref. Fig. 007)

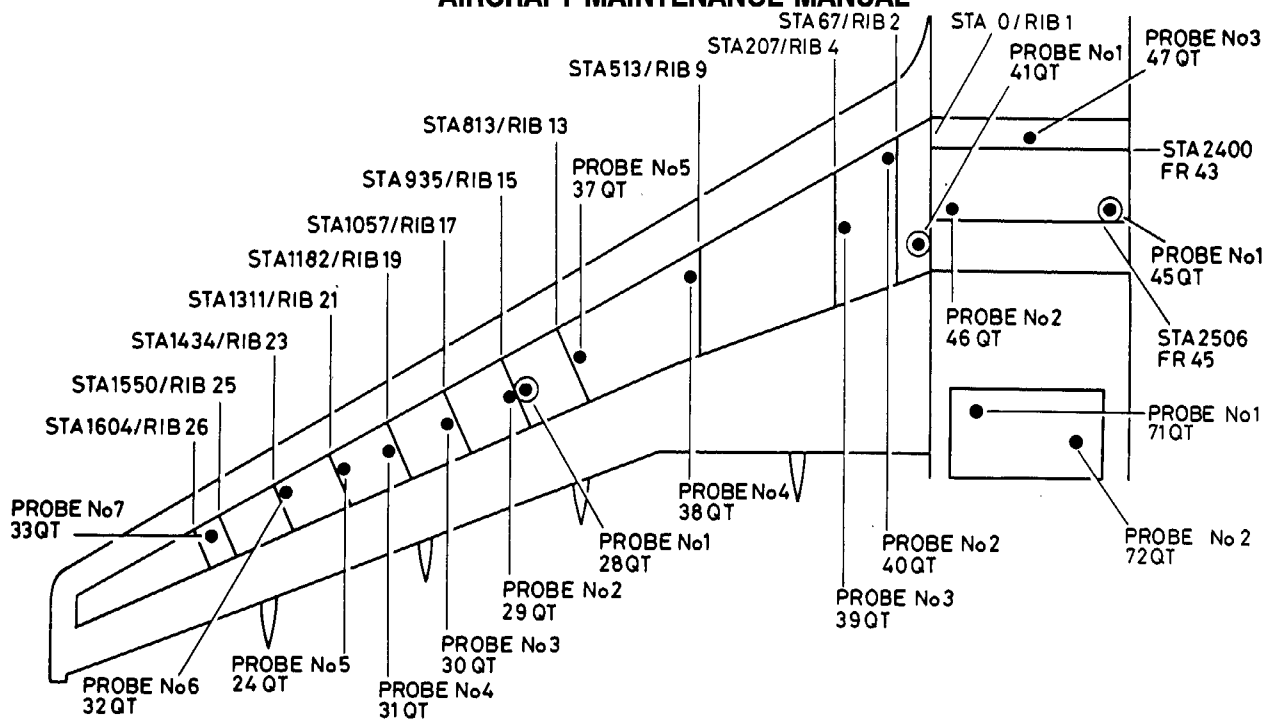
FIN	FUNCTIONAL DESIGNATION	PANEL	ZONE	ACCESS DOOR	ATA REF
280351	MTG ADPTR - CADENSICON SENSOR		623	623EB	28-42-45
1QT	C/B - FUEL/FQI/SUPPLY/& IND	132VU	212		
3QT	C/B - FUEL/FQI/CHAN SUPPLY/1	132VU	212		
4QT	C/B - FUEL/FQI/CHAN SUPPLY/2	132VU	212		

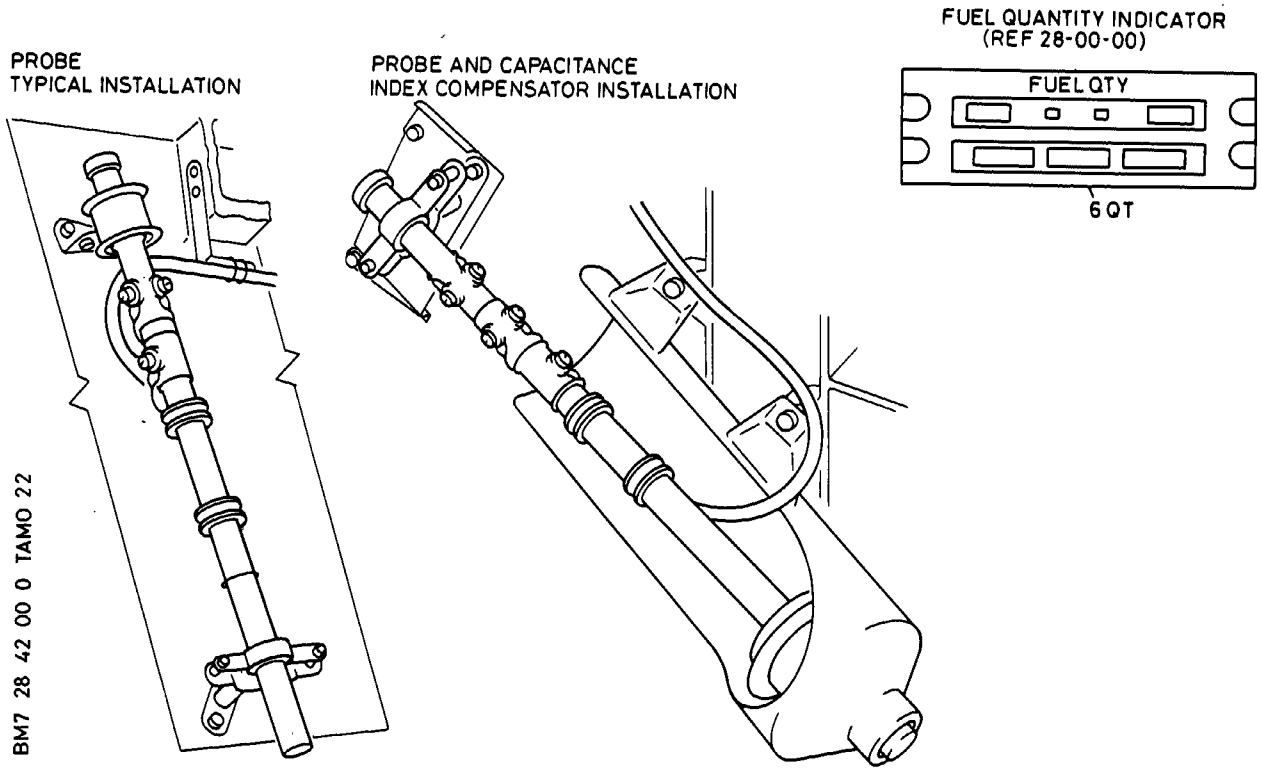
FIN	FUNCTIONAL DESIGNATION	PANEL	ZONE	ACCESS DOOR	ATA REF
5QT	ATTITUDE SENSOR - FUEL QUANTITY		121	132AZ	28-42-43
6QT	INDICATOR - FUEL QUANTITY	20VU	210		28-42-41
7QT	INDICATOR - FUEL QUANTITY	110VU	144	144DR	28-42-41
9QT	PRESELECTOR - FUEL QUANTITY	110VU	144	144DR	28-42-39
10QT	SENSOR - CADENSICON		623	623EB	28-42-44
12QT	ANNUNCIATOR - FUEL QTY, FAULT SIM	472VU	212		
13QT	ANNUNCIATOR - SYS MONITOR	472VU	212		
14QT	SW - FUEL QTY, FAULT SIM	472VU	212		
15QT	COMPUTER - FUEL QUANTITY	92VU	122	132AZ	28-42-38
16QT	MOUNTING - FUEL QUANTITY COMPUTER	92VU	122	132AZ	
24QT.1	PROBE - FUEL QUANTITY L OUTR TK		550	550GB	28-42-33
24QT.2	PROBE - FUEL QUANTITY R OUTR TK		650	650BB	28-42-33
25QT.1	PLUG - HARNESS ADPTR L OUTR TK		581	581CB	28-42-37
25QT.2	PLUG - HARNESS ADPTR R OUTR TK		681	681CB	28-42-37
26QT.1	PLUG - HARNESS ADPTR L OUTR TK		581	581CB	28-42-37
26QT.2	PLUG - HARNESS ADPTR R OUTR TK		681	681CB	28-42-37
27QT.1	HARNESS - L OUTR TK		550		28-42-36
27QT.2	HARNESS - R OUTR TK		650		28-42-36
28QT.1	PROBE - FUEL QUANTITY L OUTR TK		550	550AT	28-42-33
28QT.2	PROBE - FUEL QUANTITY R OUTR TK		650	650AT	28-42-33
29QT.1	PROBE - FUEL QUANTITY L OUTR TK		550	550BB	28-42-33
29QT.2	PROBE - FUEL QUANTITY R OUTR TK		650	650BB	28-42-33
30QT.1	PROBE - FUEL QUANTITY L OUTR TK		550	550DB	28-42-33
30QT.2	PROBE - FUEL QUANTITY R OUTR TK		650	650DB	28-42-33
31QT.1	PROBE - FUEL QUANTITY L OUTR TK		550	550FB	28-42-33
31QT.2	PROBE - FUEL QUANTITY R OUTR TK		650	650FB	28-42-33
32QT.1	PROBE - FUEL QUANTITY L OUTR TK		550	550JB	28-42-33
32QT.2	PROBE - FUEL QUANTITY R OUTR TK		650	650JB	28-42-33
33QT.1	PROBE - FUEL QUANTITY L OUTR TK		550	550MB	28-42-33
33QT.2	PROBE - FUEL QUANTITY R OUTR TK		650	650MB	28-42-33
34QT.1	PLUG - HARNESS ADPTR L INR TK		581	581BB	28-42-37
34QT.2	PLUG - HARNESS ADPTR R INR TK		681	681BB	28-42-37
35QT.1	PLUG - HARNESS ADPTR L INR TK		581	581BB	28-42-37
35QT.2	PLUG - HARNESS ADPTR R INR TK		681	681BB	28-42-37
36QT.1	HARNESS - L INR TK		540		28-42-35
36QT.2	HARNESS - R INR TK		640		28-42-35
37QT.1	PROBE - FUEL QUANTITY L INR TK		540	540GB	28-42-32
37QT.2	PROBE - FUEL QUANTITY R INR TK		640	640GB	28-42-32
38QT.1	PROBE - FUEL QUANTITY L INR TK		540	540DB	28-42-32
38QT.2	PROBE - FUEL QUANTITY R INR TK		640	640DB	28-42-32
39QT.1	PROBE - FUEL QUANTITY L INR TK		540	540AB	28-42-32
39QT.2	PROBE - FUEL QUANTITY R INR TK		640	640AB	28-42-32
40QT.1	PROBE - FUEL QUANTITY L INR TK		540	540AB	28-42-32
40QT.2	PROBE - FUEL QUANTITY R INR TK		640	640AB	28-42-32
41QT.1	PROBE - FUEL QUANTITY L INR TK		540	540AB	28-42-32
41QT.2	PROBE - FUEL QUANTITY R INR TK		640	640AB	28-42-32
42QT	PLUG - HARNESS ADPTR CTR TK		148	312AR	28-42-37
43QT	PLUG - HARNESS ADPTR CTR TK		148	312AR	28-42-37

FIN	FUNCTIONAL DESIGNATION	PANEL	ZONE	ACCESS DOOR	ATA REF
44QT	HARNESS - CTR TANK		141 142	147AZ	28-42-34
45QT	PROBE - FUEL QUANTITY CTR TK		142	148AZ	28-42-31
46QT	PROBE - FUEL QUANTITY CTR TK		141	147AZ	28-42-31
47QT	PROBE - FUEL QUANTITY CTR TK		142	148AZ	28-42-31
54QT	HARNESS - TRIM TANK				
55QT	PROBE - COMPENSATOR, TRIM TK NO.8		319	319AZ	28-42-51
56QT	PROBE - FUEL QUANTITY TRIM TK NO.9		319	319BZ	28-42-51
57QT	PROBE - FUEL QUANTITY TRIM TK NO.7		319	319AZ	28-42-51
58QT	PROBE - FUEL QUANTITY TRIM TK NO.10		343	343BB	28-42-51
59QT	PROBE - FUEL QUANTITY TRIM TK NO.6		333	333BB	28-42-51
60QT	PROBE - FUEL QUANTITY TRIM TK NO.11		343	343BB	28-42-51
61QT	PROBE - FUEL QUANTITY TRIM TK NO.5		333	333BB	28-42-51
62QT	PROBE - FUEL QUANTITY TRIM TK NO.12		343	343CB	28-42-51
63QT	PROBE - FUEL QUANTITY TRIM TK NO.4		333	333CB	28-42-51
64QT	PROBE - FUEL QUANTITY TRIM TK NO.13		343	343DB	28-42-51
65QT	PROBE - FUEL QUANTITY TRIM TK NO.3		333	333DB	28-42-51
66QT	PROBE - FUEL QUANTITY TRIM TK NO.14		343	343EB	28-42-51
67QT	PROBE - FUEL QUANTITY TRIM TK NO.2		333	333EB	28-42-51
68QT	PROBE - FUEL QUANTITY TRIM TK NO.15		343	343GB	28-42-51
69QT	PROBE - FUEL QUANTITY TRIM TK NO.1		333	333GB	28-42-51
70QT	SW - ROTARY	110VU	144		
**ON A/C 101-200,					
280253	PROBE - FUEL QUANTITY ACT (71QT)		151	251AZ	28-42-61
280255	PROBE - FUEL QUANTITY ACT (72QT)		152	252BZ	28-42-61
74QT	ACT				
**ON A/C 101-200,					
Post SB 28-2108	For A/C 101-200,				
R Post SB 28-2126	For A/C 104-104,				
280253	PROBE 1 - FUEL QUANTITY ACT 1 (71QT1)		151	151AZ	28-42-61
280254	PROBE 1 - FUEL QUANTITY ACT 2 (71QT2)		151	151CZ	28-42-61
280255	PROBE 2 - FUEL QUANTITY ACT 1 (72QT1)		152	152BZ	28-42-61
280256	PROBE 2 - FUEL QUANTITY ACT 2 (72QT2)		152	152DZ	28-42-61
74QT1	ACT 1				
74QT2	ACT 2				
**ON A/C ALL					

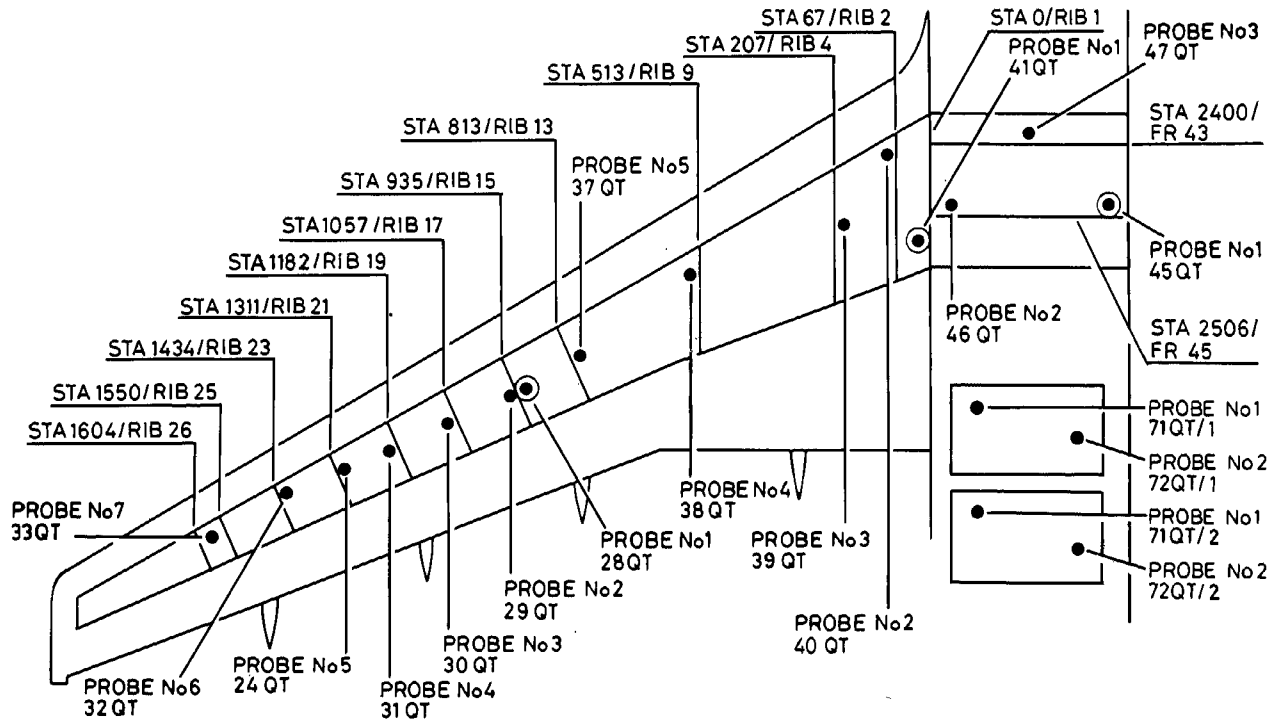


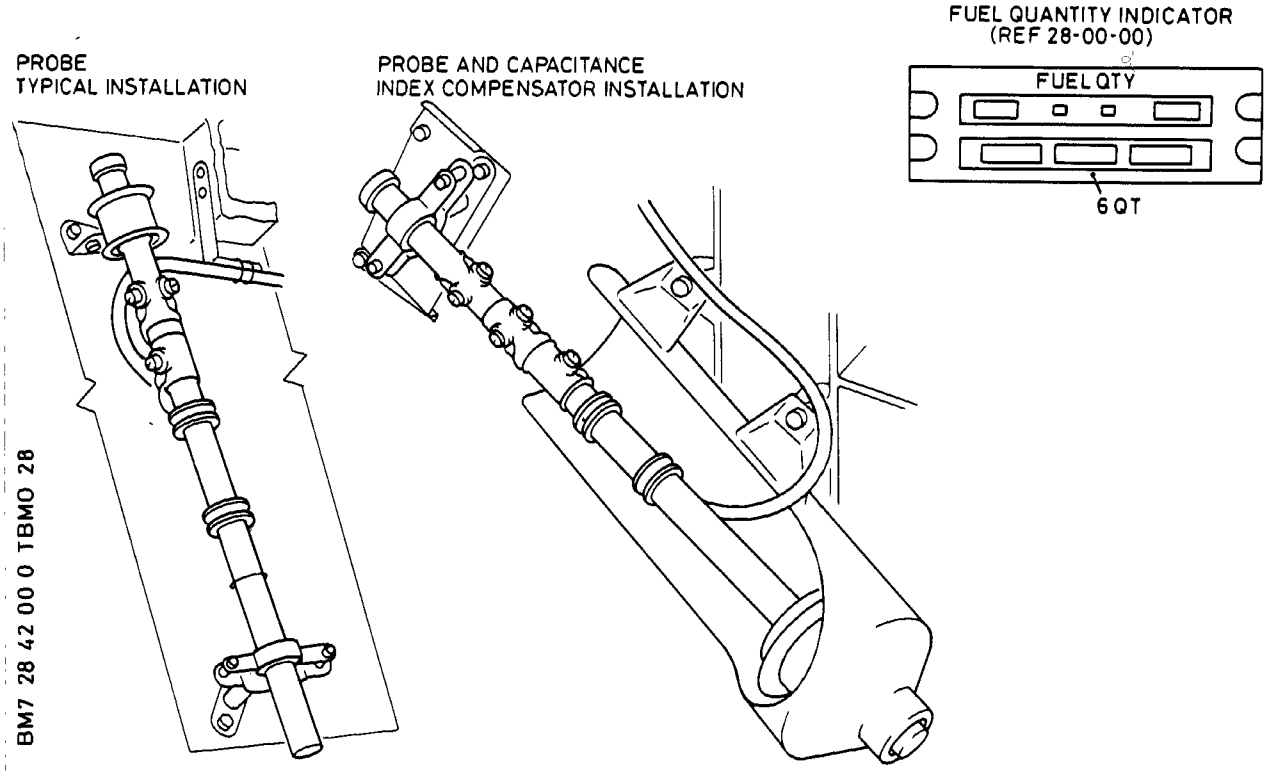
Fuel Quantity Indicating - Component Location
Figure 004



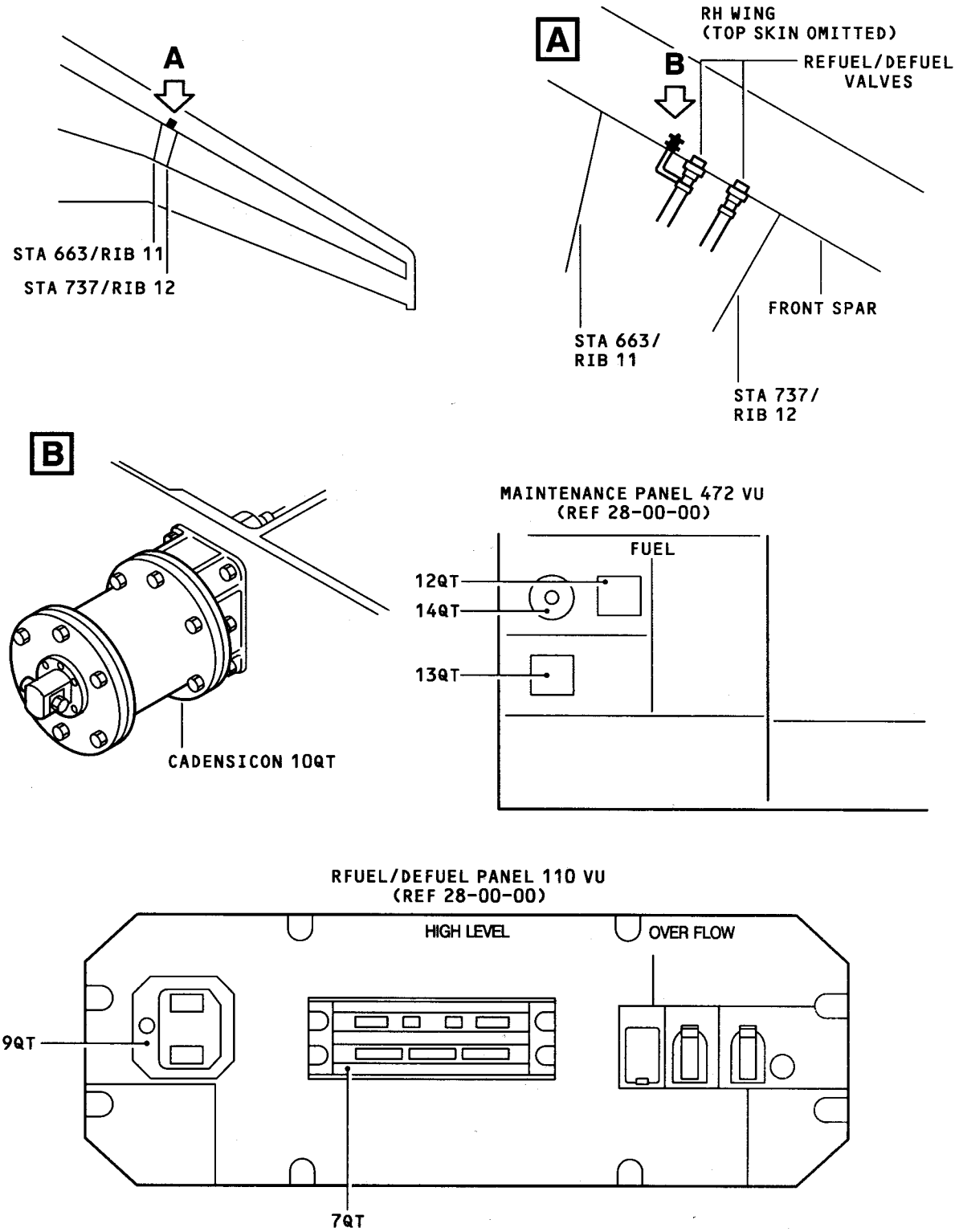


Fuel Quantity Indicating - Component Location
Figure 005





Fuel Quantity Indicating - Component Location
Figure 006



FQI System - Component Location
Figure 007

3. Description

The system has:
- a set of capacitance probes in each tank
- one capacitance index compensator in each tank
- two summing adaptors in each tank wall
- a cadensicon
- an attitude sensor
- a two-channel computer
- two FUEL QTY indicators
- a PRESELECTED and ACTUAL fuel quantity indicator

Two separate 115V AC single phase 400 Hz power supplies are provided, one from the fuel gage supply busbar 901XP, and one from the essential busbar 301XP.
Busbar 901XP feeds the computer power supply unit 1, which supplies computer Channel 1, left tanks and center tank probes and compensators.
Busbar 301XP feeds the computer power supply unit 2, which supplies computer Channel 2, right tanks probes and compensators.
Both busbars 901XP and 301XP feed computer power supply unit 3, which supplies the attitude sensor and the cadensicon sensor.

Loss of busbar 901XP results in failure of computer Channel 1, blanking of FUEL QTY indicators left and center tank displays, and blanking of preselector displays.
Loss of busbar 301XP results in the failure of computer Channel 2, and the blanking of FUEL QTY indicators right tank displays.

- two rotary switches that let you preselect the fuel quantity before refuel begins
- two fuel quantity indicators that shows refuel PRESELECTED quantity and ACTUAL fuel quantity.

The computer gets two 115VAC single phase power supplies that separately power the two channels. One supply comes from the fuel gage supply bus 901XP that powers channel No.1. The other supply comes from the essential bus 304XP that powers the channel No.2. When the essential bus is not available an annunciator (AC ESS BUS OFF) on panel 472VU comes on and the bus 901XP automatically supplies power to the two channels.

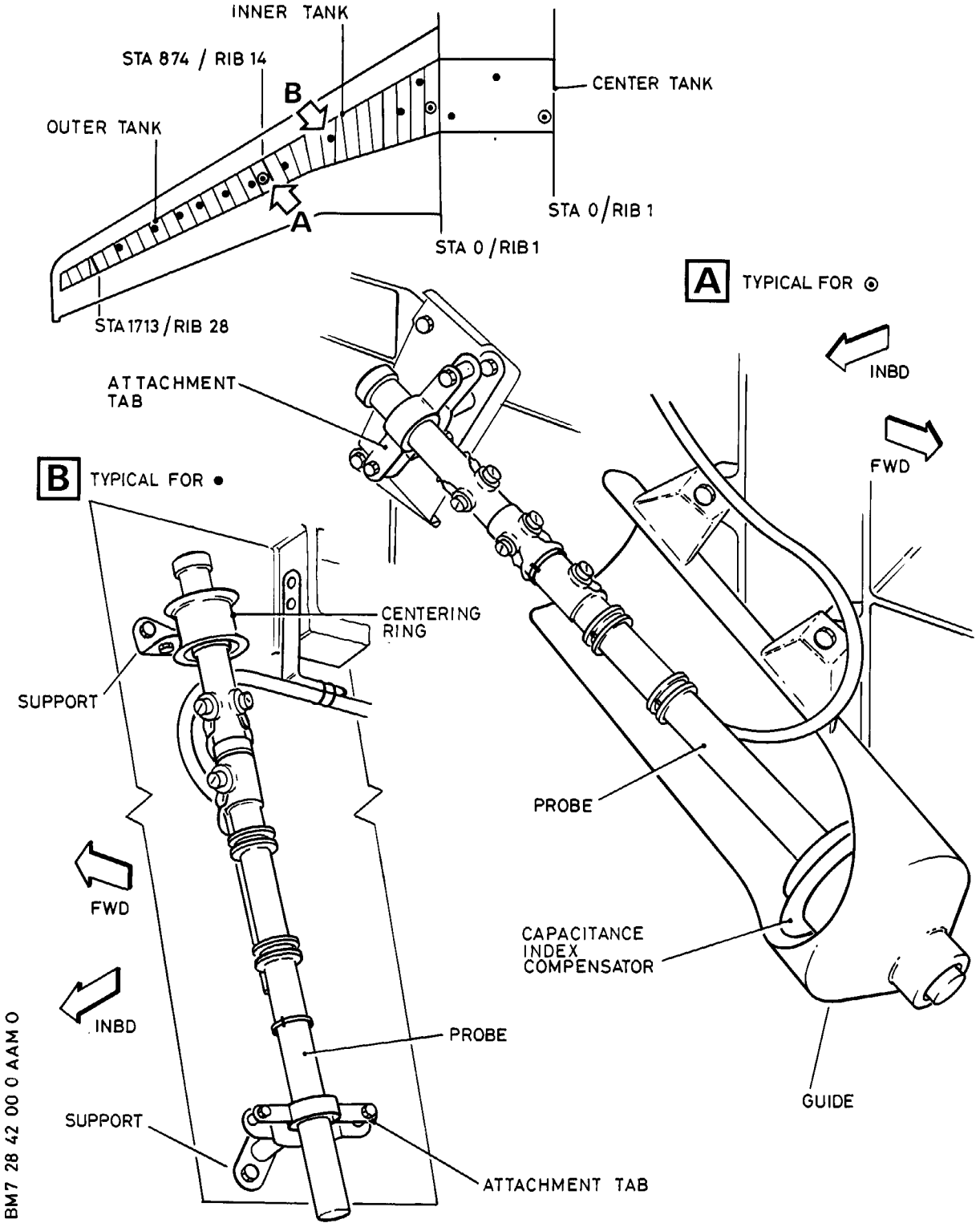
4. Component Description

A. Probes
(Ref. Fig. 008)
(Ref. Fig. 009)

**ON A/C 101-200,

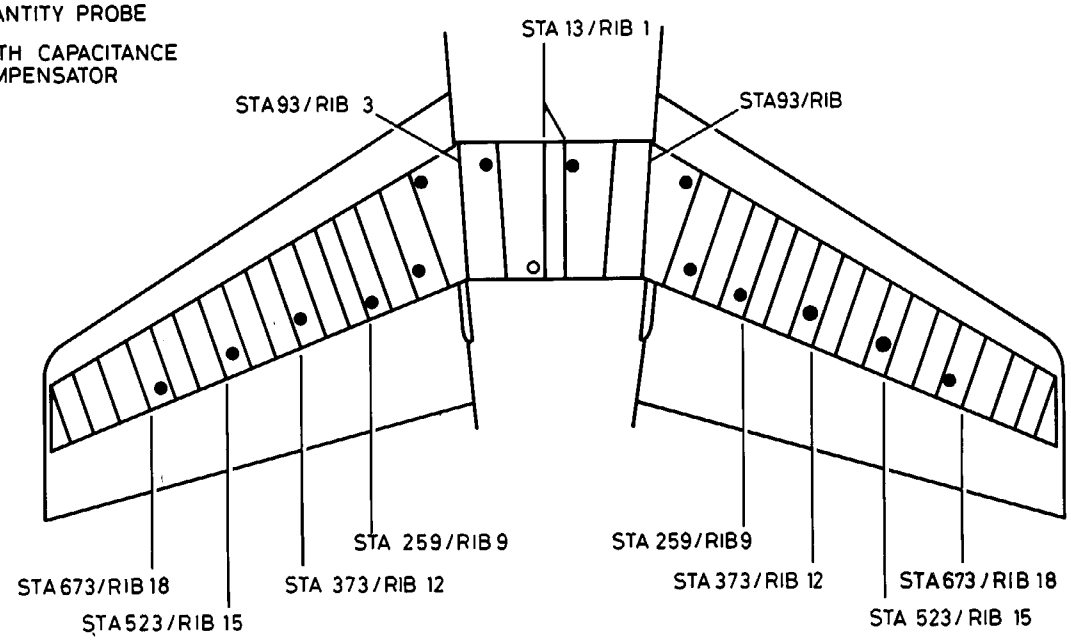
(Ref. Fig. 010)

**ON A/C 101-200,

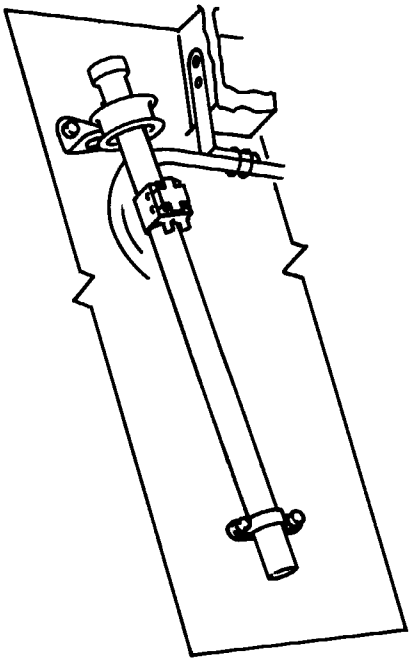


Probes Capacitance Index Compensator
Figure 008

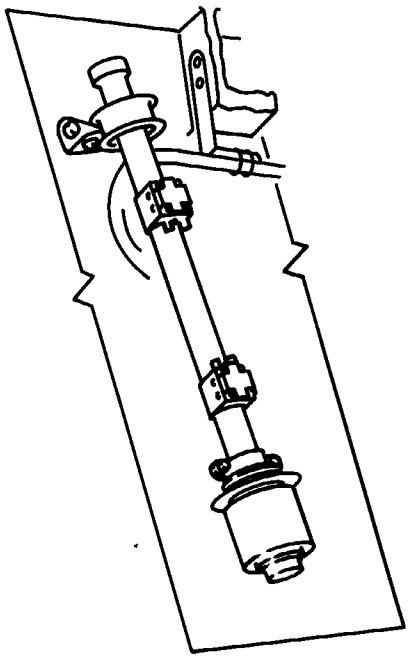
KEY
- ● FUEL QUANTITY PROBE
- o PROBE WITH CAPACITANCE INDEX COMPENSATOR



FUEL QUANTITY PROBE TYPICAL INSTALLATION

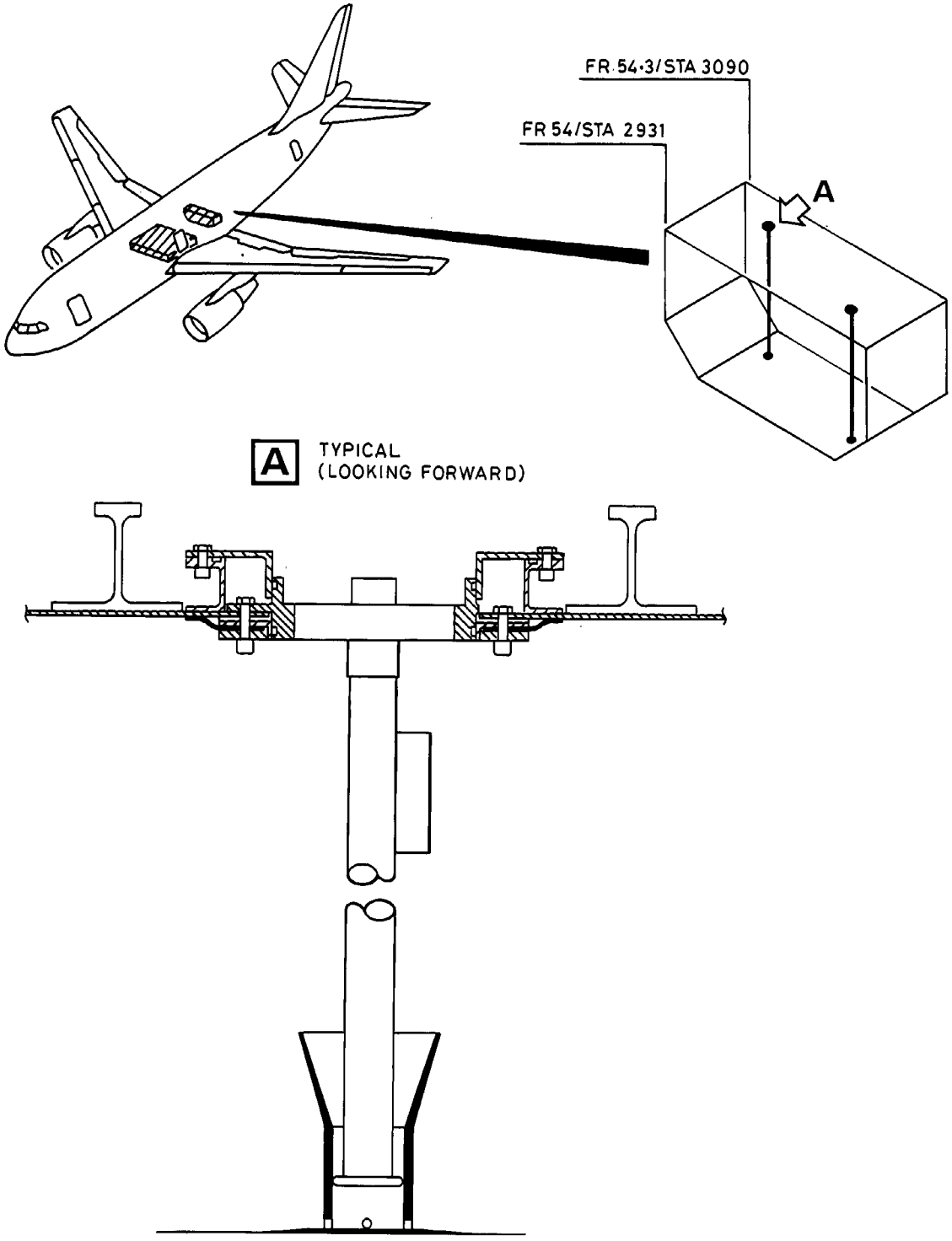


PROBE WITH CAPACITANCE INDEX COMPENSATOR



BM7 28 42 000 TEMO 22

Probe Installation - Trim Tank
Figure 009



BM7 28 42 00 0 TEPO 28

Probe Installation - ACT
Figure 010

Post SB 28-2105 For A/C 101-200,

Post SB 28-2108 For A/C 101-200,

R Post SB 28-2126 For A/C 104-104,

(Ref. Fig. 011)

**ON A/C ALL

Each probe is equipped with an attachment tab and a centering ring, for attachment to the tank structure. Wing tank probe terminals have captive, self-locking screws, which mate with lug-type terminals of the aircraft wiring. Terminals are identified by number and color coding, and different sizes are used to help safeguard against wrong connection. Trim tank probes have bayonet-type terminals, identified by color coding.

Each set of probes is located so that at least one probe is always cutting the fuel surface. Any change in fuel quantity, therefore, results in a change in probe immersion and a consequent change in probe capacitance.

B. Capacitance Index Compensator (Ref. Fig. 008)

A compensator unit is located at the bottom of one probe in each tank, and is immersed in fuel until the tank is almost empty. The unit has a drip shield for protection against condensing water vapour, and terminals similar to those on the fuel probes. The compensator has a capacitance proportional to the dielectric constant of the fuel.

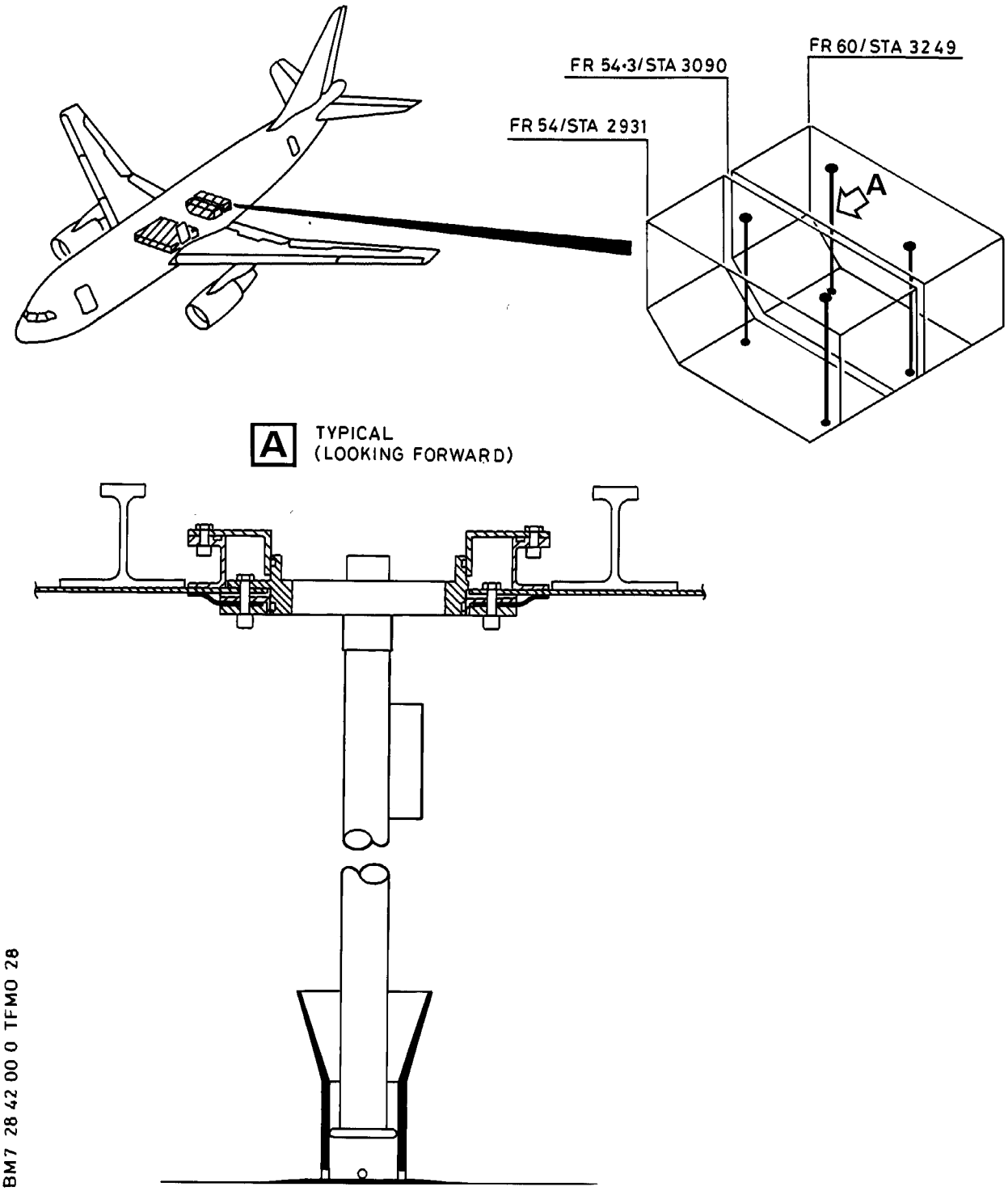
C. Summing Adapter

One high impedance and one low impedance summing adapter is located in each tank wall. The probes within each tank are wired through the summing adapters, so that, by disconnecting the adapter, individual probes may be checked for correct characteristics.

D. Cadensicon
(Ref. Fig. 012)
(Ref. Fig. 013)

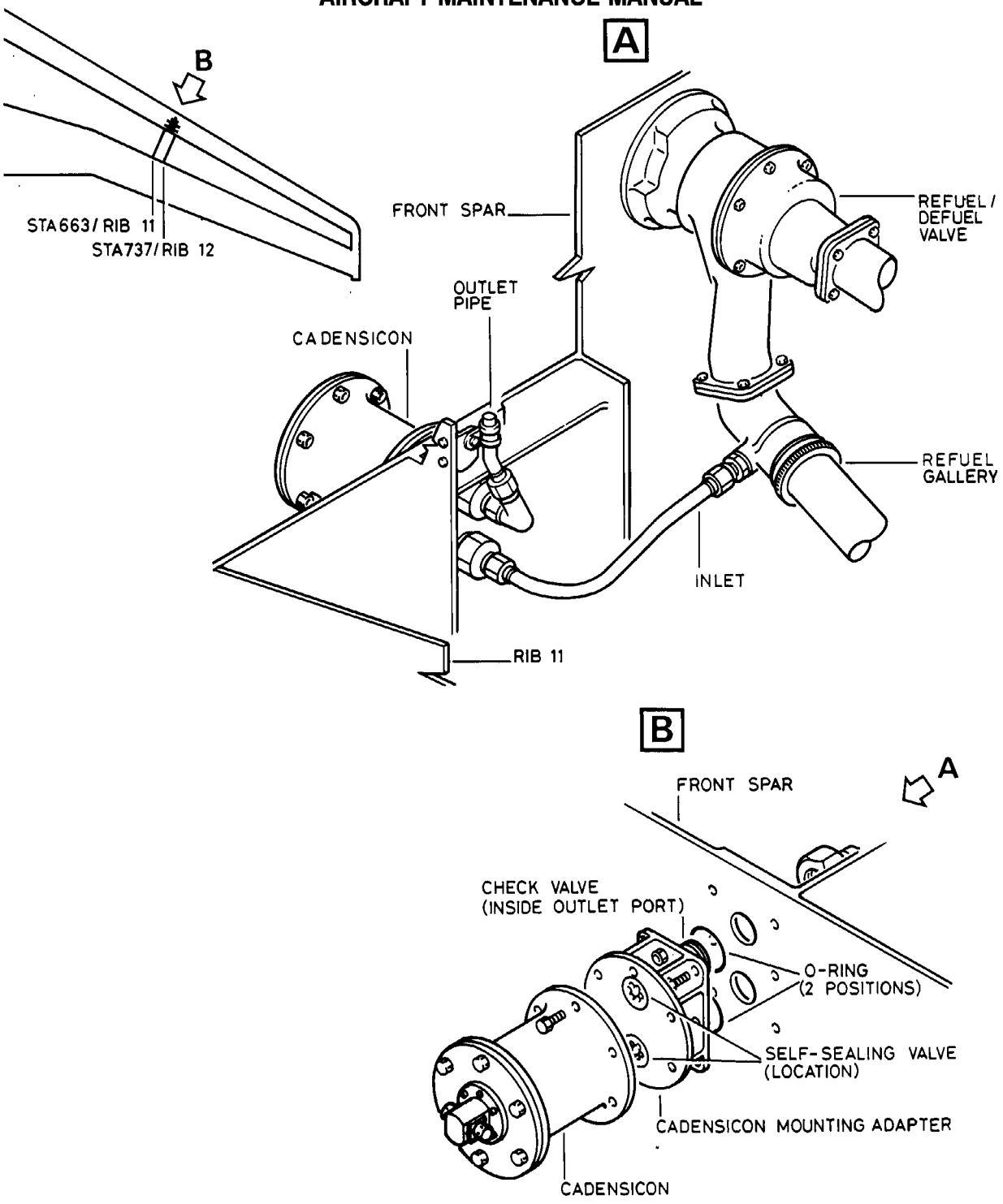
The cadensicon is installed on an adapter plate on the front spar of the right wing. The fuel input to the cadensicon is connected to the refuel gallery, downstream of the right inner-tank refuel/defuel valve. The fuel output is connected back into the right inner tank. Thus, as fuel goes into the right inner tank, a sample goes through the cadensicon.

The cadensicon is attached to the adapter plate with two self-sealing poppet valves. The poppet valves let the cadensicon be removed when there



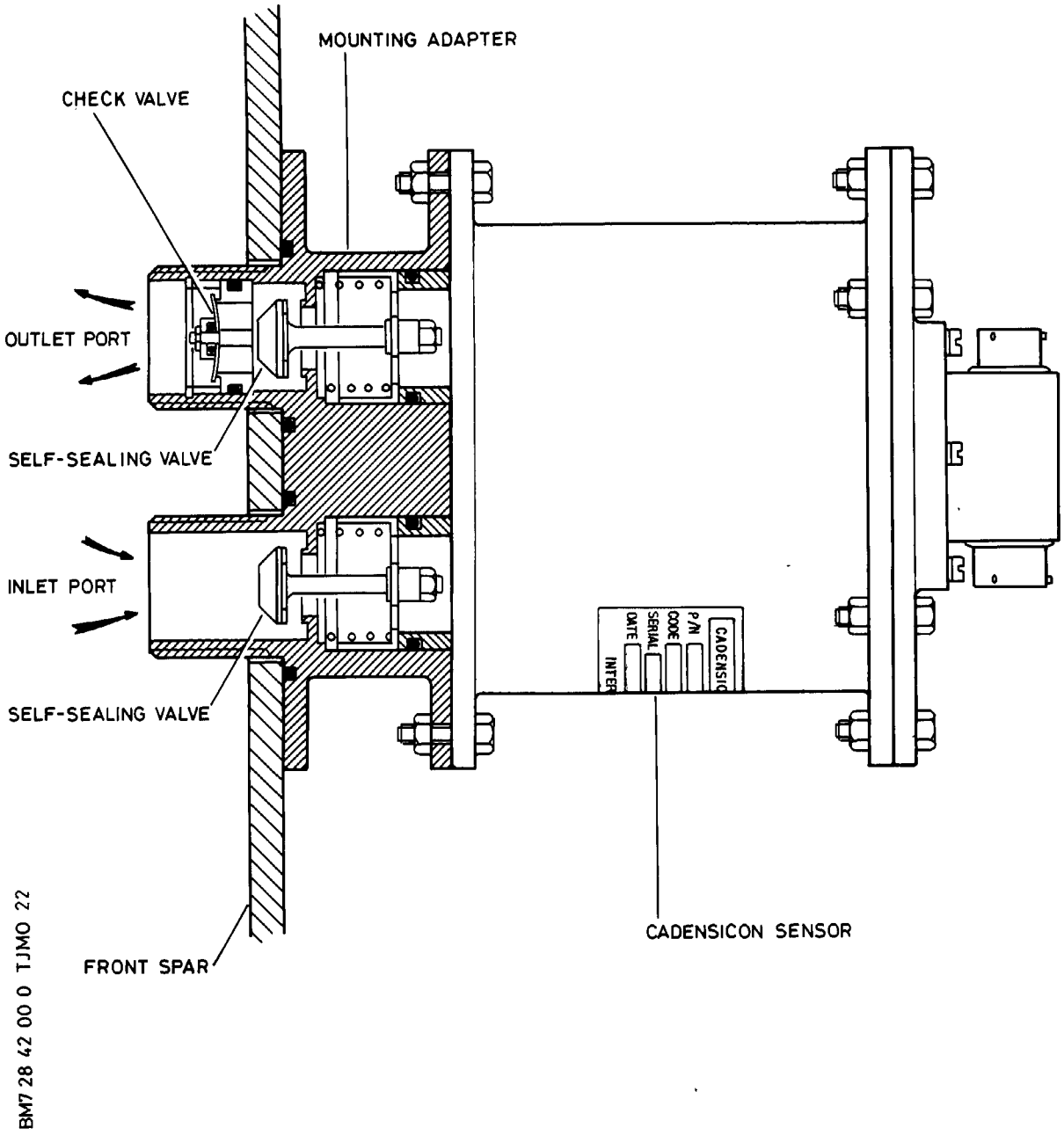
BM7 28 42 00 0 TFMO 28

Probe Installation - ACTs
Figure 011



BM7 28 42 00 0 TGMO 22

Cadensicon Installation
Figure 012



Cadensicon Details
Figure 013

is fuel in the tank. A check valve is also installed on the adapter plate. The check valve does not let air go through the cadensicon during suction defueling.

The cadensicon contains a capacitor and a densitometer. The capacitor gives a signal in proportion to the dielectric constant of the fuel that goes into the aircraft. The densitometer gives a signal in proportion to the fuel density/specific gravity.

E. Aircraft Attitude Sensor (5QT)

The attitude sensor compensates any gaging errors due to aircraft attitude. The attitude sensor provides two signals: one proportional to aircraft pitch, and one proportional to aircraft roll. The sensor is on the navigation platform in the electronics bay Zone 121, and may be adjusted to the correct pitch and roll alignment.

F. Trimmable Horizontal Stabilizer Position Sensor (11CT)

The trimmable horizontal stabilizer position sensor is located between STA4805 (FR 91) and STA4817 (FR 92).

The FQI computer monitors the Trimmable Horizontal Stabilizer (THS) position using the THS position sensor 11CT (Ref.27-15-00,P.Block 1). This determines the trim tank attitude. The computer then uses this information to correct the fuel quantity indication for the trim tank.

G. Computer (15QT).
(Ref. Fig. 014)

**ON A/C 001-100,

(Ref. Fig. 015)

**ON A/C 101-200,

(Ref. Fig. 016)

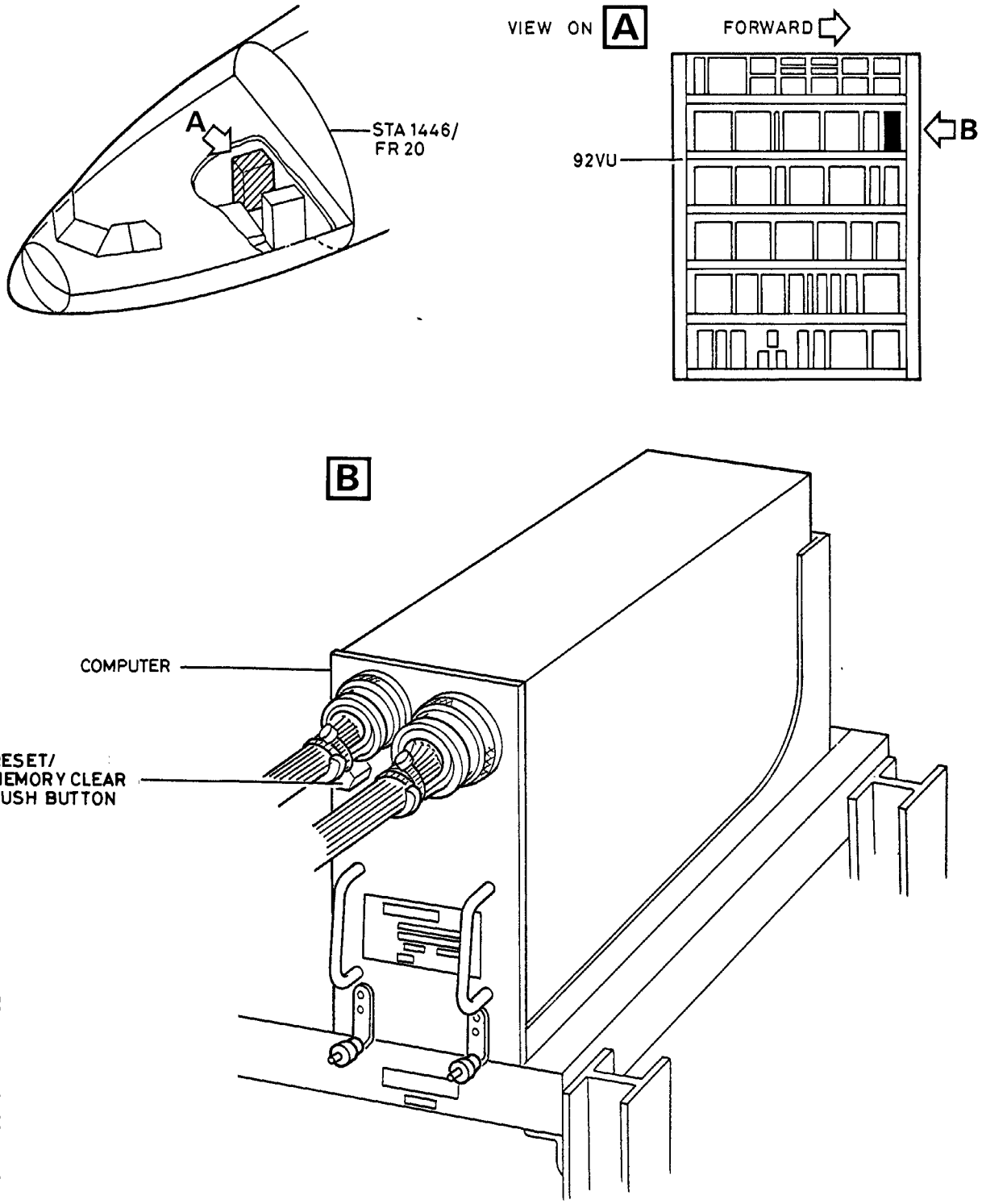
**ON A/C 101-200,

Post SB 28-2105 For A/C 101-200,

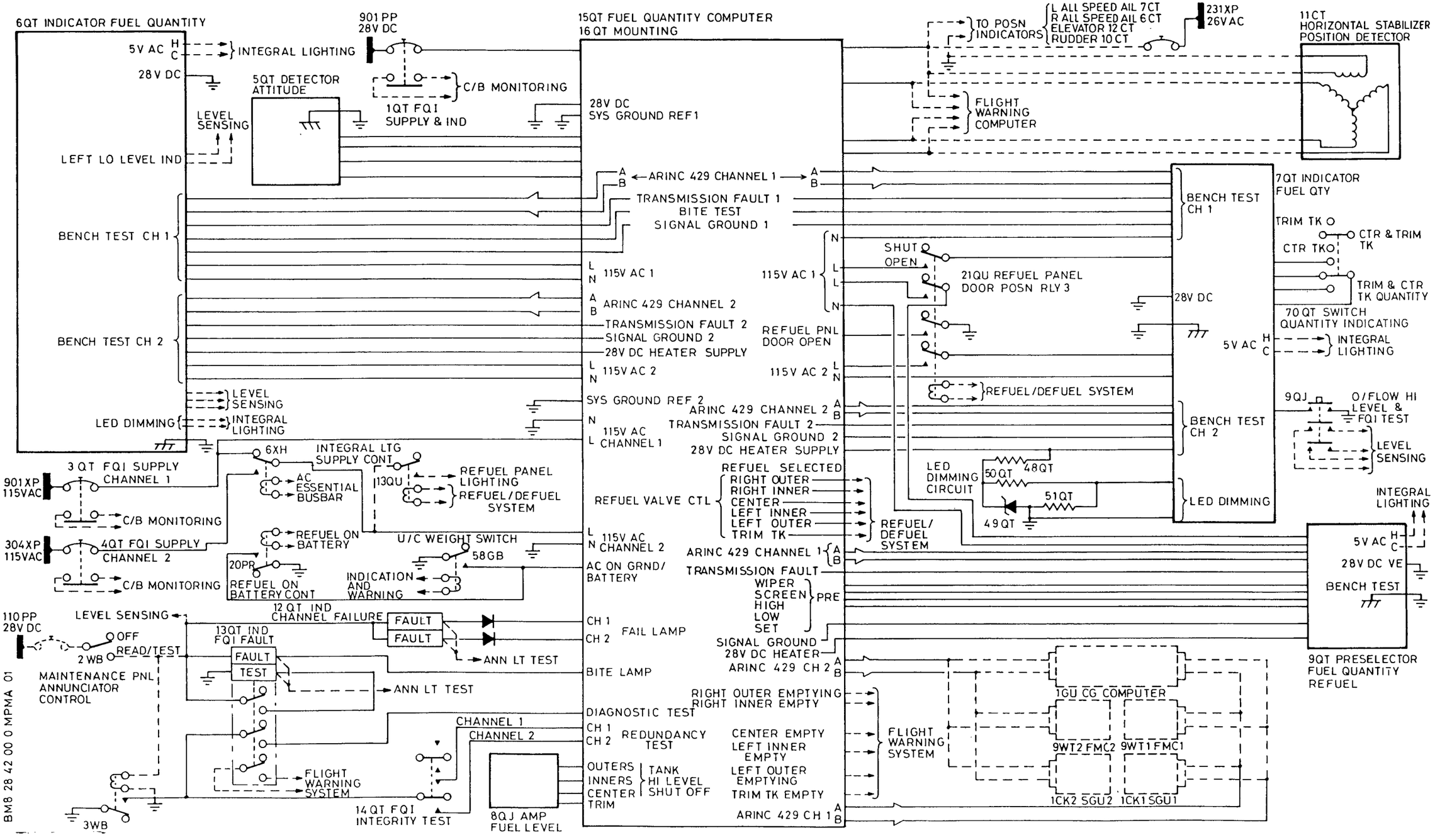
Post SB 28-2108 For A/C 101-200,

(Ref. Fig. 017)

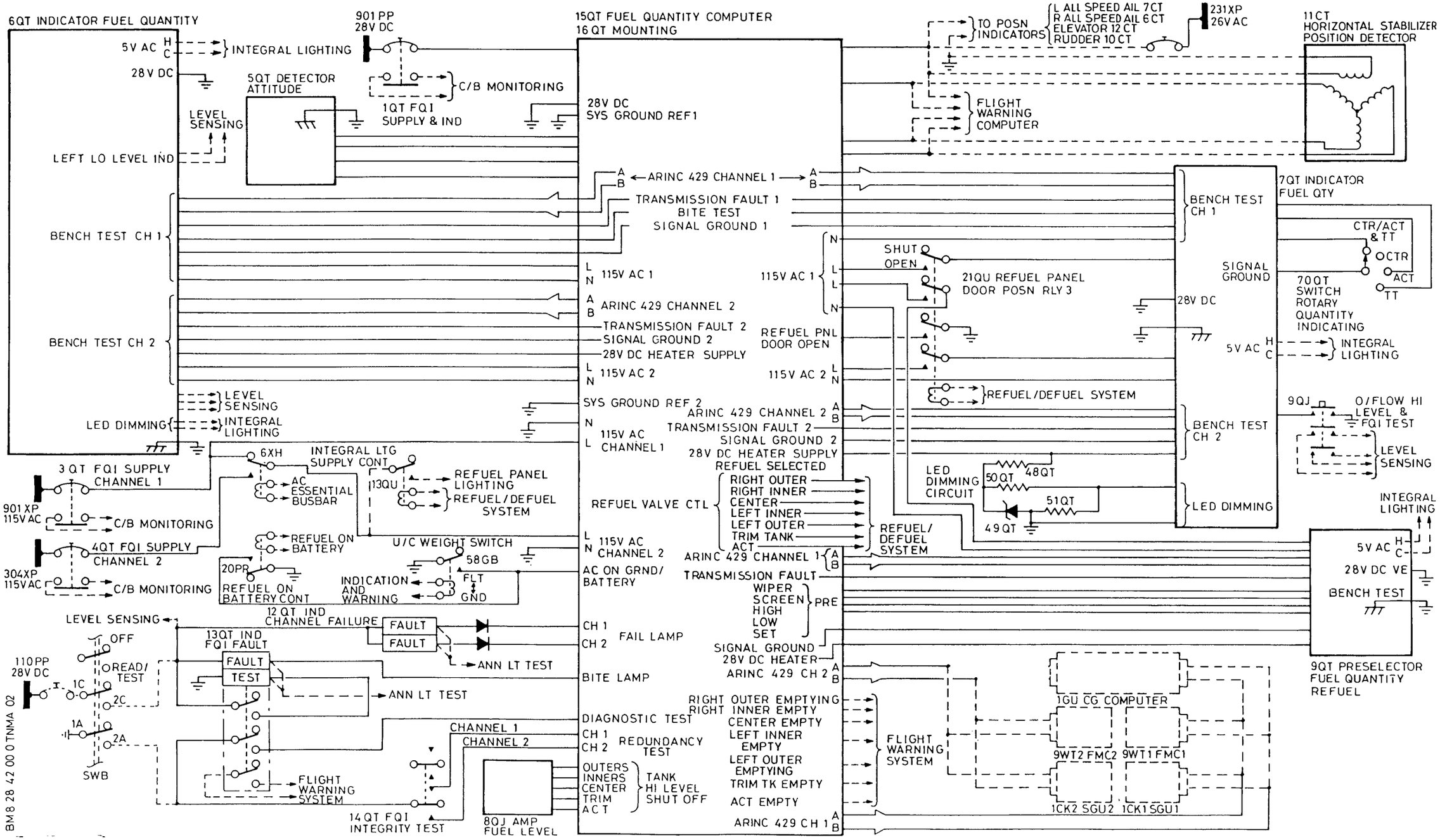
**ON A/C 001-100,



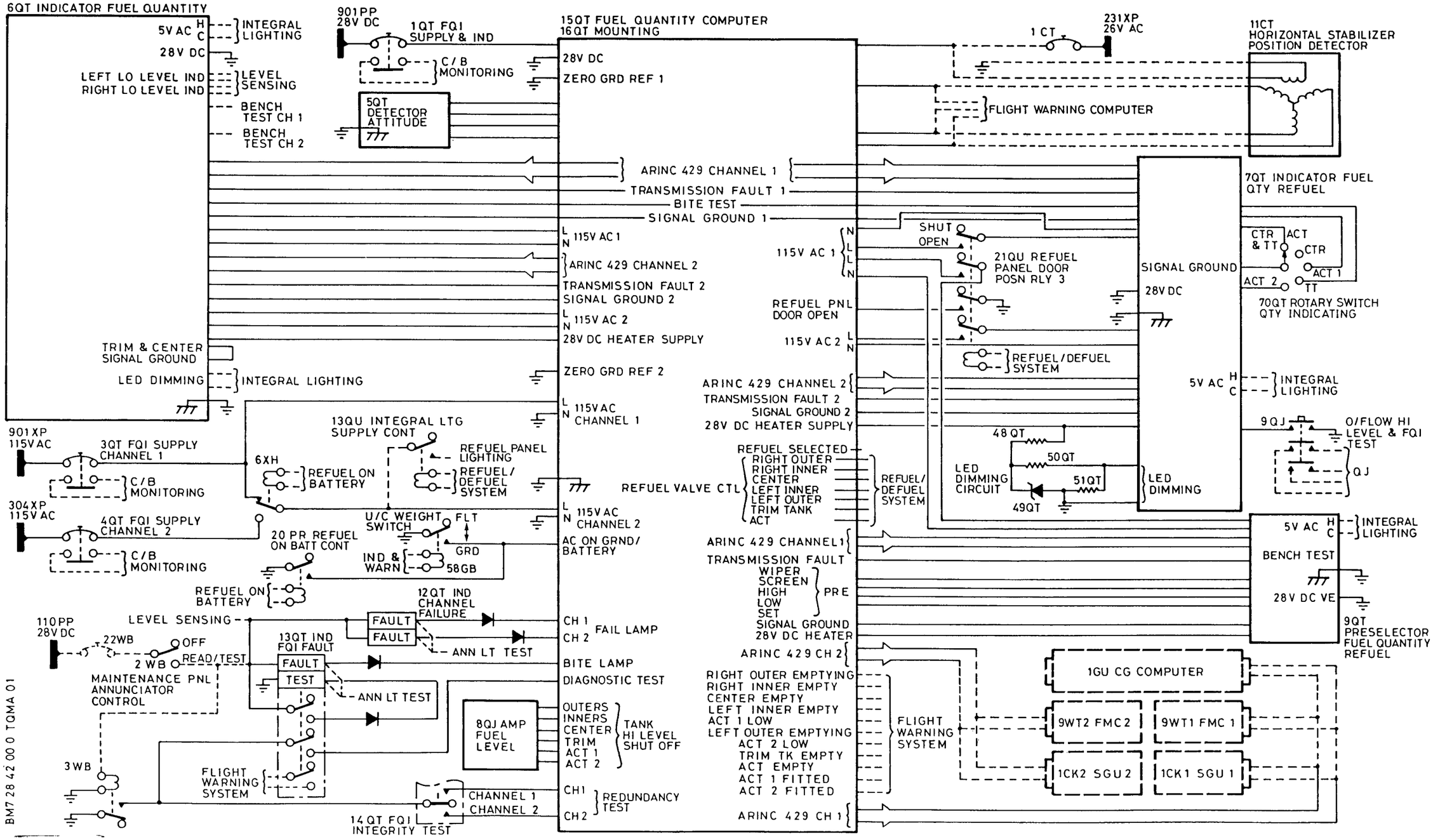
Computer Location
Figure 014



Fuel-Quantity Indicating System - Circuit Diagram
Figure 015



Fuel-Quantity Indicating System - Circuit Diagram
Figure 016



Fuel-Quantity Indicating System - Circuit Diagram
Figure 017

(Ref. Fig. 018)

**ON A/C 101-200,

(Ref. Fig. 016)

**ON A/C 101-200,

Post SB 28-2105 For A/C 101-200,

Post SB 28-2108 For A/C 101-200,

(Ref. Fig. 017)

**ON A/C ALL

(1)Description
The computer is packaged in a 3MCU case which carries fuel signal connections on the front face, and power and output connections on the back face. Also on the front face is a RESET/MEMORY CLEAR pushbutton switch.

The main components of the computer are:
- signal conditioning stages
- two input multiplexers
- two analog to digital (A/D) converters
- two microprocessor stages.

The duplication of components provides two processing channels, identified as Channel 1 and Channel 2. Each channel performs the following functions:
- computation of fuel quantity in each tank
- computation of ACTUAL fuel quantity
- computation of total fuel quantity
- computation of refueling control
- discrete outputs to refuel/defuel valves, flight warning computer, center of gravity control computer, and maintenance panel (472VU)
- continuous automatic self-checking for faults
- continuous monitoring of the status of the other channel.

**ON A/C 001-100,

(2)Operation
Normally, both channels operate continuously, with each monitoring the status of the other and outputs controlled by Channel 1. Failure of Channel 1 will result in automatic changeover to Channel 2: there is no automatic changeover from Channel 2 to Channel 1. Except for test purposes on the ground, Channel 2 can only control outputs if Channel 1 has failed, therefore failure of Channel 2 in these circumstances, results in total shutdown of the computer. Failure of either channel

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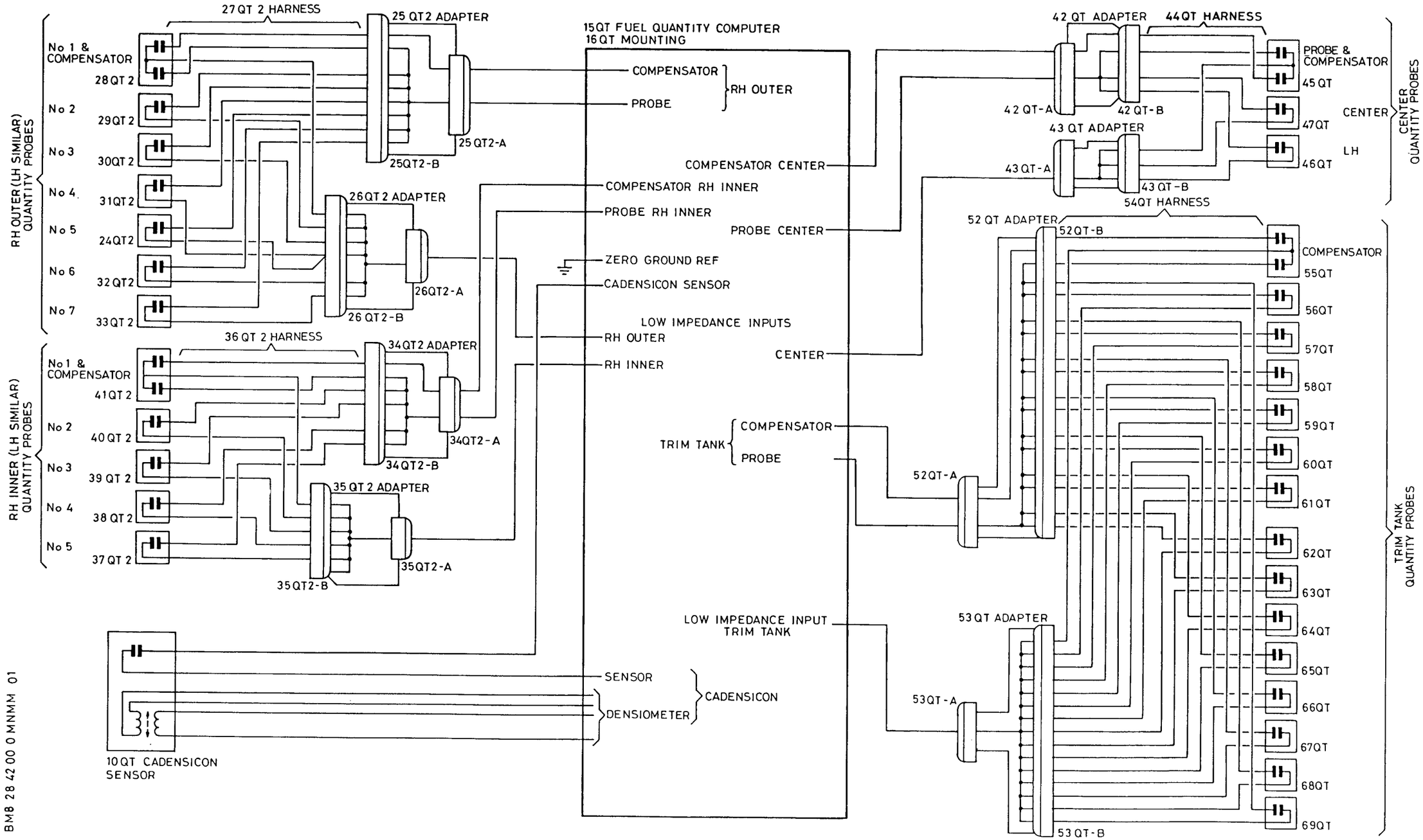
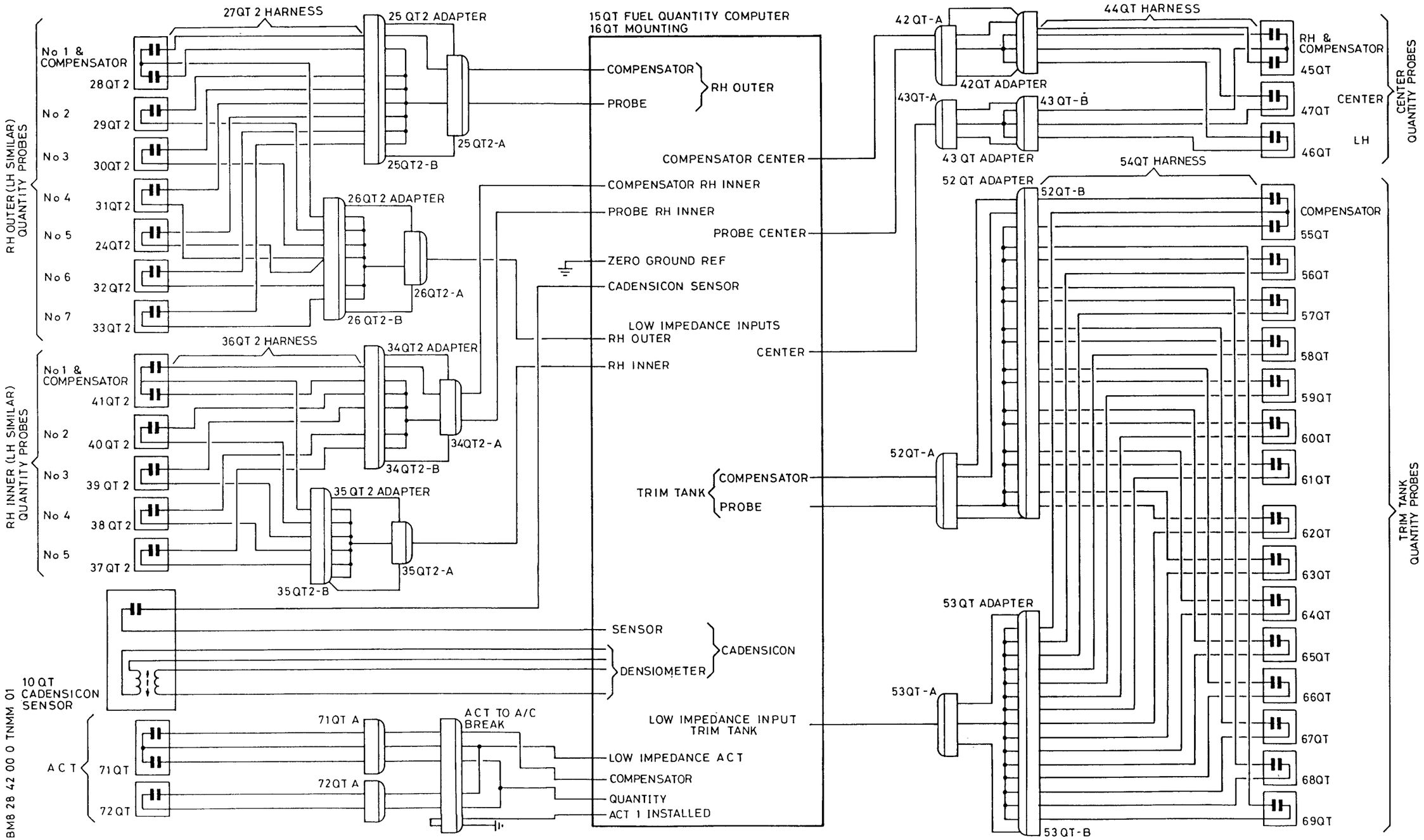
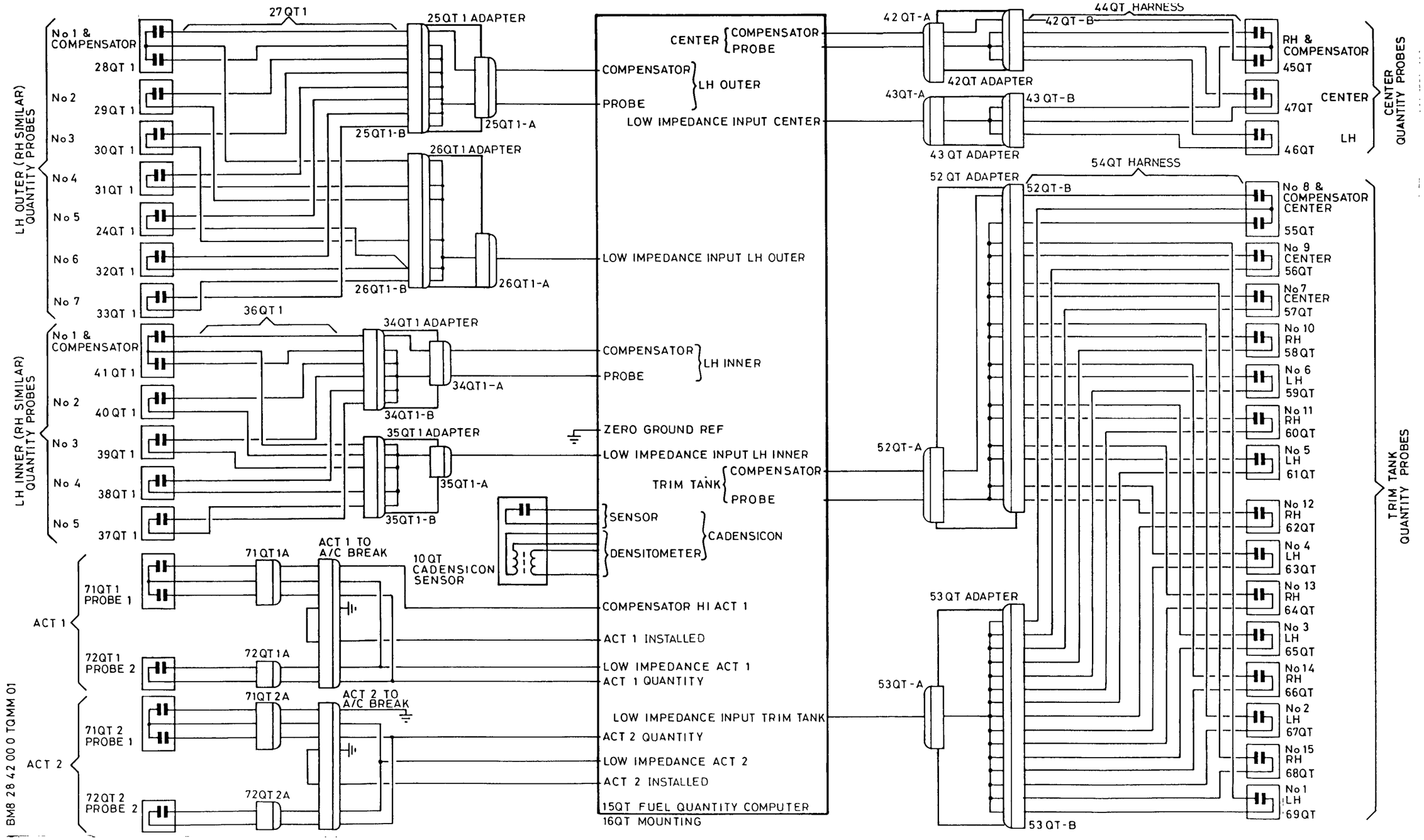


Fuel Quantity Probes/FQIC Interface - Circuit Diagram
Figure 018



Fuel Quantity Probes/FQIC Interface - Circuit Diagram
Figure 016

R



Fuel Quantity Probes/FQIC Interface - Circuit Diagram
Figure 017

R

causes the associated CHAN FAULT indicator light on the maintenance panel (472VU) to come on when the ANN LT switch is set to READ. System faults, detected during the continuous monitoring and self-checking processes, are stored in the computer memory, using a failure code number (Ref. para. 6), for subsequent diagnosis. A diagnostic test may be initiated by operation of a SYS MONITOR pushbutton switch on maintenance panel (472VU), after first setting panel ANN LT switch to READ. To identify the start of the test, the computer displays dashes in place of fuel quantities on the FUEL QTY indicator, followed by the stored failure codes. Codes are displayed sequentially, at five second intervals, and then repeated until the SYS MONITOR switch is released: a display of all 8's indicates no faults. Continuous faults are identified by a decimal point between the first and second digit of the failure code. Intermittent faults have no decimal point. Operation of the computer RESET/MEMORY CLEAR pushbutton switch for a period of 5 seconds while the SYS MONITOR switch is latched in, will clear the fault memory with the exception of 506 and LA. If 506 or LA are not present 888 will be displayed.

**ON A/C 101-200,

(2)Operation

Normally, both channels operate continuously, with each monitoring the status of the other and outputs controlled by Channel 1. Failure of Channel 1 will result in automatic changeover to Channel 2: there is no automatic changeover from Channel 2 to Channel 1. Except for test purposes on the ground, Channel 2 can only control outputs if Channel 1 has failed, therefore failure of Channel 2 in these circumstances, results in total shutdown of the computer. Failure of either channel causes the associated CHAN FAULT indicator light on the maintenance panel (472VU) to come on when the ANN LT switch is set to READ. System faults, detected during the continuous monitoring and self-checking processes, are stored in the computer memory, using a failure code number (Ref. para. 6), for subsequent diagnosis. A diagnostic test may be initiated by operation of a SYS MONITOR pushbutton switch on maintenance panel (472VU), after first setting panel ANN LT switch to READ. To identify the start of the test, the computer displays dashes in place of fuel quantities on the FUEL QTY indicator, followed by the stored failure codes. Codes are displayed sequentially, at five second intervals, and then repeated until the SYS MONITOR switch is released: a display of all 8's indicates no faults. Continuous faults are identified by a decimal point between the first and second digit of the failure code. Intermittent faults have no decimal point. Operation of the computer RESET/MEMORY CLEAR pushbutton switch while the SYS MONITOR switch is latched in, will clear the fault memory but leave the density memory unaffected.

**ON A/C 001-100,

A ground test facility is provided to prove satisfactory system operation with a single channel failure. By setting the maintenance

panel (472VU) ANN LT switch to READ, and operating the FUEL QTY FAULT SIM switch, a simulated fault may be introduced into each channel. When the FUEL QTY FAULT SIM switch is moved from CHAN 1 to CHAN 2 or from CHAN 2 to CHAN 1 the related CHAN FAULT indicator light comes on, and the FUEL QTY indicator readings, after stabilizing, should not change by more than 100 kg.

H. FUEL QTY Indicator

**ON A/C 101-200,

A ground test facility is provided to prove satisfactory system operation with a single channel failure. By setting the maintenance panel (472VU) ANN LT switch to READ, and operating the FUEL QTY FAULT SIM switch, a simulated fault may be introduced into each channel. When the FUEL QTY FAULT SIM switch is moved from CHAN 1 to CHAN 2 or from CHAN 2 to CHAN 1 the related CHAN FAULT indicator light comes on, and the FUEL QTY indicator readings, after stabilizing, should not change by more than 100 lb.

H. FUEL QTY Indicator

R **ON A/C ALL

The FUEL QTY indicator 6QT has a separate light-emitting diode display for the fuel quantity in each of the four wing tanks. The fifth display shows the fuel quantity in the tank/s selected on the FUEL QTY/FQI DISPLAY switch on panel 110VU. This can be a single tank or the sum of selected tanks.
Each display shows the fuel quantity in units of 1000 kg to the nearest 10 kg. The first zero is not shown except when the fuel quantity is less than 1000 kg.

The last digit of each display shows a dash if the quantity indicated is not accurate due to:
- cadensicon failure (inner tanks)
- attitude sensor failure (all tanks)
- compensator failure (related tank)
- pitch angle more than 15 degrees for at least four minutes.

The maximum quantity-indicated error when a dash is shown is 100 kg. To prevent a false error indication, a dash is not shown if the tank is almost empty. Any display that receives a defective signal shows blanks.

The indicator also has a red-low level warning light for each outer tank. The light comes on when the remaining fuel in the tank is less than approximately 800 kg.

R

A similar indicator (7QT) is located on refuel panel (110VU). The low level warning lights are inoperative on this indicator.

R

J. PRESELECTED and ACTUAL Fuel Quantity Indicator

The indicator is located on refuel panel (110VU) and uses liquid crystal displays to show the ACTUAL fuel mass and PRESELECTED fuel mass. Leading zero blanking is employed for fuel mass below 1000 kg(1000 lb), when a leading zero followed by a decimal point is displayed.

A knob operates a combined switch and potentiometer to set and display a PRESELECTED fuel mass. When the knob is pulled, the ACTUAL quantity display is blanked; rotation of the knob will then alter the PRESELECTED quantity. A lag of up to two seconds may occur between the knob setting and the PRESELECTED figure displayed. As a result, the PRESELECTED figure will continue to increase or decrease after rotation of the knob has ceased. Pushing the knob in, sets the PRESELECTED value in the computer memory, and restores the ACTUAL display.

5. Operation

**ON A/C 001-100,

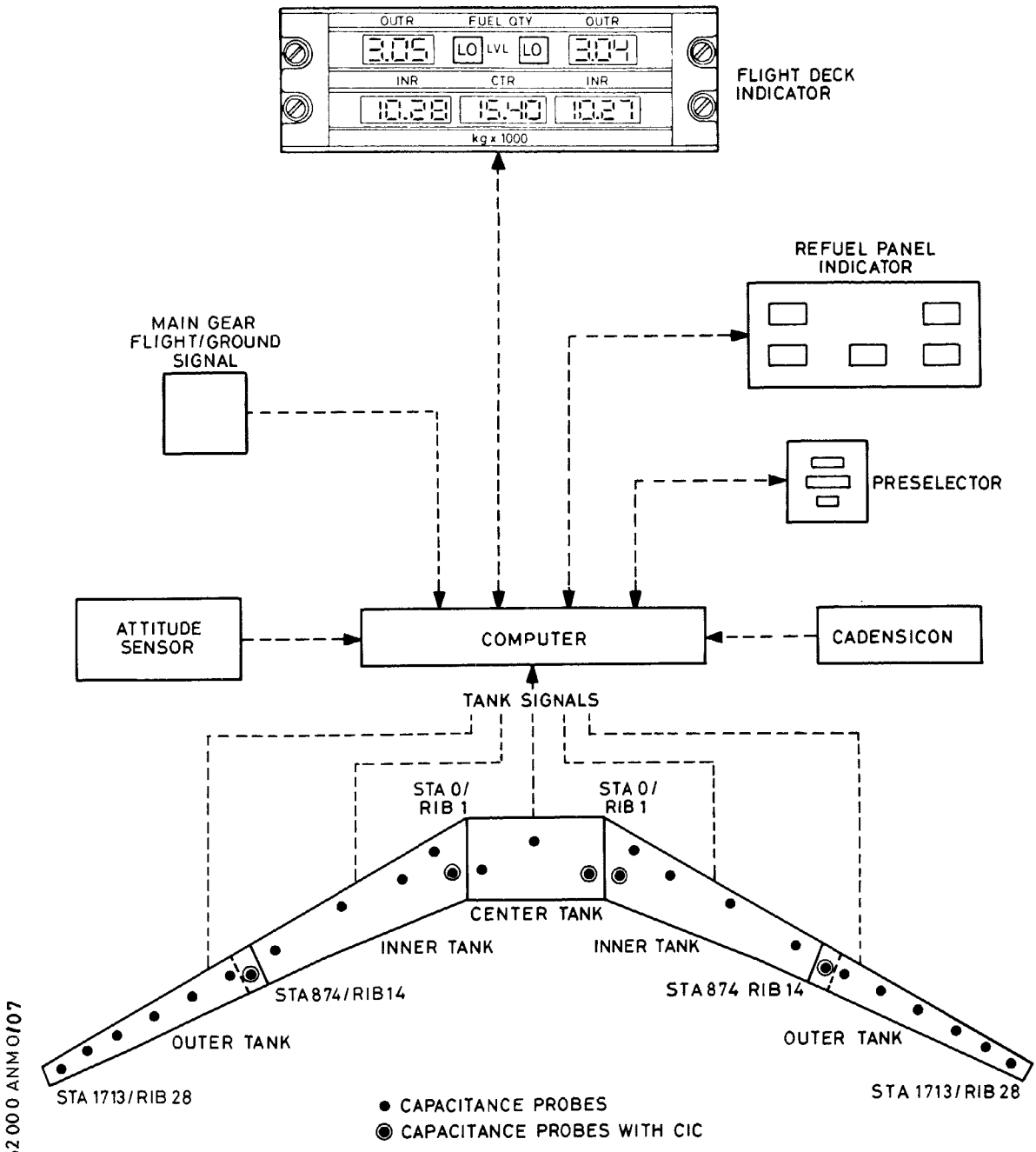
(Ref. Fig. 019)

**ON A/C 101-200,

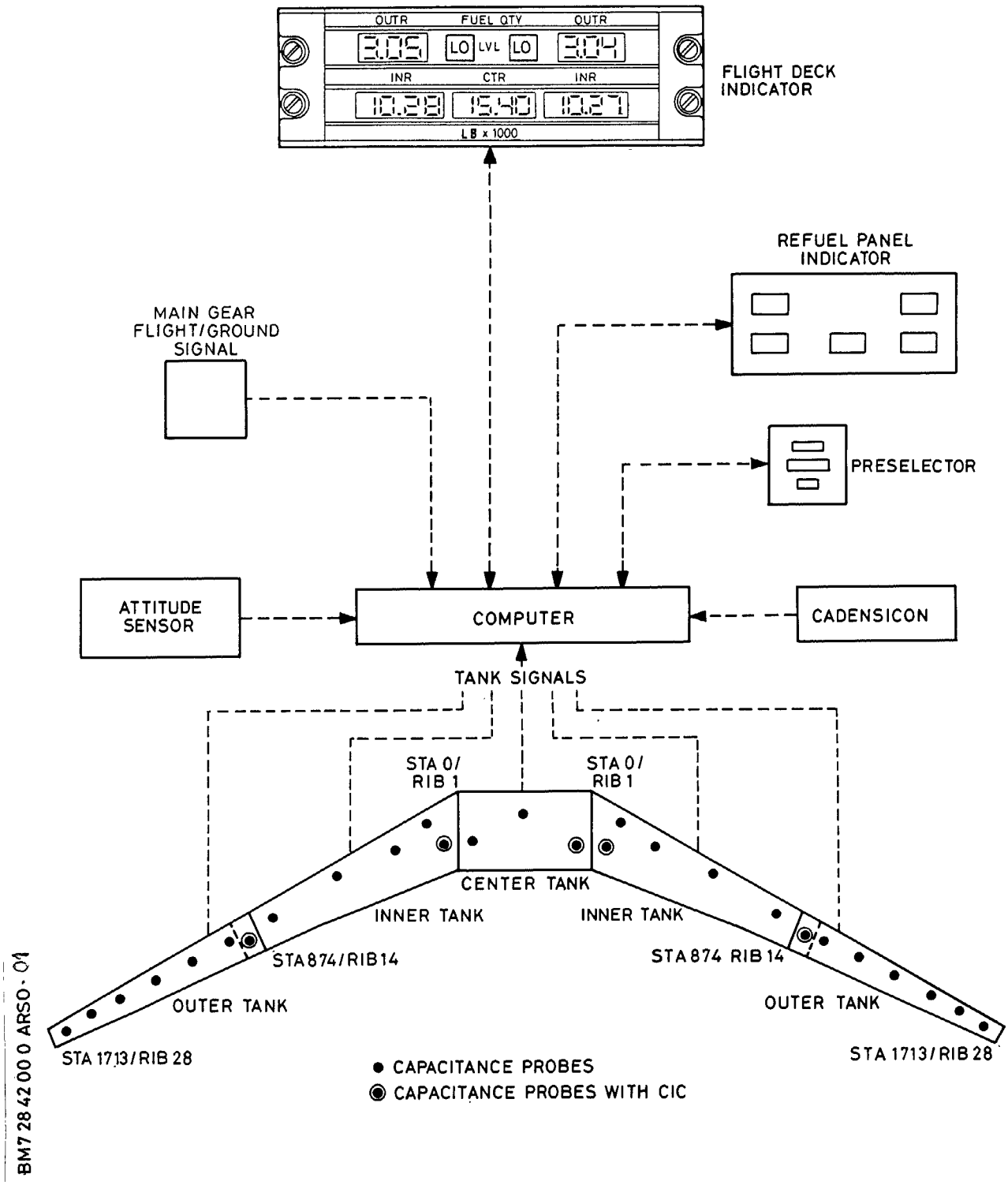
(Ref. Fig. 020)

**ON A/C ALL

The capacitance of a set of tank probes is proportional to the fuel quantity in the tank, but is subject to errors due to fuel grade and aircraft attitude. The computer measures the capacitance of each set of probes, and uses signals from the capacitance index compensators and attitude sensor to correct the errors. As the attitude correction will vary, depending on whether the aircraft is on the ground or in flight, the computer also receives a signal from the landing gear weight switch. During refueling, the computer also uses the signals from the cadensicon to make additional corrections, needed to take account of the dielectric constant and specific gravity/density of the new fuel. Individual tank quantities and ACTUAL fuel weight are calculated and displayed on the associated indicators.



Fuel Quantity Indicating System
Figure 019



Fuel Quantity Indicating System - Circuit Diagram
Figure 020

For automatic refueling, the computer identifies the start of refueling when the **MODE SELECTOR** switch on panel 110VU is put in the **REFUEL** position. The computer receives the signal derived from the preselector potentiometer, and compares the load selected with the **ACTUAL** fuel quantity. As the **ACTUAL** quantity approaches the **PRESELECTED** quantity, a short pause in refueling will occur, while the computer calculates the final distribution of the load. When the two quantities are equal, the computer signals the appropriate refuel/defuel valves to shut (Ref. 28-25-00, P. Block 1). When the **MODE SELECTOR** switch is put in the **OFF** position, the computer identifies the end of refueling, and within 15 seconds stores in the non-volatile memory the information on fuel characteristics received from the cadensicon during refueling.

**ON A/C 101-200,

Post SB 28-2105 For A/C 101-200,

Post SB 28-2108 For A/C 101-200,

Post SB 28-2126 For A/C 104-104,

For automatic refueling, the computer identifies the start of refueling when the **MODE SELECT** switch on panel 110VU, is put in the **REFUEL** position. The computer receives the signal derived from the preselector potentiometer, and compares the load selected with the **ACTUAL** fuel quantity. As the **ACTUAL** quantity approaches the **PRESELECTED** quantity, a short pause in refueling will occur, while the computer calculates the final distribution of the load. When the two quantities are equal, the computer signals the appropriate refuel/defuel valves to shut (Ref. 28-25-00, P. Block 1). When the **MODE SELECT** switch is put in the **OFF** position, the computer identifies the end of refueling, and within 15 seconds stores in the non-volatile memory the information on fuel characteristics received from the cadensicon during refueling.

**ON A/C 001-100,

The cadensicon measures the characteristics of fuel entering the right inner tank during any complete refueling operation, however the computer does not interrogate the cadensicon until the **FUEL QTY** indicator digital display for the right inner tank has increased by 400 kg (881 lb). Thus fuel received in any tank is only classed as 'known' fuel after an increase on the right inner tank display of 400 kg (881 lb) or more. Fuel received in any tank at right inner increments of less than 400 kg (881 lb) is classed as 'unknown' fuel and, depending on quantity, may signal degraded accuracy.

**ON A/C 101-200,

The cadensicon measures the characteristics of fuel entering the right inner tank during any complete refueling operation, however the computer does not interrogate the cadensicon until the FUEL QTY indicator digital display for the right inner tank has increased by 881 lb (400 kg). Thus fuel received in any tank is only classed as 'known' fuel after an increase on the right inner tank display of 881 lb (400 kg) or more. Fuel received in any tank at right inner increments of less than 881 lb (400 kg) is classed as 'unknown' fuel and, depending on quantity, may signal degraded accuracy.

R **ON A/C ALL

R Post SB 28-2126 For A/C 104-104,

'Unknown' fuel received in the right inner tank cannot exceed 400 kg because this fuel must pass through the cadensicon. Dashes resulting from uplift of 'Unknown' fuel may be removed either by adding a sufficient quantity of 'Known' fuel to the 'Unknown' fuel in the R INNER tank or by pressing the RESET button on the computer. The 'LA' code will only be cleared at the next successful refuel.

**ON A/C 101-200,

'Unknown' fuel received in the right inner tank cannot exceed 881 lb (400 kg) because this fuel must pass through the cadensicon. 'Unknown' fuel will be considered to have a combination of standard and previously measured right inner tank fuel values.

**ON A/C ALL

A fault will be considered present when the failure parameters have been exceeded for a total of one minute. If the computer has detected a fault in a tank probe group, the associated display on the FUEL QTY indicator will be blank, together with the ACTUAL fuel quantity display. Detection of a fault in a capacitance index compensator will cause the associated display to show a dash in the least significant digit, signifying degraded accuracy for that tank. For a fault detected in the cadensicon, a dash will show on the left and right inner displays on the FUEL QTY indicator, together with the ACTUAL fuel quantity display signifying degraded system accuracy. For a fault detected in the attitude sensor a dash will show in the least significant digit on all displays on the FUEL QTY indicator, together with the ACTUAL fuel quantity display, signifying degraded system accuracy. In each case, a fault in the

signal conditioning stage associated with a particular computer input will have the same effect as a fault outside the computer. Should the computer subsequently determine the data to be satisfactory, then the associated displays will be corrected and the failure code stored in memory will be classified as intermittent. Blanking of all left tank and center tank displays simultaneously or all right tank displays simultaneously, indicates power supply failure.

R

A built-in test (BITE) facility is provided to verify the satisfactory functioning of the computer signal conditioning stages and indicator displays. The test may be initiated by operating either the ANN LT switch on flight deck overhead panel (436VU), or the TEST pushbutton switch on external refuel panel (110VU). When the switch is operated for at least one minute, the display for each tank on the five-tank FUEL QTY indicators will be LA (only if lowered accuracy exists) for 4 seconds then 8's for 15 seconds. Displays change to 7's for 30 seconds if the system is satisfactory or blank for fault condition (Ref. TSM. 28-42).

PRESELECTED and ACTUAL indicators display 8's. After one minute FQI displays revert to their original readings to within 10 Kg (10 LB), individual tanks and PRESELECTED and ACTUAL displays revert to their original readings, to within 100 Kg (100 LB).

R

When a new computer is installed, it is necessary to introduce standard fuel density (d) and dielectric constant (k) values in memory. This is initiated by pressing the RESET/MEMORY CLEAR pushbutton for 5 seconds when the refuel selector is 'OFF'. The FUEL QTY indicators will then display fuel quantity (based on standard values) until the next successful refuel; when, fuel in the right inner tank is circulated through the cadensicon. The fuel density (d) and diaelectric constant (k) values will then be updated in the Computer memory. The mean value of k, d, determined by this action is then assumed to represent the k, d value of all on-board fuel.

6. Failure/Advisory Codes

A. For further information (Ref. TSM. 28-42).

R WARNING : LANDING GEAR - MAKE SURE THAT THE GROUND SAFETIES AND CHOCKS ARE IN POSITION.

R FLIGHT CONTROLS - MAKE SURE THAT THE GROUND SAFETIES AND NOTICES ARE
R IN POSITION.

OBSERVE THE SAFETY PRECAUTIONS IN 28-00-00, P. BLOCK 301.

R MAKE SURE THAT THE FIRE FIGHTING EQUIPMENT IS AVAILABLE AND IS
R ADEQUATE.

R MAKE SURE THAT YOU ISOLATE THE ELECTRICAL CIRCUITS UPON WHICH WORK IS
R IN PROGRESS.

1. Operational (BITE) Test

A. Reason for the job

To do the tests that follow with the Built-In Test Equipment (BITE):
(1)Operational (BITE) test.
(2)Operational (Diagnostic) test.

B. Equipment and Materials

ITEM	Designation
Referenced Procedures	
- 24-41-00, P. Block 301	AC External Power Control
- 28-00-00, P. Block 301	Fuel - General
- 28-42-00, P. Block 1	Fuel Quantity Indicating System
- 28-42, P. Block 1A	TSM - FQI Fault Codes

C. Procedure

(1)Job Set-Up

(a)Energize the aircraft electrical network (Ref. 24-41-00, P. Block 301).

(b)Make sure that the access door 144DR is closed.
(c)Make sure that the circuit breakers that follow are closed:

PANEL	SERVICE	IDENT.	LOCATION
22VU	FUEL/TK LO LVL AND CAL /L OUT & R INR & CTR R	1QJ	208/B26
22VU	FUEL/TK LO LVL/R OUT & L INR & CTR L	2QJ	208/B27
132VU	FUEL/FUELLING/XFR VALVE	2QU	321/P55
132VU	FUEL/FUELLING/CTL & REFUEL VALVE	1QU	321/P56
132VU	FUEL/FUELLING/HI LVL	6QJ	321/P57
132VU	FUEL/FUELLING/OVERFLOW	5QJ	321/P58
132VU	FUEL/FQI/SUPPLY & IND	1QT	321/P59

PANEL	SERVICE	IDENT.	LOCATION
132VU	FUEL/FQI/CHAN SUPPLY 1	3QT	321/P60
132VU	FUEL/FQI/CHAN SUPPLY 2	4QT	321/P61

NOTE: Operation of ANN LT switch on panel 436VU, will cause test displays to appear on FUEL QTY indicator on panel 430VU.

(2)Test

R (a)To perform the operational (BITE) test, do test steps 1. thru 7.

R (b)To perform the operational (diagnostic) test, only do test steps

R 1., 6. and 7.

ACTION	RESULT
1. On panel 132VU:	On panel 430VU:
- open FUEL/FQI/CHAN SUPPLY 1 circuit breaker 3QT	- digital displays for LH and CTR/TT tanks go blank
- close circuit breaker 3QT	- digital displays change to sevens then after short delay revert to normal
- open FUEL/FQI/CHAN SUPPLY 2 circuit breaker 4QT	- digital displays for RH tanks go blank
- close circuit breaker 4QT.	- digital displays change to sevens then after short delay revert to normal.
2. On panel 472VU:	On panel 472VU:
- place ANN LT switch in TEST position	- all lights come on
- put the ANN LT switch in the READ position	- the fuel lights go off - the maintenance panel controls and indications are activated.
- press the MFA reset buttons on panels 470VU, 471VU and 472VU	- all memorized fault annunciators go off.
- make sure that CHAN 1 and CHAN 2 and SYS MONITOR fault annunciators are off (Ref. 28-42-00, P. Block 1).	
3. Open the access door 144DR.	- the refuel/defuel panel 110VU, is energized.
4. On panel 110VU:	

ACTION	RESULT
- Make sure that the **PWR SUPPLY** switch is in the **NORM** position and the guard is lowered.	
5. On panel **436VU**: - Hold the **ANN LT** switch in the **TEST** position for not less than 1 minute.	On panel **430VU**: - the **FUEL QTY** indicator **LO** legends come on. If lowered accuracy does not exist: - the **FUEL QTY** indicator will display all **8's** for **15** seconds. If lowered accuracy does exist: - the **FUEL QTY** indicator will display **LA**. After **4** seconds all displays will change to all **8's** for **15** seconds. If the system is satisfactory: - the **FUEL QTY** indicator displays will change from **8's** to **7's**. If a fault condition does exist: - the **FUEL QTY** indicator displays will change from **8's** to blanks **(Ref. TSM 28-42)**. After displaying **7's** for **30** seconds displays return to normal fuel indications.
- Put the **ANN LT** switch in the **BRT** position.	- the **FUEL QTY** indicator **LO** legends go off.
6. On panel **110VU**: - Lift the guard and push (in) the **HI LVL TEST** p/bsw for not less than 1 minute	On panel **110VU**: - all the **HIGH LEVEL** and **OVERFLOW** lights come on. If lowered accuracy does not exist: - the **FUEL QTY, PRESELECTED** and **ACTUAL** indicators will display all **8's** for **15** seconds. If lowered accuracy does exist: - the **FUEL QTY** indicator will display **LA**

ACTION	RESULT
	- the PRESELECTED and ACTUAL indicators will each display three 8's. After 4 seconds all displays will change to all 8's for 15 seconds. If the system is satisfactory: - the FUEL QTY, PRESELECTED and ACTUAL indicator displays will change from 8's to 7's. If a fault condition does exist: - the FUEL QTY indicator displays will change from 8's to blanks (Ref. TSM 28-42) - the PRESELECTED and ACTUAL indicator display will change from 8's to 7's. After approximately 30 seconds, all displays return to normal fuel indications.
- Release (out) the HI LVL TEST p/bsw and lower the guard.	- all the HIGH LEVEL and OVERFLOW lights go off.
R	
7. On panel 472VU: - Hold the FAULT SIM switch in the CHAN 1 position.	On panel 472VU: - the CHAN 1 FAULT annunciator comes on (System operates on Channel 2). On the LH ECAM Display Unit (DU): - white message:TRIM TK PUMP 1 OFF TRIM TK PUMP 2 OFF - blue message:TRIM TK MODE---FWD. The display comes on for 1-2 seconds. On the RH ECAM DU: - the fuel page comes on for 1-2 seconds. On panel 430VU: - the FUEL QTY indications do not change by more than 100 kg per tank.

ACTION	RESULT
- Hold the FAULT SIM switch in CHAN 2 position.	On panel 472VU: - CHAN 2 FAULT annunciator comes on - CHAN 1 FAULT annunciator goes off (System operates on Channel 1). On panel 430VU: - the FUEL QTY indications do not change by more than 100 kg per tank.
- Release (out) the FAULT SIM switch.	On panel 472VU: - the CHAN 2 FAULT annunciator goes off.

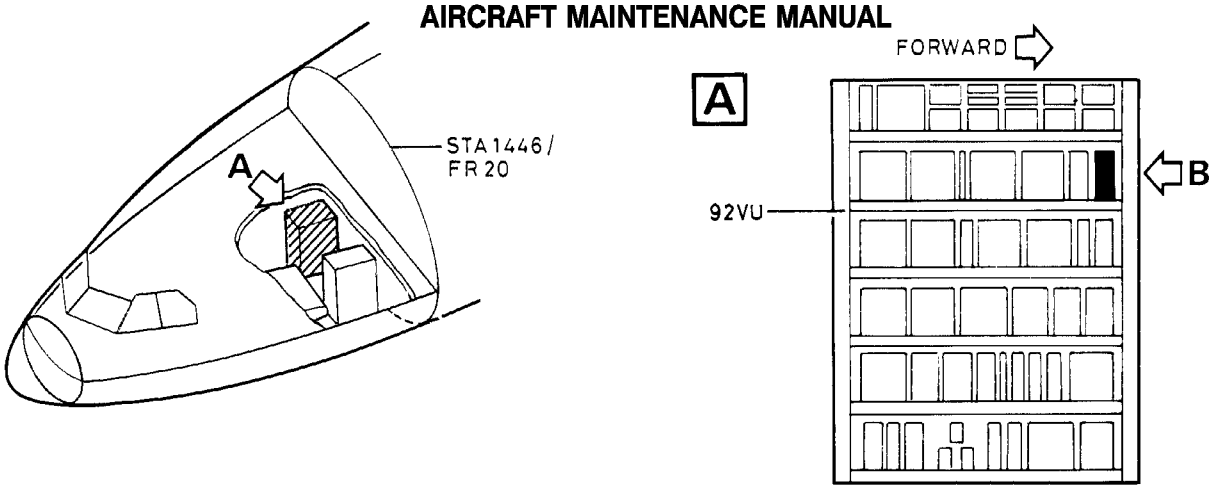
R

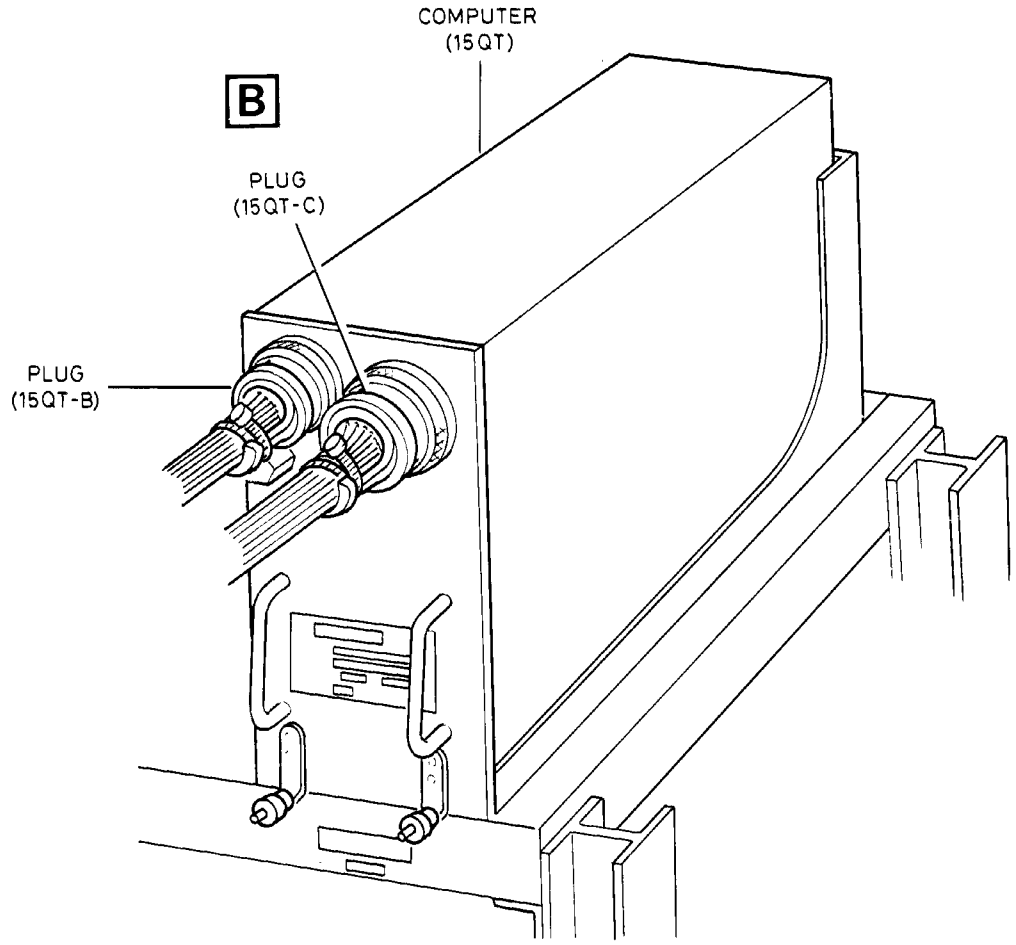
8. On panel 472VU:
   - Make sure that the ANN LT switch is in READ position.

- Press (in) the SYS MONITOR p/bsw switch.	On panel 472VU: - the SYS MONITOR TEST legend comes on. On panel 430VU: - the FUEL QTY indicators display all dashes for 15 ± 5 seconds. For no failure condition: On panel 430VU: - FUEL QTY indicator displays change to 888 for outer tanks and -888 for center/trim and inner tanks. For failure condition: On panel 430VU: - FUEL QTY indicator displays change to failure code(s) alternating with dashes at 5 second intervals (Ref. TSM 28-42).
- Release (out) the SYS MONITOR p/bsw.	On panel 472VU: - the SYS MONITOR TEST legend goes off. - the FUEL QTY indicators on panel 430VU go back to the original indications.

ACTION	RESULT
9. On panel 472VU: - Put the ANN LT switch in the OFF position.	

(3)Reset procedure for FQI computer
(Ref. Fig. 501)
(a)On panel 472VU, put the ANN LT switch in the TEST position and make sure that all the panel 472VU lights come on.
(b)On panel 472VU, put the ANN LT switch in the READ position.
(c)Open the access door 211PZ and gain access to rack 92VU.
(d)On panel 472VU, press (in) the SYS MONITOR P/BSW. Make sure that the SYS MONITOR TEST legend comes on.
(e)Immediately, on rack 92VU, press (in) the computer (15QT) RESET/ MEMORY CLEAR P/BSW for a minimum of 10 seconds.
(f)On panel 472VU, release (out) the SYS MONITOR P/BSW. Make sure that the SYS MONITOR TEST legend goes off.
(g)Press (in) the MFA reset buttons on panels 470VU, 471VU and 472VU.
(h)On panel 472VU, put the ANN LT switch in the OFF postion.
(j)Close the access door 211PZ.
(4)Close-Up
(a)Close the refuel/defuel panel access door 144DR.
(b)De-energize the aircraft electrical network (Ref. 24-41-00, P. Block 301).





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Computer Connections (15QT-B) and (15QT-C)
Figure 501

2. Functional Test - Capacitance and Insulation Resistance - Gull Test Set

A. Reason for the Job
Measurement of fuel probe insulation and capacitance.

**ON A/C 001-100,

B. Equipment and Materials

ITEM	DESIGNATION	
A.	Access Platform 2 m (6.5 ft)	
B.	Access platform 4 m (13 ft)	
C. 361012001	Test Set (Gull)	
D. 99A28404001017	Assembly of Harness	
E. 99A28404001000	Harness - Outer Tank Individual Probe Capacitance	))
F. 99A28404001001	Harness - Inner Tank Individual Probe Capacitance	))
G. 99A28404001002	Harness - Center Tank Individual Probe Capacitance	))
H. 99A28404001004	Harness - Total Tank Capacitance at Tank Wall (all tanks)	) Part of) Harness) Assembly
J. 99A28404001013	Harness - Total Tank Capacitance at computer	) 99A28404001017)
K. 99A28404001011	Harness - Tail Tank Individual Capacitance	))
L. 99A28404001014	Harness - Probe Compensator Grounding	))
M.	Circuit Breaker Safety Clips and Tags	

**ON A/C 101-200,

B. Equipment and Materials

ITEM	DESIGNATION	
A.	Access Platform 2 m (6.5 ft)	
B.	Access platform 4 m (13 ft)	
C. 361012001	Test Set (Gull)	
D. 99A28404001020	Assembly of Harnesses	
E. 99A28404001000	Harness - Outer Tank Individual Probe Capacitance	))
F. 99A28404001001	Harness - Inner Tank Individual Probe Capacitance	))
G. 99A28404001002	Harness - Center Tank Individual Probe Capacitance	))
H. 99A28404001004	Harness - Total Tank Capacitance at Tank Wall	)) Part of

ITEM	DESIGNATION	
	(all tanks)	) Harness
J. 99A28404001011	Harness - Tail Tank	) Assembly
	Individual Capacitance	) 99A28404001020
K. 99A28404001014	Harness - Probe Compensator	)
	Grounding	)
L. 99A28404001018	Harness - AUX Tank Individual	)
	Probe Capacitance	)
M. 99A28404001019	Harness - Total Tank	)
	Capacitance at Computer	)
N.	Circuit Breaker Safety Clips and Tags	

**ON A/C 101-103, 105-200,

Post SB 28-2105 For A/C 101-103,105-200,

Post SB 28-2108 For A/C 101-103,105-200,

B. Equipment and Materials

ITEM	DESIGNATION	
A.	Access Platform 2 m (6.5 ft)	
B.	Access platform 4 m (13 ft)	
C. 361012001	Test Set (Gull)	
D. 99A28404001022	Assembly of Harnesses	
E. 99A28404001000	Harness - Outer Tank	)
	Individual Probe Capacitance	)
F. 99A28404001001	Harness - Inner Tank	)
	Individual Probe Capacitance	)
G. 99A28404001002	Harness - Center Tank	)
	Individual Probe Capacitance	)
H. 99A28404001004	Harness - Total Tank	)
	Capacitance at Tank Wall	) Part of
	(all tanks)	) Harness
J. 99A28404001011	Harness - Tail Tank Individual	) Assembly
	Capacitance	) 99A28404001022
K. 99A28404001014	Harness - Probe Compensator	)
	Grounding	)
L. 99A28404001018	Harness - AUX Tank Individual	)
	Probe Capacitance	)
M. 99A28404001021	Harness - Total Tank	)
	Capacitance at Computer	)
N.	Circuit Breaker Safety Clips and Tags	

**ON A/C 001-100,

ITEM	DESIGNATION
Referenced Procedures	
- 12-32-28, P. Block 301	Fuel Sampling for Water Contamination
- 28-00-00, P. Block 301	Fuel - General
- 28-13-00, P. Block 501	External Ventilation System
- 28-25-00, P. Block 301	Refuel/Defuel System
- 28-42-31, P. Block 401	Probe - Center Tank
- 28-42-32, P. Block 401	Probe - Inner Tank
- 28-42-33, P. Block 401	Probe - Outer Tank
- 28-42-51, P. Block 401	Probe - Trim Tank
- 32-12-11, P. Block 301	Main Gear Main Door
- 55-00-00, P. Block 301	Stabilizers - General

NOTE: Capacitance or insulation resistance may be measured for complete tank probe sets, or for individual probes. Only one tank can be tested at a time.

C. Procedure
(1)Capacitance Measurement - Input to Computer

**ON A/C 101-200,

ITEM	DESIGNATION
Referenced Procedures	
- 12-32-28, P. Block 301	Fuel Sampling for Water Contamination
- 28-00-00, P. Block 301	Fuel - General
- 28-13-00, P. Block 501	External Ventilation System
- 28-25-00, P. Block 301	Refuel/Defuel System
- 28-42-31, P. Block 401	Probe - Center Tank
- 28-42-32, P. Block 401	Probe - Inner Tank
- 28-42-33, P. Block 401	Probe - Outer Tank
- 28-42-51, P. Block 401	Probe - Trim Tank
- 28-42-61, P. Block 401	Probe - ACT (If Fitted)
- 32-12-11, P. Block 301	Main Gear Main Door
- 55-00-00, P. Block 301	Stabilizers - General

NOTE: Capacitance or insulation resistance may be measured for complete tank probe sets, or for individual probes. Only one tank can be tested at a time.

C. Procedure
(1)Capacitance Measurement - Input to Computer

**ON A/C 001-100,

(Ref. Fig. 502)

**ON A/C 101-200,

(Ref. Fig. 503)

**ON A/C 101-200,

Post SB 28-2105 For A/C 101-200,

Post SB 28-2126 For A/C 104-104,

(Ref. Fig. 504)

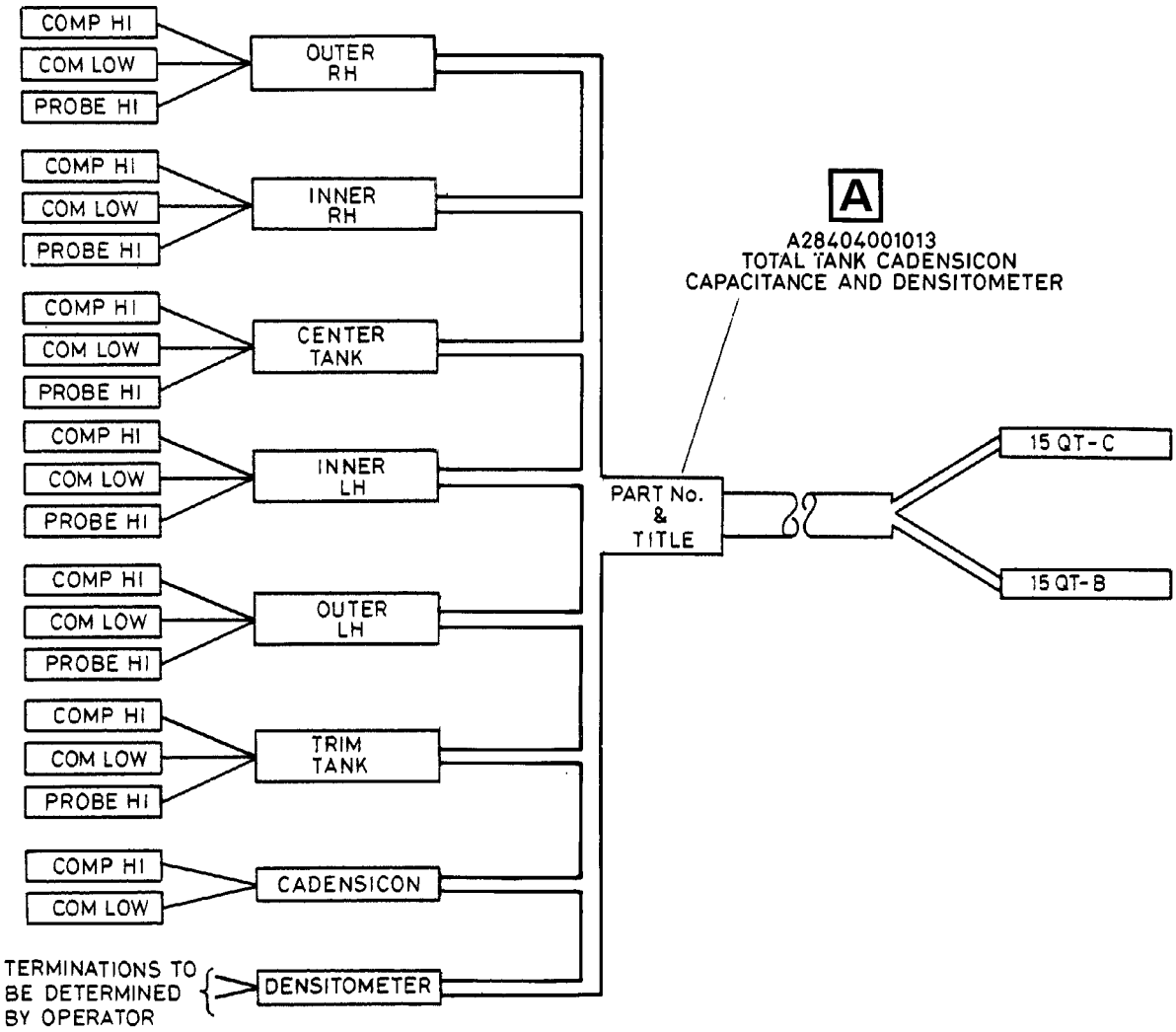
**ON A/C ALL

(Ref. Fig. 505)
(Ref. Fig. 506)
(a)Job Set-Up
1 Defuel relevant tank(s) (Ref. 28-25-00, P. Block 301), then drain residual fuel through water drain valves (Ref. 12-32-28, P. Block 301).
2 Open, safety and tag the following circuit breakers:

PANEL	SERVICE	IDENT.	LOCATION
132VU	FUEL/FQI/SUPPLY & IND	1QT	321/P59
132VU	FUEL/FQI/CHAN SUPPLY 1	3QT	321/P60
132VU	FUEL/FQI/CHAN SUPPLY 2	4QT	321/P61

3 Put the access platform 2 m (6.5 ft) in position.
4 Open the access door 121BL.
5 On the rack 92VU:
- disconnect the plugs (15QT-B) (15QT-C) from the computer (15QT).
6 Connect the harness A to the aircraft cable plugs (15QT-B) (15QT-C).
7 On the test set:
- Make sure the ON/OFF switch is in the OFF position.
- Put the DISPLAY SELECT switch in the CAP(PF) position.
- Put the CAPACITANCE FUNCTION switch in the A/C TEST UNSH position.
- Connect the harness F to the test set GND terminal.
- Connect the test set ground cable W2 to the harness F and to an approved aircraft ground-point.
- Connect the test set-power cable W1 to the connector J1 and to the 115 VAC, 47-440 Hz, power source.

(b)Test (Ref. Table 501)



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Total Tank Harness - Schematic
Figure 502

R EFFECTIVITY: 001-100,

PIA

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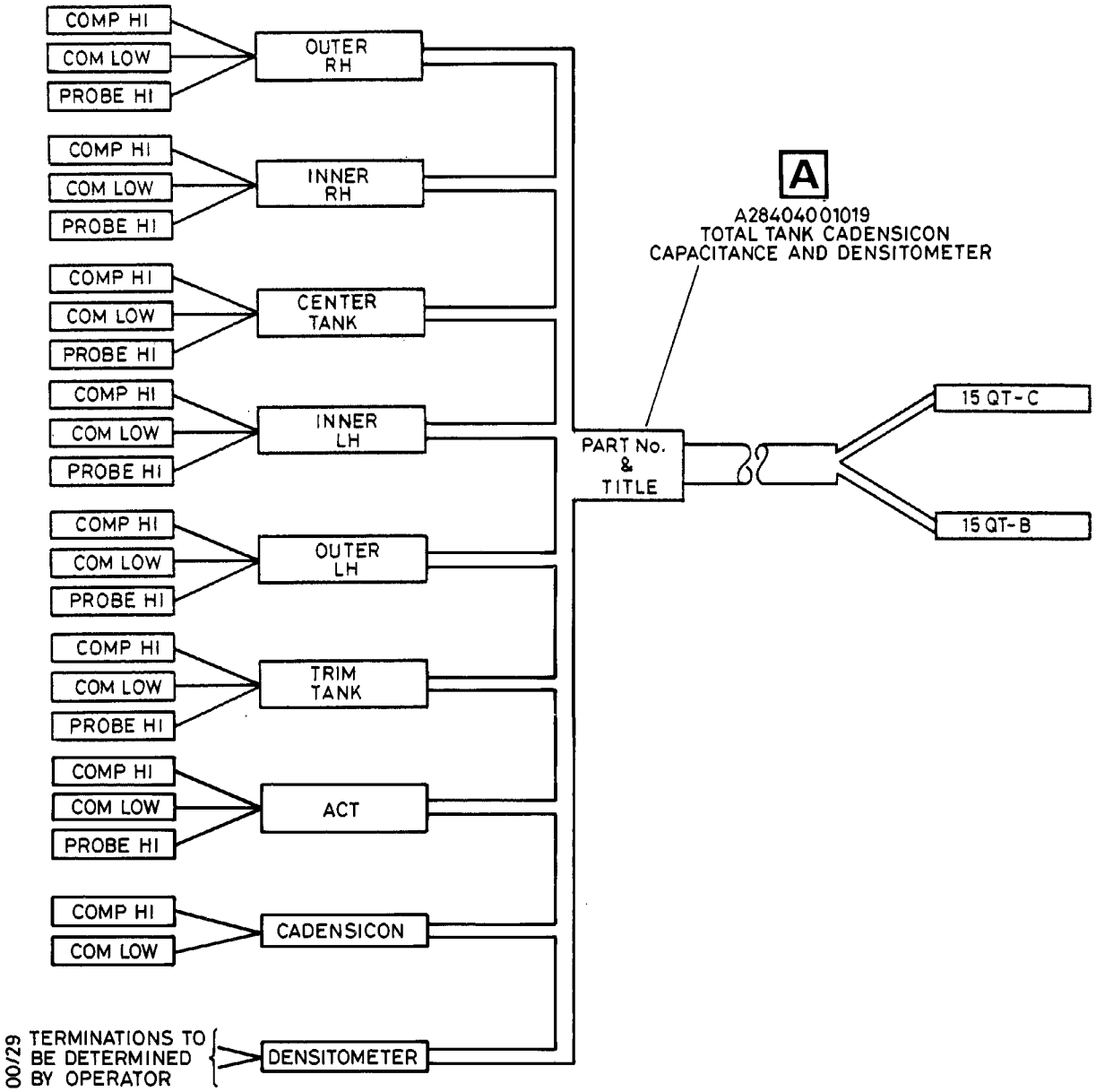
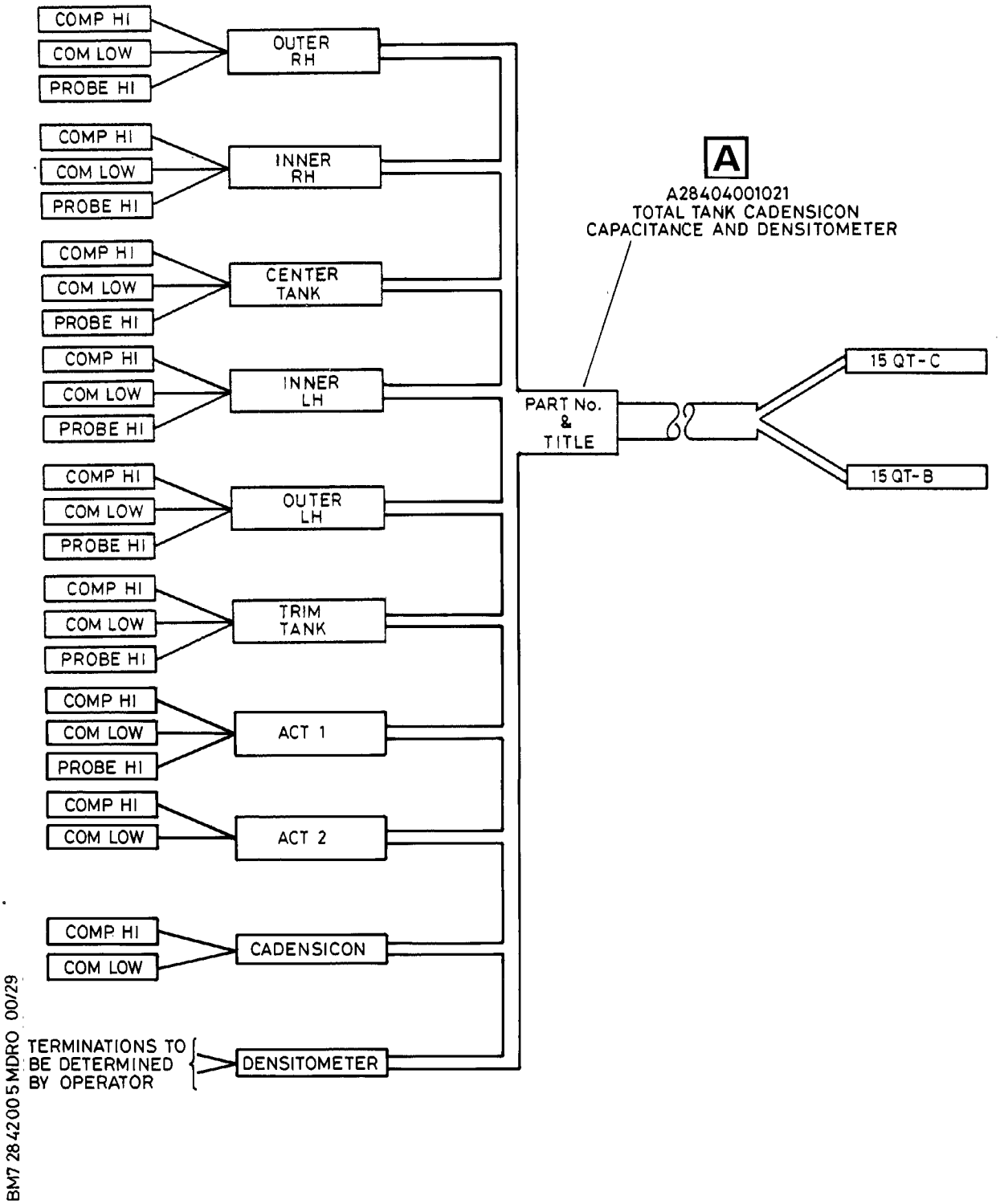
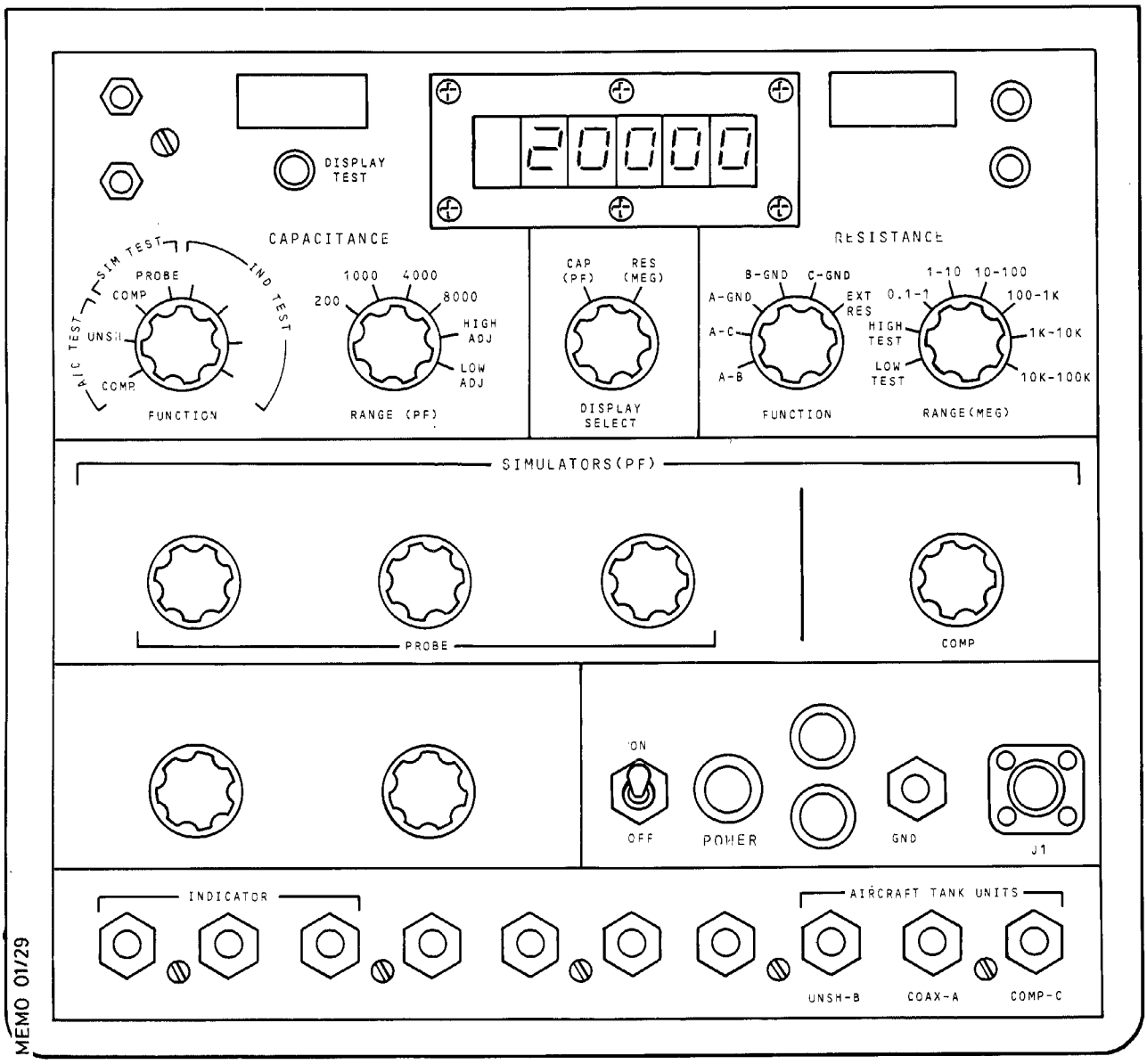


Total Tank Harness - Schematic
Figure 503



Total Tank Harness - Schematic
Figure 504



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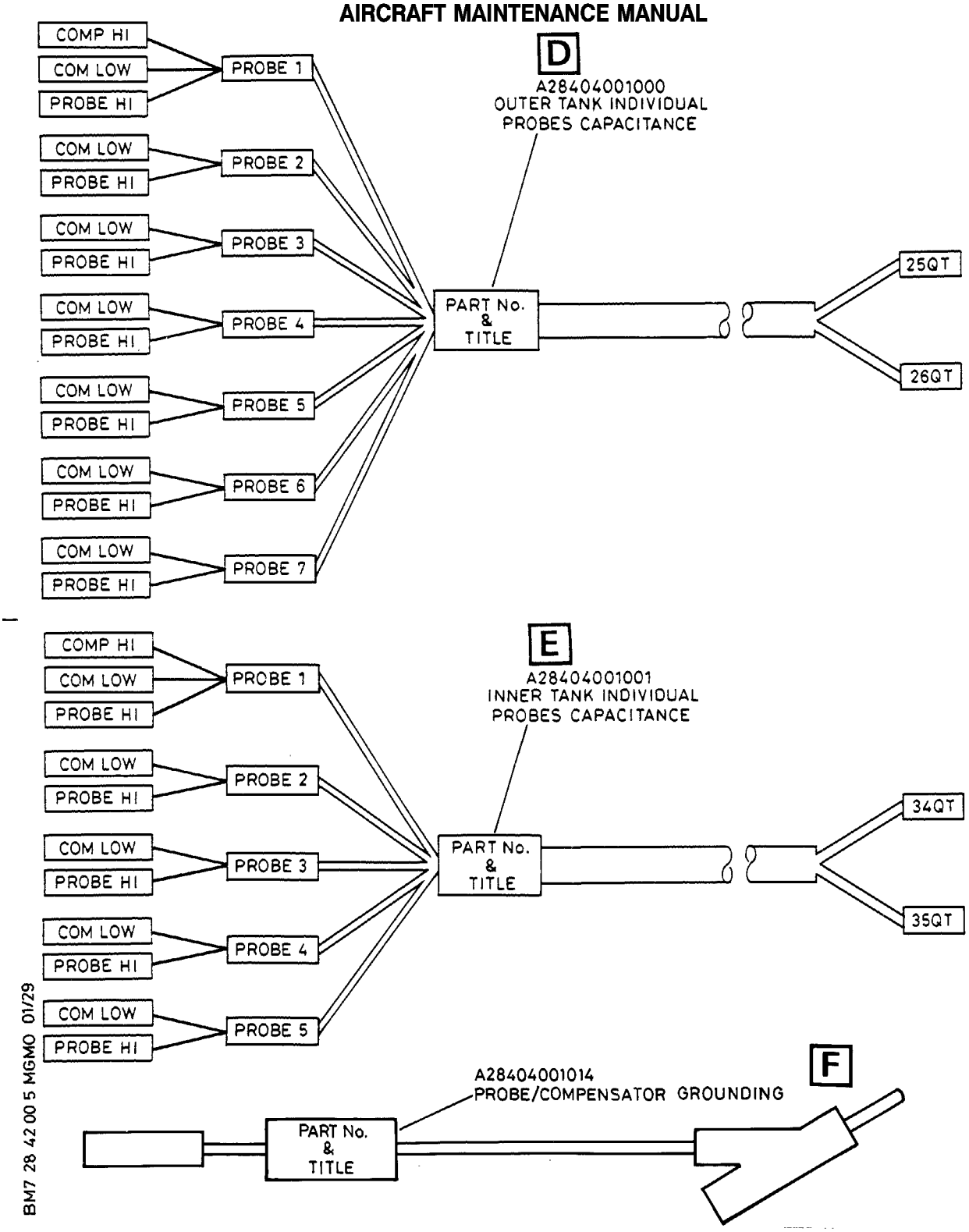
Test Set (Gull)
Figure 505



Individual Harnesses - Schematic
Figure 506

NOTE: Display flashing 199.95 indicates capacitance is greater than selected 200 range. CAPACITANCE RANGE (PF) switch should then be moved to 1000 position to obtain reading.

ACTION	RESULT
1. On test set: - place ON/OFF switch in ON position	On test set: - digital display shows zero
- press DISPLAY TEST pushbutton switch	- digital display shows all 8's
- release DISPLAY TEST pushbutton switch	- display reverts to zero
- place CAPACITANCE RANGE (PF) switch in 200 position	
2. For the outer tank compensator capacitance connect the OUTER TK leads of the harness A to the test set as follows: PROBE HI to GND COMP HI to COAX-A COM LOW to UNSH-B.	- the digital display shows the outer tank compensator capacitance (Ref. Table 501).
- Put the CAPACITANCE RANGE (PF) switch in the 1000 position.	
- Disconnect COMP HI from COAX-A and PROBE HI from GND.	- the digital display goes back to zero.
3. For outer tank probe capacitance connect COMP HI to GND and PROBE HI to COAX-A.	- the digital display shows the outer tank total probe capacitance (Ref. Table 501).
- disconnect the harness A leads from the test set.	
4. Do the steps 2. and 3. again for each tank on which you do the test.	
5. Put the ON/OFF switch in the OFF position. If the capacitance figures are not in tolerance, do the test at the tank wall (Ref. para.(2),(3) or (6) as applicable).	

TANK	CAPACITANCE (PF) OF PROBES WHICH HAVE NEVER BEEN IMMERSED IN FUEL	CAPACITANCE (PF) OF PROBES WHICH HAVE ALREADY BEEN IMMERSED IN FUEL	TOLERANCE
Outer Compensator	28.30	28.50	± 0.50
Outer Probes	201.50	203.00	± 1.25
Inner Compensator	28.50	28.80	± 0.50
Inner Probes	227.50	229.00	± 1.25
Center Compensator	28.30	28.50	± 0.50
Center Probes	328.50	329.75	± 1.75
**ON A/C 101-200,			
ACT Compensator	29.50	29.70	± 0.75
ACT Probes	131.00	131.20	± 1.00
**ON A/C 101-200,			
Post SB 28-2105 For A/C 101-200,			
Post SB 28-2126 For A/C 104-104,			
ACT 1 Compensator	29.50	29.70	± 0.75
ACT 1 Probes	131.00	131.20	± 1.00
ACT 2 Probes	131.00	131.20	± 1.00
**ON A/C ALL			
Trim Compensator	28.30	28.50	± 0.50
Trim Probes	480.00	483.50	± 1.50

Capacitance - Input to Computer
Table 501

(c)Close-Up

1 Disconnect the harness A from the test set and the aircraft cable plugs (15QT-B) (15QT-C).
2 Connect the aircraft cable plugs (15QT-B) (15QT-C) to the computer (15QT).
3 Disconnect the test-set power cable W1, the ground cable W2 and the harness F.
4 Make sure that the work area is clean and clear of tools and miscellaneous items of equipment.
5 Close the access door 121BL.
6 Remove the access platform.
7 Remove the safety clips and tags and close the circuit breakers

1QT (321/P59), 3QT (321/P60) and 4QT (321/P61).

(2)Outer, Inner and Center Tank Total Compensator/Probe Capacitance Measurement - Tank Wall
(Ref. Fig. 505, 506)
(Ref. Fig. 507)
(Ref. Fig. 508)
(Ref. Fig. 509)

**ON A/C 101-200,

NOTE: The Capacitance of the ACT probes can only be measured individually. To obtain total probe capacitance measurement, combine individual probe readings (Ref. Para.(6)).

**ON A/C ALL

(a)Job Set-Up

1 Defuel the relevant tank(s) (Ref. 28-25-00, P. Block 301) then drain the fuel that remains fuel through the water drain valves (Ref. 12-32-28, P. Block 301).

2 Open, safety and tag the circuit breakers that follow:

PANEL	SERVICE	IDENT.	LOCATION
132VU	FUEL/FQI/SUPPLY & IND	1QT	321/P59
132VU	FUEL/FQI/CHAN SUPPLY 1	3QT	321/P60
132VU	FUEL/FQI/CHAN SUPPLY 2	4QT	321/P61

3 For the outer and inner tanks:
- Put the access platform 4 m (13 ft) in position.
- Open the access doors 581(681) CB, 581(681) BB.

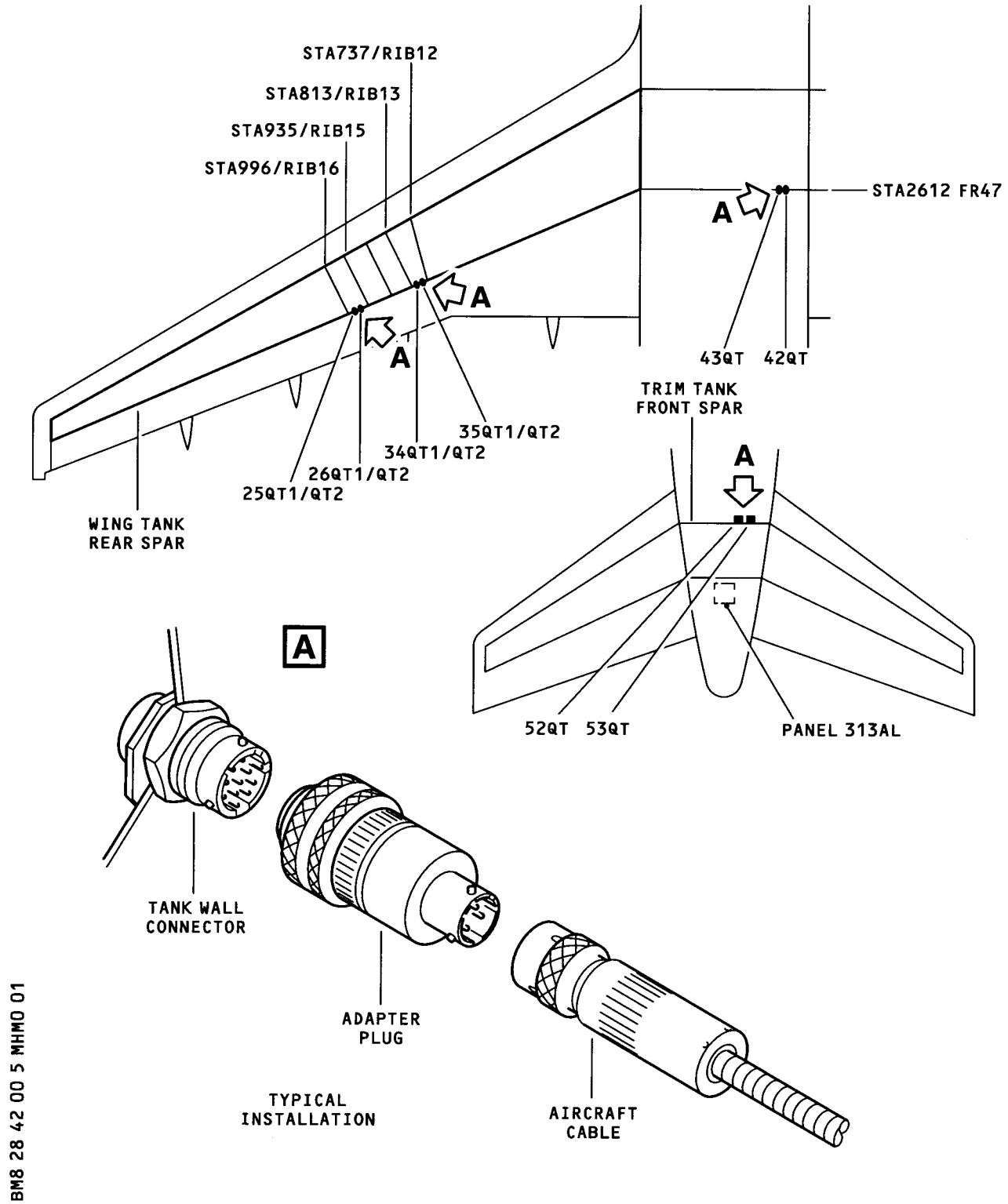
4 For the center tank:
- Open the LH(RH) main-landing-gear bay door(Ref. 32-12-11, P. Block 301.
- Put the access platform 2 m (6.5 ft) in position.

5 Disconnect the aircraft cable from the adapter plugs at the tank wall.

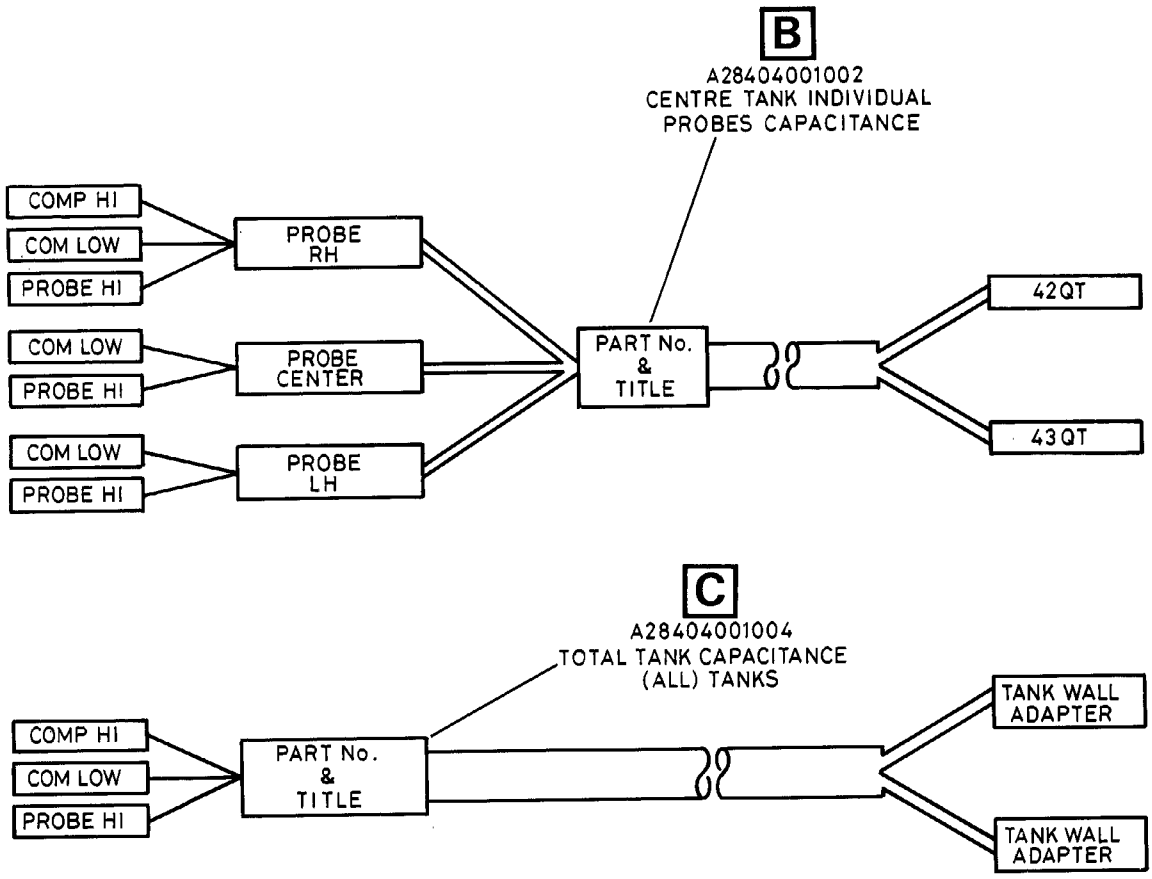
6 Connect the harness C to the tank-wall adapter plugs.

7 On the test set:
- Make sure that the ON/OFF switch is in the OFF position.
- Put the DISPLAY SELECT switch in the CAP (PF) position.
- Put the CAPACITANCE FUNCTION switch in the A/C TEST UNSH position.
- Connect the harness F to the test set GND terminal.
- Connect the test set ground cable W2 to the harness F and to an approved aircraft ground-point.
- Connect the test set power-cable W1 to the connector J1 and to the 115 VAC, 47-440 Hz, power source.

(b)Test (Ref. Table 502).



Harness Adapter Plug - Installation
Figure 507



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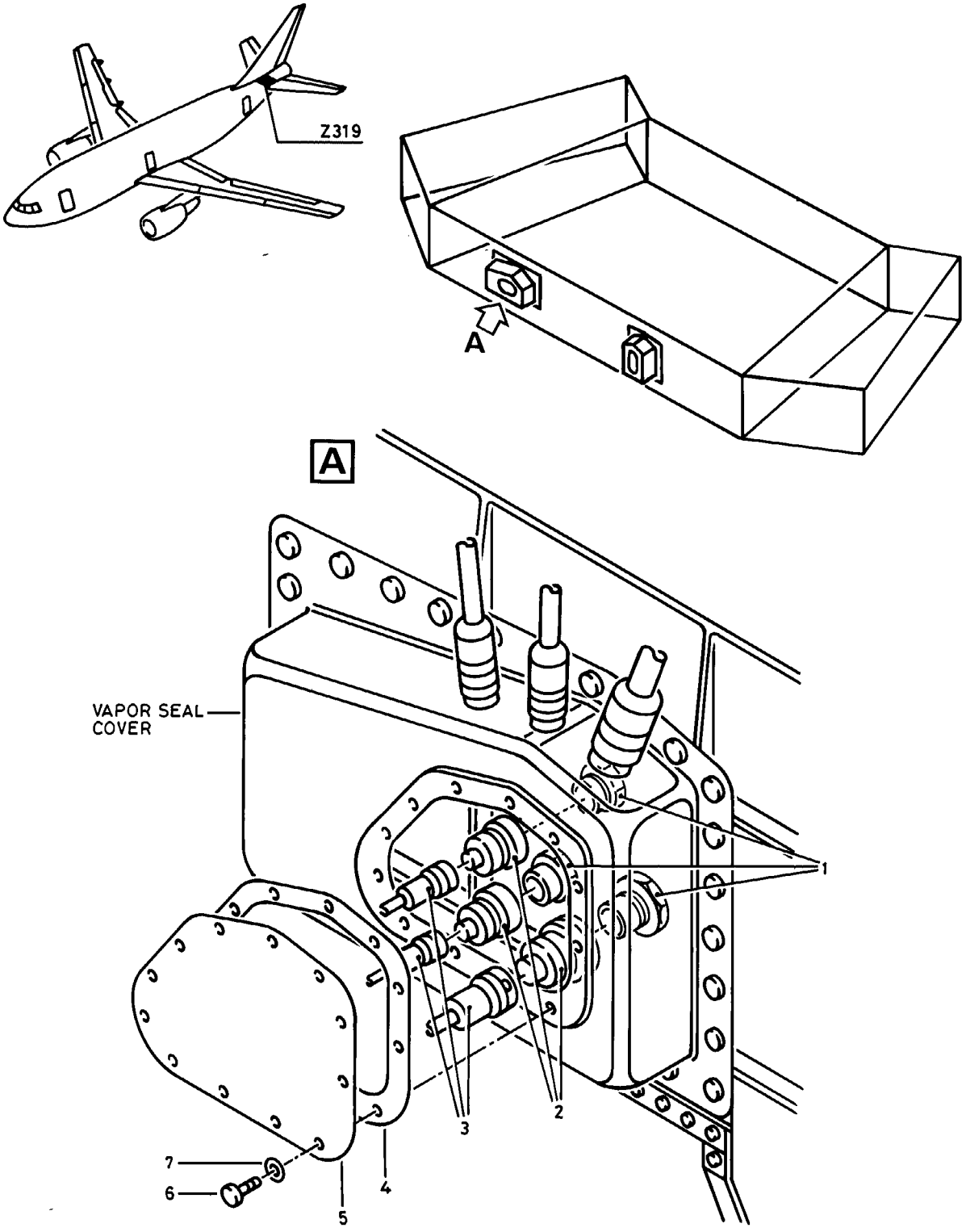
Individual Harness - Schematic
Figure 508



Trim Tank Harness Connections
Figure 509

NOTE: Display flashing 199.95 indicates capacitance is greater than selected 200 range. CAPACITANCE RANGE (PF) switch should then be moved to 1000 position to obtain reading.

ACTION	RESULT
1. On test set: - place ON/OFF switch in ON position	On test set: - digital display shows zero
- press DISPLAY TEST pushbutton switch	- digital display shows all 8's
- release DISPLAY TEST pushbutton switch	- display reverts to zero
- place CAPACITANCE RANGE (PF) switch in 200 position	
2. For the compensator capacitance of the tank on which you do the test, connect the harness C leads to the test set as follows: - PROBE HI to GND - COMP HI to COAX-A - COM LOW to UNSH-B.	- the digital display shows the compensator capacitance (Ref. Table 502).
- Put the CAPACITANCE RANGE (PF) switch in the 1000 position.	
- Disconnect COMP HI from COAX-A and PROBE HI from GND.	- the digital display goes back to zero.
3. For the tank probe capacitance - Connect COMP HI to GND and PROBE HI to COAX A.	- the digital display shows the tank total probe capacitance (Ref. Table 502).
- Put the ON/OFF switch in the OFF position.	
If the capacitance figures are not in tolerance, do the test on each probe in turn (Ref. Para.(4)).	

TANK	CAPACITANCE (PF) OF PROBES WHICH HAVE NEVER BEEN IMMERSED IN FUEL	CAPACITANCE (PF) OF PROBES WHICH HAVE ALREADY BEEN IMMERSED IN FUEL	TOLERANCE
Outer Compensator	28.30	28.50	± 0.50
Outer Probes	200.50	202.00	± 1.00
Inner Compensator	28.50	28.80	± 0.50
Inner Probes	226.50	228.00	± 1.00
Center Compensator	28.30	28.50	± 0.50
Center Probes	328.50	329.75	± 1.50

Total Tank Capacitance - Tank Wall
Table 502

(c)Close-Up
1 Disconnect harness C from test set and tank wall adapter plugs.
2 Connect aircraft cable to tank wall adapter plugs.
3 Disconnect test set power cable W1, ground cable W2 and harness F.
4 Make certain that working area is clean and clear of tools and miscellaneous items of equipment.
5 For outer and inner tanks:
- close access door(s) 581(681) CB, 581(681) BB.
- remove access platform.
6 For center tank:
- remove access platform.
- close LH(RH) main landing gear bay door (Ref. 32-12-11, P. Block 301).
7 Remove safety clips and tags and close circuit breakers 1QT (321/P59), 3QT (321/P60) and 4QT (321/P61).

(3)Trim-Tank Total Compensator/Probe Capacitance Measurement - Tank Wall
(Ref. Fig. 505, 506, 507)
(Ref. Fig. 508, 509).
(a)Job Set-Up
1 Defuel the trim tank (Ref. 28-25-00, P. Block 301) then drain the fuel that remains through the water drain valves (Ref. 12-32-28, P. Block 301).
2 Open, safety and tag the circuit breakers that follow:

PANEL	SERVICE	IDENT.	LOCATION
132VU	FUEL/FQI/SUPPLY & IND	1QT	321/P59
132VU	FUEL/FQI/CHAN SUPPLY 1	3QT	321/P60
132VU	FUEL/FQI/CHAN SUPPLY 2	4QT	321/P61

3 Put the 8 m (26 ft) access platform in position in zone 311.
4 Open the access door 312AR.
5 Make the trimmable horizontal stabilizer (THS) and the vertical

stabilizer safe (Ref. 55-00-00, P. Block 301).

6 Get access to the RH vapor seal cover on the front spar of the trim tank.

NOTE : The harness connectors are in location on the front spar of the trim tank behind the RH vapor seal cover.

The access panel on the vapor seal cover must be removed to get access to the connectors.

7 Loosen the bolts (6) in the access panel (5) (in the vapor seal cover) in a symmetrical diagonal pattern.

8 Remove the bolts (6) and the sealing washers (7).

9 Remove the access panel (5) and the seal (4).

10 Disconnect the aircraft cables (3) from the adapter plugs (2) at the tank wall.

11 Connect the harness C to the tank-wall adapter plugs (2).

12 On the test set:
- Make sure that the ON/OFF switch is in the OFF position.
- Put the DISPLAY SELECT switch in the CAP (PF) position.
- Put the CAPACITANCE FUNCTION switch in the A/C TEST UNSH position.
- Connect the harness F to the test set GND terminal.
- Connect the test set ground cable W2 to the harness F and to an approved aircraft ground point.
- Connect the test set power cable W1 to the connector J1 and to the 115 VAC, 47-440 Hz, power source.

(b)Test (Ref. Table 503)

NOTE : When the display flashes 199.95, this shows that the capacitance is more than the selected 200 range. The CAPACITANCE RANGE (PF) switch should then be moved to the 1000 position to get the indication.

ACTION	RESULT
1. On the test set: - Put the ON/OFF switch in the ON position.	On the test set: - the digital display shows zero.
- Push (in) the DISPLAY TEST P/BSW.	- the digital display shows all 8's.
- Release (out) the DISPLAY TEST P/BSW.	- the digital display goes back to zero.
- Put the CAPACITANCE RANGE (PF) switch in the 200 position.	
2. For the compensator capacitance connect the harness C to the	- the digital display shows the compensator capacitance

ACTION	RESULT
test set as follows: - PROBE HI to GND - COMP HI to COAX-A - COM LOW to UNSH-B.	(Ref. Table 503).
- Put the CAPACITANCE RANGE (PF) switch in the 1000 position.	
- Disconnect COMP HI from COAX-A and PROBE HI from GND.	- the digital display goes back to zero.
3. For the total probe capacitance: - Connect COMP HI to GND and PROBE HI to COAX-A.	- the digital display shows the tank total probe capacitance (Ref. Table 503).
- Put the ON/OFF switch in the OFF position.	
If the capacitance figures are not in tolerance, do the test on each probe in turn (Ref. Para.(5)).	

COMPENSATOR PROBE	CAPACITANCE (PF) OF PROBES WHICH HAVE NEVER BEEN IMMERSED IN FUEL	CAPACITANCE (PF) OF PROBES WHICH HAVE ALREADY BEEN IMMERSED IN FUEL	TOLERANCE
Trim Compensator	28.30	28.50	± 0.50
Trim Probes	478.50	482.00	± 1.25

Total Tank Capacitance - Tank Wall
Table 503

(c)Close-Up

1 Disconnect the harness C from the test set and the tank wall adapter plugs (2).
2 Connect the aircraft cables (3) to the tank wall adapter plugs (2).
3 Examine the access panel seal (4) for correct condition. If necessary, discard and replace the seal.
4 Install the access panel (5) and the seal (4) in the RH vapor seal cover. Install the bolts (6) and the sealing washers (7) and tighten the bolts (6) in a symmetrical diagonal pattern.
5 Do the leak test of the vapor seal cover (Ref. 28-13-00, P. Block 501 paragraph 2. E.).
6 Disconnect the test-set power cable W1, the ground cable W2 and the harness F.

7 Make sure that the work area is clean and clear of tools and miscellaneous items of equipment.
8 Put the (THS) and the vertical stabilizer back to the serviceable condition (Ref. 55-00-00, P. Block 301).

9 Close the access door 312AR.
10 Remove the access platform.
11 Remove the safety clips and tags and close the circuit breakers 1QT (321/P59), 3QT (321/P60) and 4QT (321/P61).

(4)Outer, Inner and Center Tank Individual Compensator/Probe Capacitance Measurement - Tank Wall
(Ref. Fig. 505, 506, 507)
(Ref. Fig. 508).

(a)Job Set-Up

1 Defuel the relevant tank(s) (Ref. 28-25-00, P. Block 301) then drain the fuel that remains through the water drain valves (Ref. 12-32-28, P. Block 301).
2 Open, safety and tag the circuit breakers that follow:

PANEL	SERVICE	IDENT.	LOCATION
132VU	FUEL/FQI/SUPPLY & IND	1QT	321/P59
132VU	FUEL/FQI/CHAN SUPPLY 1	3QT	321/P60
132VU	FUEL/FQI/CHAN SUPPLY 2	4QT	321/P61

3 For the outer and inner tanks:
- Put the access platform 4 m (13 ft) in position.
- Open the access doors 581(681) CB, 581(681) BB.

4 For the center tank:
- Open the LH(RH) main-landing-gear bay door (Ref. 32-12-11, P. Block 301).
- Put the access platform 2 m (6.5 ft) in position.

5 Disconnect the adapter plugs from the tank wall connectors.
6 Connect the applicable harness to the tank wall connectors as follows:
- the outer tank, harness D
- the inner tank, harness E
- the center tank, harness B.

7 On the test set:
- Make sure the ON/OFF switch is in the OFF position.
- Put the DISPLAY SELECT switch in the CAP (PF) position.
- Put the CAPACITANCE FUNCTION switch in the A/C TEST UNSH position.
- Connect the harness F to the test set GND terminal.
- Connect the test set ground cable W2 to the harness F and to an approved aircraft ground-point.
- Connect the test set power-cable W1 to the connector J1 and to the 115 VAC, 47-440 Hz, power source.

(b)Test (Ref. Table 504).

ACTION	RESULT
1. On the test set: - Put the ON/OFF switch in the ON position.	On the test set: - the digital display shows zero.
- Push (in) the DISPLAY TEST P/BSW.	- the digital display shows all 8's.
- Release (out) the DISPLAY TEST P/BSW.	- the digital display goes back to zero.
- Put the CAPACITANCE RANGE (PF) switch in the 200 position.	
2. Connect the inner or outer tank PROBE 1, or the center tank PROBE RH leads to the test set as follows: - PROBE HI to GND - COMP HI to COAX-A - COM LOW to UNSH-B.	- the digital display shows the compensator capacitance (Ref. Table 504).
- Disconnect COMP HI from COAX A and PROBE HI from GND.	- the digital display goes back to zero.
- Connect COMP HI to GND and PROBE HI to COAX-A.	- the digital display shows the outer and inner tank PROBE 1 capacitance and the center tank PROBE RH capacitance (Ref. Table 504).
- Disconnect the PROBE 1 (PROBE RH) leads from test set.	- the digital display goes back to zero.
3. For the probes that remain you have to test, connect the PROBE leads as follows: - PROBE HI to COAX-A - COM LOW to UNSH-B.	- the digital display shows the PROBE capacitance (Ref. Table 504).
- Disconnect the probe leads from the test set.	- the digital display goes back to zero.
- Put the ON/OFF switch in the OFF position.	
If the capacitance figures are not in tolerance, replace the applicable compensator/probe (Ref. 28-42-31, P. Block 401, Ref. 28-42-32, P. Block 401 and Ref. 28-42-33 P. Block 401).	

COMPENSATOR PROBE	CAPACITANCE (PF) OF PROBES WHICH HAVE NEVER BEEN IMMERSED IN FUEL	CAPACITANCE (PF) OF PROBES WHICH HAVE ALREADY BEEN IMMERSED IN FUEL	TOLERANCE
Outer Tank			
Compensator	28.30	28.50	± 0.50
Probe 1 (28QT)	23.55	23.70	± 0.25
Probe 2 (29QT)	18.55	18.65	± 0.25
Probe 3 (30QT)	47.35	47.65	± 0.30
Probe 4 (31QT)	32.60	32.80	± 0.25
Probe 5 (24QT)	26.55	26.65	± 0.20
Probe 6 (32QT)	22.75	22.90	± 0.25
Probe 7 (33QT)	28.35	28.50	± 0.25
Inner Tank			
Compensator	28.50	28.80	± 0.50
Probe 1 (41QT)	20.20	20.25	± 0.25
Probe 2 (40QT)	15.90	15.95	± 0.25
Probe 3 (39QT)	105.15	105.70	± 0.40
Probe 4 (38QT)	62.10	62.45	± 0.30
Probe 5 (37QT)	22.80	22.95	± 0.25
Center Tank			
Compensator	28.30	28.50	± 0.50
Probe RH (45QT)	116.15	116.60	± 0.50
Probe Center (47QT)	95.75	96.10	± 0.55
Probe LH (46QT)	116.25	116.75	± 0.50

Compensator/Probe Capacitance - Tank Wall
Table 504

(c)Close-Up

1 Disconnect the harness (as applicable) from the tank wall connectors.

2 Connect the adapter plugs to the tank wall connectors.

3 Disconnect the test-set power cable W1, the ground cable W2 and the harness F.

4 Make sure that the work area is clean and clear of tools and miscellaneous items of equipment.

5 For the outer and inner tanks:
- Close the access door(s) 581(681) CB, 581(681) BB.
- Remove the access platform.

6 For the center tank:
- Remove the access platform.
- Close the LH(RH) main-landing-gear bay door (Ref. 32-12-11, P. Block 301).

7 Remove the safety clips and tags and close the circuit breakers 1QT (321/P59), 3QT (321/P60) and 4QT (321/P61).

(5)Trim Tank Individual Compensator/Probe Capacitance Measurement -

Tank Wall
(Ref. Fig. 505, 506, 507)
(Ref. Fig. 509)
(Ref. Fig. 510)

(a)Job Set-Up

1 Defuel the trim tank (Ref. 28-25-00, P. Block 301) then drain the fuel that remains through the water drain valves (Ref. 12-32-28, P. Block 301).

2 Open, safety and tag the circuit breakers that follow:

PANEL	SERVICE	IDENT.	LOCATION
132VU	FUEL/FQI/SUPPLY & IND	1QT	321/P59
132VU	FUEL/FQI/CHAN SUPPLY 1	3QT	321/P60
132VU	FUEL/FQI/CHAN SUPPLY 2	4QT	321/P61

3 Put the 8 m (26 ft) access platform in position in zone 311.

4 Open the access door 312AR.

5 Make the trimmable horizontal stabilizer (THS) and the vertical stabilizer safe (Ref. 55-00-00, P. Block 301).

6 Get access to the RH vapor seal cover on the front spar of the trim tank.

NOTE : The harness connectors are in location on the front spar of the trim tank behind the RH vapor seal cover.

The access panel on the vapor seal cover must be removed to get access to the connectors.

7 Loosen the bolts (6) in the access panel (5) (in the vapor seal cover) in a symmetrical diagonal pattern.

8 Remove the bolts (6) and the sealing washers (7).

9 Remove the access panel (5) and the seal (4).

10 Disconnect the adapter plugs (2) from the tank wall connectors (1).

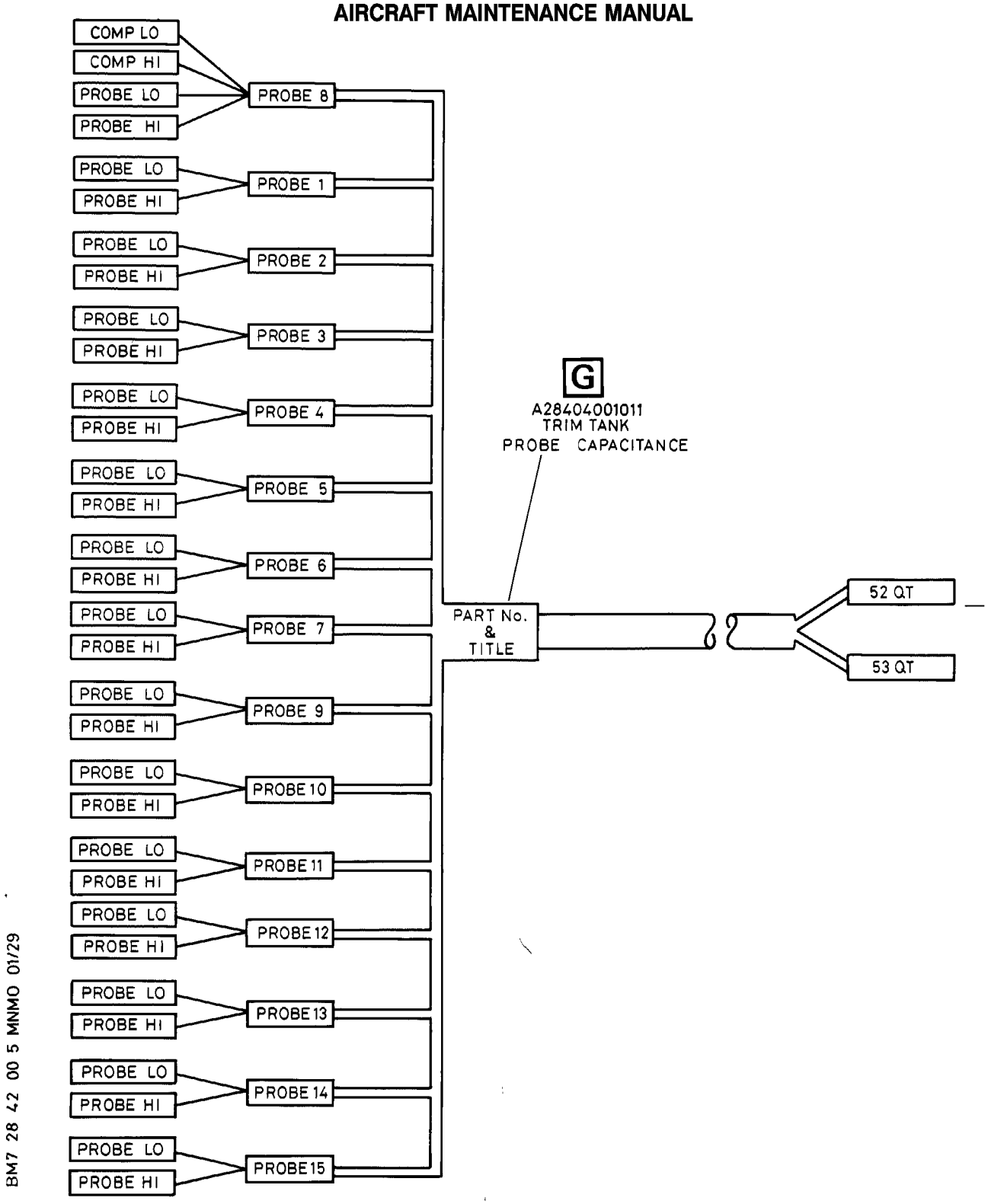
11 Connect the harness G to the tank wall connectors (1).

12 On the test set:
- Make sure that the ON/OFF switch is in the OFF position.
- Put the DISPLAY SELECT switch in the CAP (PF) position.
- Put the CAPACITANCE FUNCTION switch in the A/C TEST UNSH position.
- Connect the harness F to the test set GND terminal.
- Connect the test set ground cable W2 to the harness F and to an approved aircraft ground-point.
- Connect the test set power-cable W1 to the connector J1 and to the 115 VAC, 47-440 Hz, power source.

(b)Test (Ref. Table 505)

ACTION	RESULT
1. On the test set: - Put ON/OFF switch in the ON position.	On test set: - the digital display shows zero.

ACTION	RESULT
- Push (in) the **DISPLAY TEST P/BSW.**	- the digital display shows all 8's.
- Release (out) the **DISPLAY TEST P/BSW.**	- the digital display goes back to zero.
- Put the **CAPACITANCE RANGE (PF)** switch in the 200 position.	
2. Connect the harness G to the test set with the **PROBE** 8 leads as follows: - **PROBE HI** to **GND** - **COMP HI** to **COAX-A** - **COMP LO** to **UNSH-B.**	- the digital display shows the compensator capacitance. (Ref. Table 505).
- Disconnect **COMP HI** from **COAX-A, PROBE HI** from **GND** and **COMP LO** from **UNSH-B.**	- the digital display goes back to zero.
- Connect **COMP HI** to **GND, PROBE HI** to **COAX-A** and **PROBE LO** to **UNSH-B.**	- the digital display shows **PROBE** 8 capacitance (Ref. Table 505).
- Disconnect the **PROBE** 8 leads from the test set.	- the digital display goes back to zero.
3. To do a test on the probe(s) that remain, connect the **PROBE** leads as follows: - **PROBE HI** to **COAX-A** - **PROBE LO** to **UNSH-B.**	- the digital display shows the probe capacitance (Ref. Table 505).
- Disconnect the harness G from the test set.	- the digital display goes back to zero.
- Put the **ON/OFF** switch in the **OFF** position.	
If the capacitance figures are not in tolerance, replace the applicable compensator/probe (Ref. 28-42-51, P. Block 401).	



Trim Tank Harness - Schematic
Figure 510

COMPENSATOR PROBE	CAPACITANCE (PF) OF PROBES WHICH HAVE NEVER BEEN IMMERSED IN FUEL	CAPACITANCE (PF) OF PROBES WHICH HAVE ALREADY BEEN IMMERSED IN FUEL	TOLERANCE
Trim Tank			
Compensator	28.30	28.50	± 0.50
Probe 8 (55QT)	48.20	48.40	± 0.40
Probe 1 (69QT)	21.60	21.75	± 0.30
Probe 2 (67QT)	36.95	37.20	± 0.35
Probe 3 (65QT)	32.55	32.80	± 0.35
Probe 4 (63QT)	34.35	34.60	± 0.35
Probe 5 (61QT)	29.75	30.00	± 0.35
Probe 6 (59QT)	33.40	33.65	± 0.35
Probe 7 (57QT)	25.80	26.00	± 0.30
Probe 9 (56QT)	25.80	26.00	± 0.30
Probe 10 (58QT)	33.40	33.65	± 0.35
Probe 11 (60QT)	29.75	30.00	± 0.35
Probe 12 (62QT)	34.35	34.60	± 0.35
Probe 13 (64QT)	32.55	32.80	± 0.35
Probe 14 (66QT)	36.95	37.20	± 0.35
Probe 15 (68QT)	21.60	21.75	± 0.30

Compensator/Probe Capacitance - Tank Wall
Table 505

(c)Close-Up

1 Disconnect the harness G from the tank wall connectors (1).
2 Connect the adapter plugs (2) to the tank wall connectors (1).
3 Examine the access panel seal (4) for correct condition. If necessary, discard and replace the seal.
4 Install the access panel (5) and the seal (4) in the RH vapor seal cover. Install the bolts (6) and the sealing washers (7) and tighten the bolts (6) in a symmetrical diagonal pattern.
5 Do the leak test of the vapor seal cover (Ref. 28-13-00, P. Block 501 paragraph 2. E.).
6 Disconnect the test set power-cable W1, the ground cable W2 and the harness F.
7 Make sure that the work area is clean and clear of tools and miscellaneous items of equipment.
8 Put the (THS) and the vertical stabilizer to the serviceable condition (Ref. 55-00-00, P. Block 301).
9 Close the access door 312AR.
10 Remove the access platform.
11 Remove the safety clips and tags and close the circuit breakers 1QT (321/P59), 3QT (321/P60) and 4QT (321/P61).

**ON A/C 101-200,

(6)ACT Individual Compensator/Probe Capacitance Measurement - FQI Probes.
(Ref. Fig. 505, 506)

**ON A/C 101-200,

Post SB 28-2105 For A/C 101-200,

Post SB 28-2126 For A/C 104-104,

(6)ACT 1 and 2 Individual Compensator/Probe Capacitance Measurement - FQI Probes.
(Ref. Fig. 505, 506)

**ON A/C 101-200,

(Ref. Fig. 511)

**ON A/C 101-200,

Post SB 28-2105 For A/C 101-200,

Post SB 28-2126 For A/C 104-104,

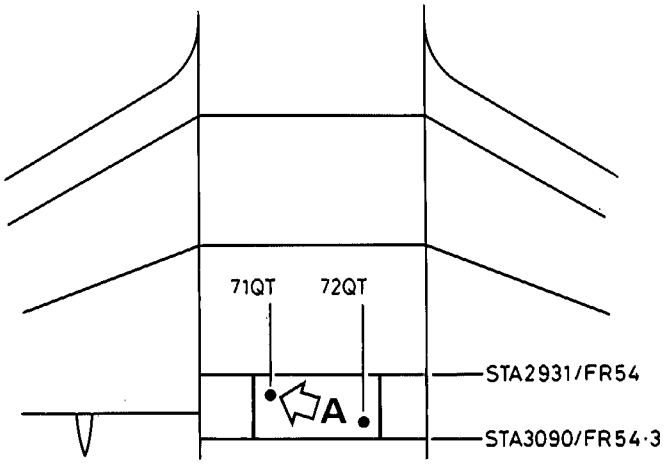
(Ref. Fig. 512)

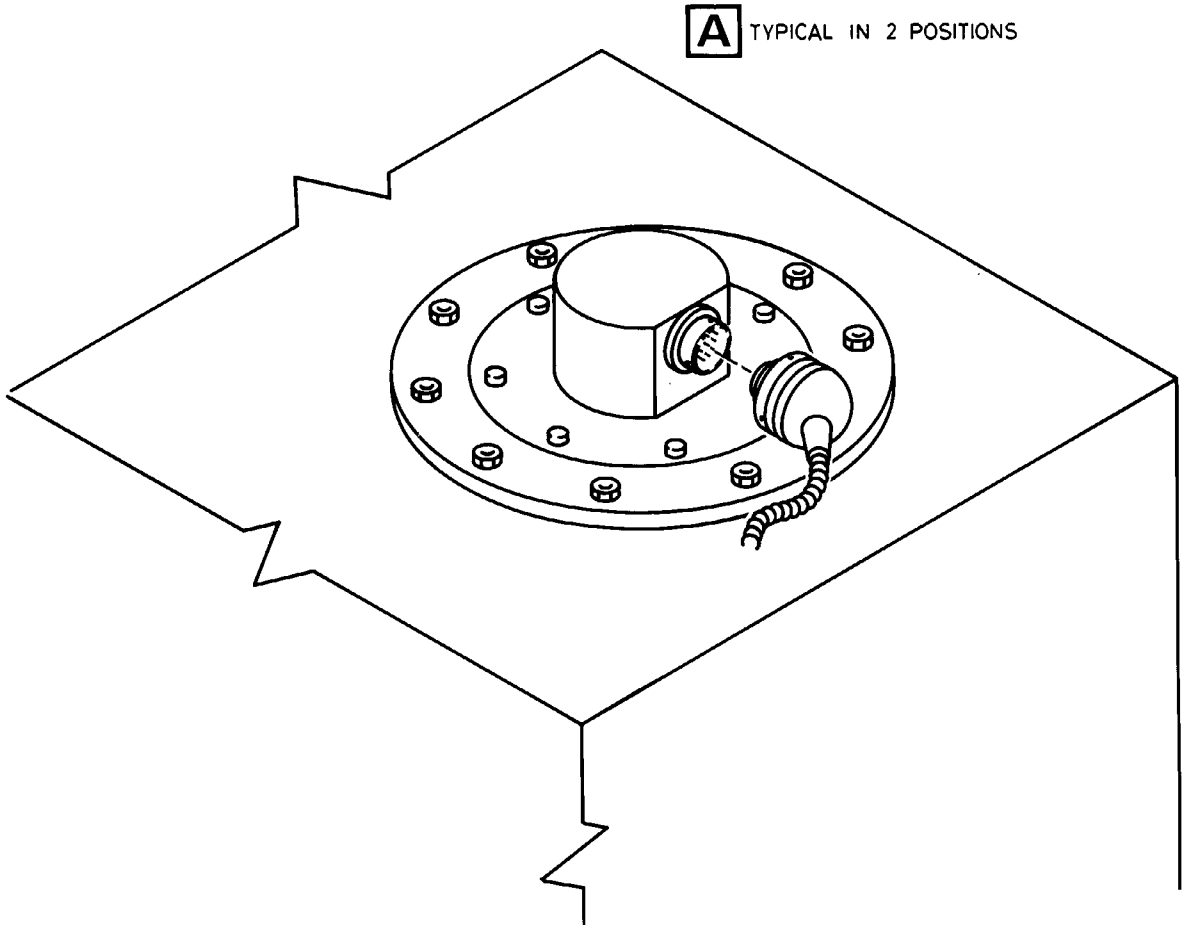
**ON A/C 101-200,

(Ref. Fig. 513)
(a)Job Set-Up
1 Defuel the ACT (Ref. 28-25-00, P. Block 301) then drain the fuel that remains through the remote water drain valves (Ref. 12-32-28, P. Block 301).
2 Open, safety and tag the circuit breakers that follow:

PANEL	SERVICE	IDENT.	LOCATION
132VU	FUEL/FQI/SUPPLY & IND	1QT	321/P59
132VU	FUEL/FQI/CHAN SUPPLY 1	3QT	321/P60
132VU	FUEL/FQI/CHAN SUPPLY 2	4QT	321/P61

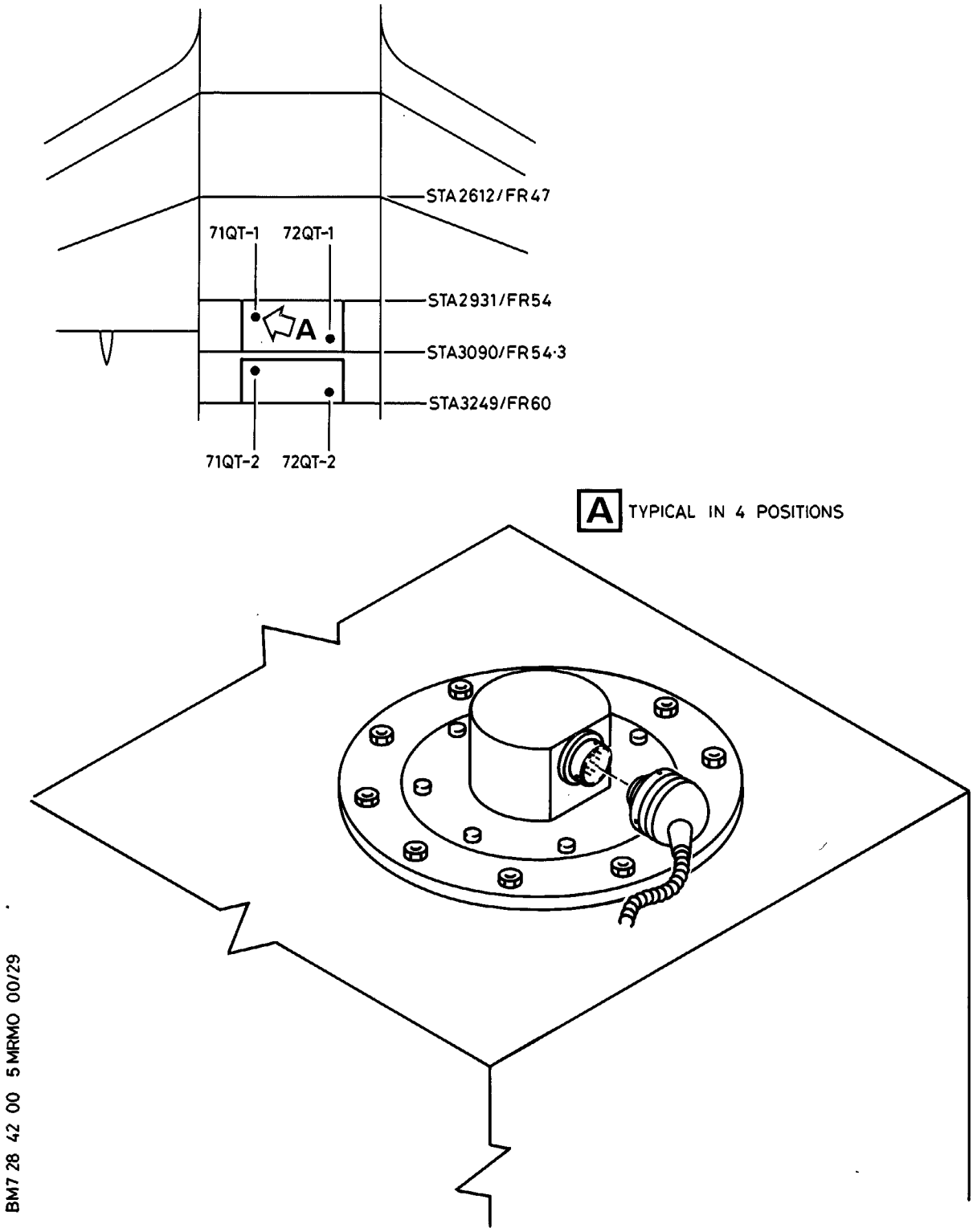
3 Get access to the aft passenger compartment between STA2931 (FR 54) and STA3090 (FR 54.3)
4 Remove the seats (where necessary), lift the carpet and remove the access panels 251AZ and 251BZ.
5 Remove the maintenance covers and get access to the FQI probes.





BM7 28 42 00 5MPMO 00/29

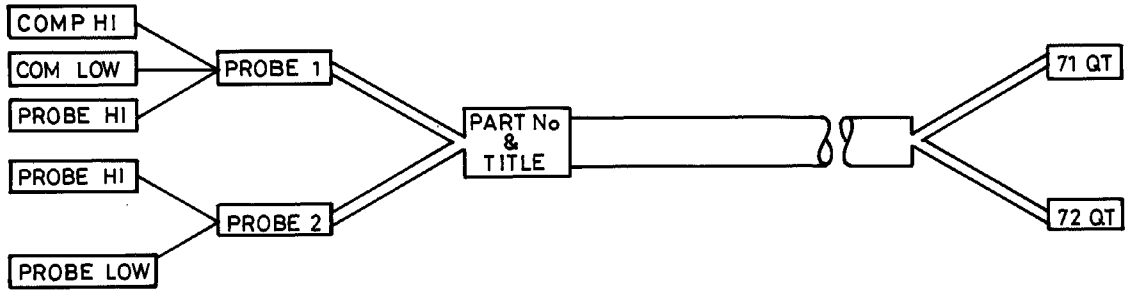
ACT Harness Installation
Figure 511



ACT(s) Harness Installation
Figure 512

H

A 28404001018
ADDITIONAL CENTER TANK
INDIVIDUAL PROBES CAPACITANCE



BM728 42 00 5 MTMO 01/29

ACT Harness - Schematic
Figure 513

6 Disconnect the aircraft cables from the FQI probes 71QT and 72QT.
7 Connect the harness H (P/N 28404001018) to the FQI probe 71QT.
8 On the test set:
- Make sure the ON/OFF switch is in the OFF position.
- Put DISPLAY SELECT switch in the CAP (PF) position.
- Put CAPACITANCE FUNCTION switch in the A/C TEST UNSH position.
- Connect the harness F (P/N 28404001014) to the test set GND terminal.
- Connect the test set ground-cable W2 to the harness F and to an approved aircraft ground-point.
- Connect the test set power-cable W1 to the connector J1 and to the 115 vac, 47-440 Hz, power source.

(b)Test (Ref. Table 506)

ACTION	RESULT
1. On the test set: - Put the ON/OFF switch in the ON position.	On the test set: - the digital display shows zero.
- Push (in) the DISPLAY TEST P/BSW.	- the digital display shows all 8's.
- Release (out) the DISPLAY TEST P/BSW.	- the digital display goes back to zero.
- Put the CAPACITANCE RANGE (PF) switch in the 200 position.	
2. Connect the PROBE 1 leads of the harness H to the test set as follows: PROBE HI to GND COMP HI to COAX-A COM LOW to UNSH-B.	- the digital display shows the compensator capacitance (Ref. Table 506).
- Disconnect COMP HI from COAX-A and PROBE HI from GND.	- the digital display goes back to zero.
- Connect COMP HI to GND and PROBE HI to COAX-A.	- the digital display shows the PROBE 1 capacitance (Ref. Table 506).
- Disconnect the PROBE 1 leads from the test set.	- the digital display goes back to zero.
- Disconnect the harness H from the FQI probe 71QT.	
3. Connect the harness H to the FQI probe 72QT.	

ACTION	RESULT
4. Connect the PROBE 2 leads of the harness H to the test set as follows: PROBE HI to COAX-A PROBE LOW to UNSH-B.	- the digital display shows the PROBE 2 capacitance (Ref. Table 506).
- Disconnect the probe leads from the test set.	- the digital display goes back to zero.
5. Put the ON/OFF switch in the OFF position. If the capacitance figures are not in tolerance, replace the applicable compensator/probe (Ref. 28-42-61, P. Block 401).	

COMPENSATOR PROBE	CAPACITANCE (PF) OF PROBES WHICH HAVE NEVER BEEN IMMERSED IN FUEL	CAPACITANCE (PF) OF PROBES WHICH HAVE ALREADY BEEN IMMERSED IN FUEL	TOLERANCE
ACT			
Compensator	28.50	28.70	± 0.50
Probe 1 (71QT)	64.50	64.70	± 0.75
Probe 2 (72QT)	64.50	64.70	± 0.75

Compensator/Probe Capacitance - Tank Wall
Table 506

(c)Close-Up

1 Disconnect the harness H from the FQI probe 72QT.
2 Connect the aircraft cables to FQI the probes 71QT and 72QT.
3 Disconnect the test set power-cable W1, the ground cable W2 and the harness F.
4 Make sure that the work area is clean and clear of tools and miscellaneous items of equipment.
5 Install the maintenance covers.
6 Install the access panels 251AZ and 251BZ. Put the carpet in position and install the seats (if removed before).
7 Make sure that the AFT passenger compartment is clean and clear of tools and miscellaneous items of equipment
8 Remove the safety clips and tags and close the circuit breakers 1QT (321/P59), 3QT (321/P60) and 4QT (321/P61).

**ON A/C 101-200,

Post SB 28-2105 For A/C 101-200,

Post SB 28-2108 For A/C 101-200,

Post SB 28-2126 For A/C 104-104,

(a)Job Set-Up

1 Defuel the ACT(s) (Ref. 28-25-00, P. Block 301) then drain the fuel that remains through the remote water drain-valves (Ref. 12-32-28, P. Block 301).

2 Open, safety and tag the circuit breakers that follow:

PANEL	SERVICE	IDENT.	LOCATION
132VU	FUEL/FQI/SUPPLY & IND	1QT	321/P59
132VU	FUEL/FQI/CHAN SUPPLY 1	3QT	321/P60
132VU	FUEL/FQI/CHAN SUPPLY 2	4QT	321/P61

3 Get access to the aft passenger compartment between STA2931 (FR 54) and STA3249 (FR 60).

4 For the ACT 1:

- Remove the seats (where necessary), lift the carpet and remove the access panels 251AZ and 251BZ.

5 For the ACT 2:

- Remove the seats (where necessary), lift the carpet and remove the access panels 251CZ and 251DZ.

6 Remove the maintenance covers and get access to the FQI probes.

7 Disconnect the aircraft cables from the ACT 1 & 2 FQI probes.

8 Connect the harness H (P/N 28404001018) to the ACT 1 FQI probe 71QT-1.

9 On the test set:

- Make sure the ON/OFF switch is in the OFF position.
- Put the DISPLAY SELECT switch in the CAP (PF) position.
- Put the CAPACITANCE FUNCTION switch in the A/C TEST UNSH position.
- Connect the harness F (P/N 28404001014) to the test set GND terminal.
- Connect the test set ground-cable W2 to the harness F and to an approved aircraft ground-point.
- Connect the test set power-cable W1 to the connector J1 and to the 115 VAC, 47-440 Hz, power source.

(b)Test (Ref. Table 506)

ACTION	RESULT
1. On the test set: - Put the ON/OFF switch in the ON position.	On the test set: - the digital display shows zero.
- Push (in) the DISPLAY TEST P/BSW.	- the digital display shows all 8's.
- Release (out) the DISPLAY TEST P/BSW.	- the digital display goes back to zero.
- Put the CAPACITANCE RANGE (PF) switch in the 200 position.	
2. Connect the PROBE 1 leads of the harness H to the test set as follows: PROBE HI to GND COMP HI to COAX-A COM LOW to UNSH-B.	- the digital display shows the compensator capacitance (Ref. Table 506).
- Disconnect COMP HI from COAX A and PROBE HI from GND.	- the digital display goes back to zero.
- Connect COMP HI to GND and PROBE HI to COAX-A.	- the digital display shows the PROBE 1 capacitance (Ref. Table 506).
- Disconnect the PROBE 1 leads from the test set.	- the digital display goes back to zero.
3. Disconnect the harness H from the ACT 1 FQI probe 71QT-1.	
4. Connect the harness H to the ACT 1 FQI probe 72QT-1.	
5. Connect the PROBE 2 leads of the harness H to the test set as follows: PROBE HI to COAX-A PROBE LOW to UNSH-B.	- the digital display shows the PROBE 2 capacitance (Ref. Table 506).
- Disconnect the probe leads from the test set.	- the digital display goes back to zero.
6. Disconnect the harness H from the ACT 1 FQI	

ACTION	RESULT
probe 72QT-1.	
7. Connect the harness H to the ACT 2 FQI probe 71QT-2.	
8. Do the test step 2. again on the ACT 2 FQI probe 71QT-2.	
9. Disconnect the harness H from the ACT 2 FQI probe 71QT-2.	
10. Connect the harness H to the ACT 2 FQI probe 72QT-2.	
11. Do the test step 5. again on the ACT FQI probe 72QT-2.	
12. Put the ON/OFF switch in the OFF position.	
If the capacitance figures are not in tolerance, replace the applicable compensator/probe (Ref. 28-42-61, P. Block 401).	

COMPENSATOR PROBE	CAPACITANCE (PF) OF PROBES WHICH HAVE NEVER BEEN IMMERSED IN FUEL	CAPACITANCE (PF) OF PROBES WHICH HAVE ALREADY BEEN IMMERSED IN FUEL	TOLERANCE
ACT 1 and 2			
Compensator	28.50	28.70	± 0.50
Probe 1 (71QT-1)	64.50	64.70	± 0.75
(71QT-2)	64.50	64.70	± 0.75
Probe 2 (72QT-1)	64.50	64.70	± 0.75
(72QT-2)	64.50	64.70	± 0.75

Compensator/Probe Capacitance - Tank Wall
Table 506

(c)Close-Up
1 Disconnect the harness H from the ACT 2 FQI probe 72QT-2.

2 Connect the aircraft cables to the ACT 1 & 2 FQI probes.
3 Disconnect the test set power cable W1, the ground cable W2 and the harness F.
4 Make sure that the work area is clean and clear of tools and miscellaneous items of equipment.
5 Install the maintenance covers.
6 For the ACT 1:
- install the access panels 251AZ and 251BZ. Put the carpet in position and install the seats (if removed before).
7 For the ACT 2:
- install the access panels 251CZ and 251DZ. Put the carpet in position and install the seats (if removed before).
8 Make sure that the AFT passenger compartment is clean and clear of tools and miscellaneous items of equipment
9 Remove the safety clips and tags and close the circuit breakers 1QT (321/P59), 3QT (321/P60) and 4QT (321/P61).

**ON A/C 001-100,

(6)Not applicable.

**ON A/C ALL

(7)Outer, Inner and Center Tank Insulation Resistance Measurement - Tank Probe Set
(Ref. Fig. 505, 507, 508)

NOTE: The insulation resistance of the ACT probes can only be measured individually. To obtain total probe resistance measurement, combine individual probe readings (Ref. Para (11).

(a)Job Set-Up
1 Defuel relevant tank(s) (Ref. 28-25-00, P. Block 301) then drain residual fuel through water drain valves (Ref. 12-32-28, P. Block 301).
2 Open, safety and tag the following circuit breakers:

PANEL	SERVICE	IDENT.	LOCATION
132VU	FUEL/FQI/SUPPLY & IND	1QT	321/P59
132VU	FUEL/FQI/CHAN SUPPLY 1	3QT	321/P60
132VU	FUEL/FQI/CHAN SUPPLY 2	4QT	321/P61

3 For outer and inner tanks:
- position access platform 4 m (13 ft).
- open access doors 581(681) CB, 581(681) BB.
4 For center tank:
- open LH(RH) main landing gear bay door (Ref. 32-12-11, P. Block 301).
- position access platform 2 m (6.5 ft).

5 Disconnect aircraft cables from adapter plugs.
6 Connect harness C to adapter plugs.
7 On test set:
- make certain **ON/OFF** switch is in **OFF** position.
- place **DISPLAY SELECT** switch in **RES (meg)** position.
- place **CAPACITANCE FUNCTION** switch in **A/C TEST UNSH** position.
- connect test set ground cable **W2** to test set **GND** terminal and to an approved aircraft ground point.
- connect test set power cable **W1** to connector **J1** and to **115 VAC, 47-440 Hz,** power source.

(b)Test

NOTE: Display flashing 990.0 indicates resistance above selected range.
Display flashing .0 indicates resistance below selected range.

ACTION	RESULT
1. On test set: - place **ON/OFF** switch in **ON** position	On test set: - digital display shows zero
- press **DISPLAY TEST** pushbutton switch	- digital display shows all 8's
- release **DISPLAY TEST** pushbutton switch	- display reverts to zero
- place **RESISTANCE RANGE (MEG)** switch in **100-1K** position	
2. Connect harness C to test set as follows: - **COMP HI** to **COMP-C** - **PROBE HI** to **COAX-A** - **COM LOW** to **UNSH-B**	
- place **RESISTANCE FUNCTION** switch in **C-GND** position	- digital display shows insulation resistance between compensator high impedance and ground
- note resistance reading	
- place **RESISTANCE FUNCTION** switch in **A-GND** position	- digital display shows insulation resistance between probe high impedance and ground
- note resistance reading	
- place **RESISTANCE FUNCTION SWITCH** in **A-C** position	- digital display shows insulation resistance between compensator

ACTION	RESULT
	and probe high impedance
- note resistance reading	
- place **RESISTANCE FUNCTION** switch in **A-B** position	- digital display shows insulation resistance between probe high impedance and common low impedance
- note resistance reading	
- disconnect **COMP HI** from **COMP-C** and **PROBE HI** from **COAX-A**	- digital display shows zero
- connect test lead **COMP HI** to **COAX-A**	- digital display shows insulation resistance between compensator high impedance and common low impedance
- note resistance reading	
- place **ON/OFF** switch in **OFF** position	

All resistance readings must be greater than 100 megohms. If resistances are below limit, perform test on individual probes (Ref. Para.(9)).

NOTE: Resistance readings may be inaccurate in conditions of high humidity.

(c)Close-Up

1 Disconnect harness C from test set and tank wall adapter plugs.
2 Connect aircraft cables to adapter plugs.
3 Disconnect test set power cable W1, and ground cable W2.
4 Make certain that working area is clean and clear of tools and miscellaneous items of equipment.
5 For outer and inner tanks:
- close access door(s) 581(681) CB, 581(681) BB.
- remove access platform.

6 For center tank:
- remove access platform.
- close LH(RH) main landing gear bay door (Ref. 32-12-11, P. Block 301).

7 Remove safety clips and tags and close circuit breakers 1QT (321/P59), 3QT (321/P60) and 4QT (321/P61).

(8)Trim Tank Insulation Resistance Measurement - Tank Probe Set

(Ref. Fig. 505, 507, 508)
(Ref. Fig. 509)

(a)Job Set-Up

1 Defuel trim tank (Ref. 28-25-00, P. Block 301) then drain residual fuel through water drain valves (Ref. 12-32-28, P. Block 301).

2 Open, safety and tag the following circuit breakers:

PANEL	SERVICE	IDENT.	LOCATION
132VU	FUEL/FQI/SUPPLY & IND	1QT	321/P59
132VU	FUEL/FQI/CHAN SUPPLY 1	3QT	321/P60
132VU	FUEL/FQI/CHAN SUPPLY 2	4QT	321/P61

3 Position the 8 m (26 ft) access platform in zone 311.

4 Open the access door 312AR.

5 Make the trimmable horizontal stabilizer (THS) and the vertical stabilizer safe (Ref. 55-00-00, P. Block 301).

6 Gain access to the RH vapor seal cover on the front spar of the trim tank.

NOTE: The harness connectors are located on the front spar of the trim tank behind the RH vapor seal cover.

The access panel on the vapor seal cover must be removed to gain access to the connectors.

7 Loosen the bolts (6) in the access panel (5) (in the vapor seal cover) in a symmetrical diagonal pattern.

8 Remove the bolts (6) and the sealing washers (7).

9 Remove the access panel (5) and the seal (4).

10 Disconnect the aircraft cables (3) from the adapter plugs (2).

11 Connect the harness C to the adapter plugs (2).

12 On the test set:
- make sure that the ON/OFF switch is in the OFF position
- place the DISPLAY SELECT switch in the RES (MEG) position
- place the CAPACITANCE FUNCTION switch in the A/C TEST UNSH position
- connect the test set ground cable W2 to the test set GND terminal and to an approved aircraft ground point
- connect the test set power cable W1 to the connector J1 and to the 115 VAC, 47-440 Hz, power source.

(b)Test

NOTE: Display flashing 990.0 indicates resistance above selected range.
Display flashing .0 indicates resistance below selected range.

ACTION	RESULT
1. On test set: - place ON/OFF switch in ON position	On test set: - digital display shows zero

ACTION	RESULT
- press **DISPLAY TEST** pushbutton switch	- digital display shows all 8's
- release **DISPLAY TEST** pushbutton switch	- display reverts to zero
- place **RESISTANCE RANGE (MEG)** switch in **100-1K** position	
2. Connect harness C to test set as follows: - **COMP HI** to **COMP-C** - **PROBE HI** to **COAX-A** - **COM LOW** to **UNSH-B**	
- place **RESISTANCE FUNCTION** switch in **C-GND** position	- digital display shows insulation resistance between compensator high impedance and ground
- note resistance reading	
- place **RESISTANCE FUNCTION** switch in **A-GND** position	- digital display shows insulation resistance between probe high impedance and ground
- note resistance reading	
- place **RESISTANCE FUNCTION** switch in **A-C** position	- digital display shows insulation resistance between compensator and probe high impedance
- note resistance reading	
- place **RESISTANCE FUNCTION** switch in **A-B** position	- digital display shows insulation resistance between probe high impedance and common low impedance
- note resistance reading	
- disconnect **COMP HI** from **COMP-C** and **PROBE HI** from **COAX-A**	- digital display shows zero
- connect test lead **COMP HI** to **COAX-A** on test set	- digital diplay shows insulation resistance between compensator high impedance and common low impedance
- note resistance reading	

ACTION	RESULT
- place ON/OFF switch in OFF position All resistance readings must be greater than 100 megohms. If resistances are below limit, perform test on individual probes (Ref. Para.(10).	

NOTE: Resistance readings may be inaccurate in conditions of high humidity.

(c)Close-Up

1 Disconnect harness C from the test set and the tank wall adapter plugs (2).
2 Connect the aircraft cables (3) to the adapter plugs (2).
3 Check the access panel seal (4) for correct condition. If necessary, discard and replace the seal.
4 Install the access panel (5) and the seal (4) in the RH vapor seal cover. Install the bolts (6) and the sealing washers (7) and tighten the bolts (6) in a symmetrical diagonal pattern.
5 Do the leak test of the vapor seal cover (Ref. 28-13-00, P. Block 501 paragraph 2. E.).
6 Disconnect the test set power cable W1, and the ground cable W2.
7 Make sure that the working area is clean and clear of tools and miscellaneous items of equipment.
8 Return the (THS) and the vertical stabilizer to the normal operating condition (Ref. 55-00-00, P. Block 301).
9 Close the access door 312AR.
10 Remove the access platform.
11 Remove the safety clips and tags and close the circuit breakers 1QT (321/P59), 3QT (321/P60) and 4QT (321/P61).

(9)Outer, Inner and Center Tank Insulation Resistance Measurement - Individual Probes
(Ref. Fig. 505, 506, 507)
(Ref. Fig. 508)

(a)Job Set-Up

1 Defuel relevant tank(s) (Ref. 28-25-00, P. Block 301) then drain residual fuel through water drain valves (Ref. 12-32-28, P. Block 301).
2 Open, safety and tag the following circuit breakers:

PANEL	SERVICE	IDENT.	LOCATION
132VU	FUEL/FQI/SUPPLY & IND	1QT	321/P59
132VU	FUEL/FQI/CHAN SUPPLY 1	3QT	321/P60
132VU	FUEL/FQI/CHAN SUPPLY 2	4QT	321/P61

3 For outer and inner tanks:

- position access platform 4 m (13 ft).
- open access door(s) 581(681) CB, 581(681) BB.

4 For center tank:
- open LH(RH) main landing gear bay door (Ref. 32-12-11, P. Block 301).
- position access platform 2 m (6.5 ft).

5 Disconnect adapter plugs from tank wall connectors.

6 Connect applicable harness to tank wall connectors:
- outer tanks, harness D.
- inner tanks, harness E.
- center tank, harness B.

7 On test set:
- make certain ON/OFF switch is in OFF position.
- place DISPLAY SELECT switch in RES (MEG) position.
- place CAPACITANCE FUNCTION switch in A/C TEST UNSH poition.
- connect test set ground cable W2 to test set GND terminal and to an approved aircraft ground point.
- connect test set power cable W1 to connector J1 and to 115 VAC, 47-440 Hz, power source.

(b)Test

NOTE: Display flashing 990.0 indicates resistance above selected range. Display flashing .0 indicates resistance below selected range.

ACTION	RESULT
1. On test set: - place ON/OFF switch in ON position	On test set: - digital display shows zero
- press DISPLAY TEST pushbutton switch	- digital display shows all 8's
- release DISPLAY TEST pushbutton switch	- display reverts to zero
- place RESISTANCE RANGE (MEG) switch in 100-1K position	
2. Connect inner tank or outer tank PROBE 1, or center tank PROBE RH lead as follows: - COMP HI to COMP-C - PROBE HI to COAX-A - COM LOW to UNSH-B	
- place RESISTANCE FUNCTION switch in C-GND position	- digital display shows insulation resistance between compensator high impedance and ground

ACTION	RESULT
- note resistance reading	
- place **RESISTANCE FUNCTION** switch in **B-GND** position	- digital display shows insulation resistance between common low impedance and ground
- note resistance reading	
NOTE: Inner tank and outer tank **PROBE 1** and centre tank **PROBE RH** contain a temperature compensator connected on the tank unit, therefore it is not possible to carry out a check of the insulation between terminals 2 and 1 (with **RESISTANCE FUNCTION** switch in **B-GND** position).	
- place **RESISTANCE FUNCTION** switch in **A-GND** position	- digital display shows insulation resistance between probe high impedance and ground
- note resistance reading	
- place **RESISTANCE FUNCTION** switch in **A-C** position	- digital display shows insulation resistance between compensator and probe high impedance
- note resistance reading	
- place **RESISTANCE FUNCTION** switch in **A-B** position	- digital display shows insulation resistance between probe high impedance and common low impedance
- note resistance reading	
- disconnect **COMP HI** from **COMP-C** and **PROBE HI** from **COAX-A**	
3. Connect test lead **COMP HI** to **COAX-A** on test set	- digital diplay shows insulation resistance between compensator high impedance and common low impedance
- note resistance reading	
- disconnect **PROBE 1 (PROBE RH)** leads from test set	- digital display shows zero
4. For remaining probes to be tested connect probe leads as follows: - **PROBE HI** to **COAX-A**	

ACTION	RESULT
- COM LOW to UNSH-B	
- place **RESISTANCE FUNCTION** switch in **B-GND** position	- digital display shows insulation resistance between common low impedance and ground
- note resistance reading	
- place **RESISTANCE FUNCTION** switch in **A-GND** position	- digital display shows insulation resistance between probe high impedance and ground
- note resistance reading	
- place **RESISTANCE FUNCTION** switch in **A-B** position	- digital display shows insulation resistnace between probe high impedance and common low impedance
- note resistance reading	

All resistance readings
must be greater than 500 megohms

NOTE: Resistance readings may be inaccurate in conditions of high humidity.

- place **ON/OFF** switch
  in **OFF** position

(c)Close-Up

1 Disconnect applicable harness from test set and tank wall connectors.
2 Connect aircraft adapter plugs to tank wall connectors.
3 Disconnect test set power cable W1, and ground cable W2.
4 Make certain that working area is clean and clear of tools and miscellaneous items of equipment.
5 For outer and inner tanks:
- close access door(s) 581(681) CB, 581(681) BB.
- remove access platform.
6 For center tank:
- remove access platform.
- close LH(RH) main landing gear bay door (Ref. 32-12-11, P. Block 301).
7 Remove safety clips and tags and close circuit breakers 1QT, 3QT and 4QT .

(10)Trim Tank Insulation Resistance Measurement - Individual Probes
(Ref. Fig. 505, 507, 509)
(Ref. Fig. 510)

NOTE: It is not possible to measure the insulation resistance of PROBE 8 LO to GND.

(a)Job Set-Up

1 Defuel trim tank (Ref. 28-25-00, P. Block 301) then drain residual fuel through water drain valves (Ref. 12-32-28, P. Block 301).

2 Open, safety and tag the following circuit breakers:

PANEL	SERVICE	IDENT.	LOCATION
132VU	FUEL/FQI/SUPPLY & IND	1QT	321/P59
132VU	FUEL/FQI/CHAN SUPPLY 1	3QT	321/P60
132VU	FUEL/FQI/CHAN SUPPLY 2	4QT	321/P61

3 Position the 8 m (26 ft) access platform in zone 311.

4 Open the access door 312AR.

5 Make the trimmable horizontal stabilizer (THS) and the vertical stabilizer safe (Ref. 55-00-00, P. Block 301).

6 Gain access to the RH vapor seal cover on the front spar of the trim tank.

NOTE: The harness connectors are located on the front spar of the trim tank behind the RH vapor seal cover.

The access panel on the vapor seal cover must be removed to gain access to the connectors.

7 Loosen the bolts (6) in the access panel (5) (in the vapor seal cover) in a symmetrical diagonal pattern.

8 Remove the bolts (6) and the sealing washers (7).

9 Remove the access panel (5) and the seal (4).

10 Disconnect the aircraft adapter plugs (2) from the tank wall connectors (1).

11 Connect harness G to the tank wall connectors (1).

12 On the test set:

- make sure that the ON/OFF switch is in the OFF position
- place the DISPLAY SELECT switch in the RES (MEG) position
- place the CAPACITANCE FUNCTION switch in the A/C TEST UNSH position
- connect the test set ground cable W2 to the test set GND terminal and to an approved aircraft ground point
- connect the test set power cable W1 to the connector J1 and to the 115 VAC, 47-440 Hz, power source.

(b)Test

NOTE: Display flashing 990.0 indicates resistance above selected range. Display flashing .0 indicates resistance below selected range.

ACTION	RESULT
1. On test set: - place **ON/OFF** switch in **ON** position	On test set: - digital display shows zero
- press **DISPLAY TEST** pushbutton switch	- digital display shows all 8's
- release **DISPLAY TEST** pushbutton switch	- display reverts to zero
- place **RESISTANCE RANGE (MEG)** switch in **100-1K** position	
2. Connect **PROBE 8** leads of harness **G** to test set as follows: **COMP HI** to **COMP-C** **PROBE HI** to **COAX-A** **PROBE LO** to **UNSH-B**	
- place **RESISTANCE FUNCTION** switch in **C-GND** position	- digital display shows insulation resistance between compensator high impedance and ground
- note resistance reading	
- place **RESISTANCE FUNCTION** switch in **B-GND** position	- digital display shows resistance reading of temperature compensator
- note resistance reading	
- place **RESISTANCE FUNCTION** switch in **A-GND** position	- digital display shows insulation resistance between probe high impedance and ground
- note resistance reading	
- place **RESISTANCE FUNCTION** switch in **A-C** position	- digital display shows insulation resistance between compensator high impedance and ground
- note resistance reading	
- place **RESISTANCE FUNCTION** switch in **A-B** position	- digital display shows insulation resistance between probe high impedance and probe low impedance

ACTION	RESULT
- note resistance reading	
- disconnect **PROBE 8** leads from test set	
3. Reconnect **PROBE 8** leads as follows: **COMP HI** to **COAX-A** **COMP LO** to **UNSH-B**	
- place **RESISTANCE FUNCTION** switch in **B-GND** position	- digital display shows insulation resistance between compensator low impedance and ground
- note resistance reading	
- place **RESISTANCE FUNCTION** switch in **A-B** position	- digital display shows insulation resistance between compensator high impedance and compensator low impedance
- note resistance reading	
- disconnect **PROBE 8** leads from test set	- digital display shows zero
4. For remaining probes to be tested connect probe leads to the test set as follows: - **PROBE HI** to **COAX-A** - **PROBE LO** to **UNSH-B**	
- place **RESISTANCE FUNCTION** switch in **B-GND** position	- digital display shows insulation resistance between common low impedance and ground
- note resistance reading	
- place **RESISTANCE FUNCTION** switch in **A-GND** position	- digital display shows insulation resistance between probe high impedance and ground
- note resistance reading	
- place **RESISTANCE FUNCTION** switch in **A-B** position	- digital display shows insulation resistance between probe high impedance and common low impedance

ACTION	RESULT

- note resistance reading

All resistance readings must be greater than 500 megohms except PROBE 8 reading in B-GND position which should read approximately 15 K. ohms.

NOTE: Resistance readings may be inaccurate in conditions of high humidity.

- place ON/OFF switch in OFF position

(c)Close-Up

1 Disconnect harness G from the test set and the tank wall connectors (1).
2 Connect the adapter plugs (2) to the tank wall connectors (1).
3 Check the access panel seal (4) for correct condition. If necessary, discard and replace the seal.
4 Install the access panel (5) and the seal (4) in the RH vapor seal cover. Install the bolts (6) and the sealing washers (7) and tighten the bolts (6) in a symmetrical diagonal pattern.
5 Do the leak test of the vapor seal cover (Ref. 28-13-00, P. Block 501 paragraph 2. E.).
6 Disconnect the test set power cable W1, and the ground cable W2.
7 Make sure that the working area is clean and clear of tools and miscellaneous items of equipment.
8 Return the (THS) and the vertical stabilizer to the normal operating condition (Ref. 55-00-00, P. Block 301).

9 Close the access door 312AR.
10 Remove the access platform.
11 Remove the safety clips and tags and close the circuit breakers 1QT (321/P59), 3QT (321/P60) and 4QT (321/P61).

**ON A/C 101-200,

(11)ACT Insulation Resistance Measurement - Individual Probes (Ref. Fig. 505, 511, 513)

(a)Job Set-Up

1 Defuel ACT (Ref. 28-25-00, P. Block 301) then drain residual fuel through remote water drain valves (Ref. 12-32-28, P. Block 301).
2 Open, safety and tag the following circuit breakers:

PANEL	SERVICE	IDENT.	LOCATION
132VU	FUEL/FQI/SUPPLY & IND	1QT	321/P59
132VU	FUEL/FQI/CHAN SUPPLY 1	3QT	321/P60

PANEL	SERVICE	IDENT.	LOCATION
132VU	FUEL/FQI/CHAN SUPPLY 2	4QT	321/P61

3 Gain access to the aft passenger compartment between STA2931 (FR 54) and STA3090 (FR 54.3).
4 Remove seats (where necessary) lift carpet and remove access panels 251AZ and 251BZ.
5 Remove maintenance covers and gain access to FQI probes.
6 Disconnect aircraft cables from FQI probes 71QT and 72QT.
7 Connect harness H to FQI probe 71QT.
8 On test set:
- make certain ON/OFF switch is in OFF position.
- place DISPLAY SELECT switch in RES (MEG) position.
- place CAPACITANCE FUNCTION switch in A/C TEST UNSH position.
- connect test set ground cable W2 to test set GND terminal and to an approved aircraft ground point.
- connect test set power cable W1 to connector J1 and to 115 VAC, 47-440 Hz, power source.

(b)Test

NOTE : Display flashing 990.0 indicates resistance above selected range. Display flashing .0 indicates resistance below selected range.

ACTION	RESULT
1. On test set: - place ON/OFF switch in ON position	On test set: - digital display shows zero
- press DISPLAY TEST pushbutton switch	- digital display shows all 8's
- release DISPLAY TEST pushbutton switch	- display reverts to zero
- place RESISTANCE RANGE (MEG) switch in 100-1K position	
2. Connect PROBE 1 leads of harness H to test set as follows: - COMP HI to COMP-C PROBE HI to COAX-A COM LOW to UNSH-B	
- place RESISTANCE FUNCTION switch in C-GND position	- digital display shows insulation resistance between compensator high impedance and ground

ACTION	RESULT
- note resistance reading	
- place **RESISTANCE FUNCTION** switch in **B-GND** position	- digital display shows insulation resistance between common low impedance and ground
- note resistance reading	
- place **RESISTANCE FUNCTION** switch in **A-GND** position	- digital display shows insulation resistance between probe high impedance and ground
- note resistance reading	
- place **RESISTANCE FUNCTION** switch in **A-C** position	- digital display shows insulation resistance between compensator high impedance and ground
- note resistance reading	
- place **RESISTANCE FUNCTION** switch in **A-B** position	- digital display shows insulation resistance between probe high impedance and low impedance
- note resistance reading	
- disconnect **COMP HI** from **COMP-C** and **PROBE HI** from **COAX-A**	
- connect test lead **COMP HI** to **COAX-A**	- digital display shows insulation resistance between compensator high impedance and common low impedance
- note resistance reading	
- disconnect **PROBE 1** leads from test set	- digital display reverts to zero

3. Disconnect harness **H** from **ACT FQI** probe **71QT**

4. Connect harness **H** to **ACT FQI** probe **72QT**

5. Connect **PROBE 2** leads of harness **H** to test set as follows:
   PROBE HI to **COAX-A**

ACTION	RESULT
PROBE LOW to UNSH-B	
- place **RESISTANCE FUNCTION** switch in **B-GND** position	- digital display shows insulation resitance between common low impedance and ground
- note resistance reading	
- place **RESISTANCE FUNCTION** switch in **A-GND** position	- digital display shows insulation resistance between probe high impedance and ground
- note resistance reading	
- place **RESISTANCE FUNCTION** switch in **A-B** position	- digital display shows insulation resistance between probe high impedance and common low impedance
- note resistance reading	
All resistance readings must be greater than 500 Megohms	
NOTE: Resistance readings may be inaccurate in conditions of high humidity.	
6. Disconnect **PROBE 2** leads from test set	- digital display reverts to zero
7. Place **ON/OFF** switch in **OFF** position	

(c)Close-Up

1 Disconnect harness H from FQI probe 72QT.
2 Connect aircraft cables to FQI probes 71QT and 72QT.
3 Disconnect test set power cable W1, and ground cable W2.
4 Make certain that working area is clean and clear of tools and miscellaneous items of equipment.
5 Install maintenance covers
6 Install access panels 251AZ and 251BZ. Put carpet in position and install seats (if previously removed).
7 Make certain that AFT passenger compartment is clean and clear of tools and miscellaneous items of equipment
8 Remove safety clips and tags and close circuit breakers 1QT (321/P59), 3QT (321/P60) and 4QT (321/P61).

**ON A/C 101-200,

Post SB 28-2105 For A/C 101-200,

Post SB 28-2126 For A/C 104-104,

(11)ACT Insulation Resistance Measurement - Individual Probes
(Ref. Fig. 505, 512, 513)
(a)Job Set-Up
1 Defuel ACT(S) (Ref. 28-25-00, P. Block 301) then drain residual fuel through remote water drain valves (Ref. 12-32-28, P. Block 301).
2 Open, safety and tag the following circuit breakers:

PANEL	SERVICE	IDENT.	LOCATION
132VU	FUEL/FQI/SUPPLY & IND	1QT	321/P59
132VU	FUEL/FQI/CHAN SUPPLY 1	3QT	321/P60
132VU	FUEL/FQI/CHAN SUPPLY 2	4QT	321/P61

3 Gain access to the aft passenger compartment between STA2931 (FR 54) and STA3249 (FR 60).
4 For ACT 1:
- remove seats (where necessary) lift carpet and remove access panels 251AZ and 251BZ.
5 For ACT 2:
- remove seats (where necessary) lift carpet and remove access panels 251CZ and 251DZ.
6 Remove maintenance covers and gain access to FQI probes.
7 Disconnect aircraft cables from ACT 1 & 2 FQI probes.
8 Connect harness H to ACT 1 FQI probe 71QT-1.
9 On test set:
- make certain ON/OFF switch is in OFF position.
- place DISPLAY SELECT switch in RES (MEG) position.
- place CAPACITANCE FUNCTION switch in A/C TEST UNSH position.
- connect test set ground cable W2 to test set GND terminal and to an approved aircraft ground point.
- connect test set power cable W1 to connector J1 and to 115 VAC, 47-440 Hz, power source.

(b)Test

NOTE: Display flashing 990.0 indicates resistance above selected range. Display flashing .0 indicates resistance below selected range.

ACTION	RESULT
1. On test set: - place ON/OFF switch in ON position	On test set: - digital display shows zero
- press DISPLAY TEST pushbutton	- digital display shows all 8's

ACTION	RESULT
switch	
- release **DISPLAY TEST** pushbutton switch	- display reverts to zero
- place **RESISTANCE RANGE (MEG)** switch in **100-1K** position	
2. Connect **PROBE 1** leads of harness **H** to test set as follows:	
- **COMP HI** to **COMP-C** **PROBE HI** to **COAX-A** **COM LOW** to **UNSH-B**	
- place **RESISTANCE FUNCTION** switch in **C-GND** position	- digital display shows insulation resistance between compensator high impedance and ground
- note resistance reading	
- place **RESISTANCE FUNCTION** switch in **B-GND** position	- digital display shows insulation resistance between common low impedance and ground
- note resistance reading	
- place **RESISTANCE FUNCTION** switch in **A-GND** position	- digital display shows insulation resistance between probe high impedance and ground
- note resistance reading	
- place **RESISTANCE FUNCTION** switch in **A-C** position	- digital display shows insulation resistance between compensator high impedance and ground
- note resistance reading	
- place **RESISTANCE FUNCTION** switch in **A-B** position	- digital display shows insulation resistance between probe high impedance and low impedance
- note resistance reading	
- disconnect **COMP HI** from **COMP-C** and **PROBE HI** from **COAX-A**	

ACTION	RESULT
- connect test lead **COMP HI** to **COAX-A**	- digital display shows insulation resistance between compensator high impedance and common low impedance
- note resistance reading	
- disconnect **PROBE 1** leads from test set	- digital display reverts to zero

3. Disconnect harness **H** from **ACT 1 FQI** probe **71QT-1**

4. Connect harness **H** to **ACT 1 FQI** probe **72QT-1**

5. Connect **PROBE 2** leads of harness **H** to test set as follows:
   PROBE HI to **COAX-A**
   PROBE LOW to **UNSH-B**

- place **RESISTANCE FUNCTION** switch in **B-GND** position	- digital display shows insulation resitance between common low impedance and ground
- note resistance reading	
- place **RESISTANCE FUNCTION** switch in **A-GND** position	- digital display shows insulation resistance between probe high impedance and ground
- note resistance reading	
- place **RESISTANCE FUNCTION** switch in **A-B** position	- digital display shows insulation resistance between probe high impedance and common low impedance
- note resistance reading	

All resistance readings must be greater than 500 Megohms

NOTE: Resistance readings may be inaccurate in conditions of high humidity.

6. Disconnect harness **H**

ACTION	RESULT
from ACT 1 FQI probe 72QT-1	
7. Connect harness H to ACT 2 FQI probe 71QT-2	
8. Repeat test step 2. on ACT 2 FQI probe 71QT-2	
9. Disconnect harness H from ACT 2 FQI probe 71QT-2	
10. Connect harness H to ACT 2 FQI probe 72QT-2	
11. Repeat test step 5. on ACT 2 FQI probe 72QT-2	
12. Disconnect PROBE 2 leads from test set	- digital display reverts to zero
13. Place ON/OFF switch in OFF position	

(c) Close-Up.

1 Disconnect harness H from ACT 2 FQI probe 72QT-2.
2 Connect aircraft cables to ACT 1 & 2 FQI probes.
3 Disconnect test set power cable W1, and ground cable W2.
4 Make certain that working area is clean and clear of tools and miscellaneous items of equipment.
5 Install maintenance covers
6 For ACT 1:
- install access panels 251AZ and 251BZ. Put carpet in position and install seats (if previously removed).
7 For ACT 2:
- install access panels 251CZ and 251DZ. Put carpet in position and install seats (if previously removed).
8 Make certain that AFT passenger compartment is clean and clear of tools and miscellaneous items of equipment.
9 Remove safety clips and tags and close circuit breakers 1QT (321/P59), 3QT (321/P60) and 4QT (321/P61).

R WARNING : MAKE SURE THAT THE GROUND SAFETY-LOCKS ARE CORRECTLY INSTALLED ON
R THE LANDING GEAR.

MAKE SURE THAT THE WHEEL CHOCKS ARE CORRECTLY POSITIONED. THIS WILL PREVENT UNWANTED MOVEMENT OF THE AIRCRAFT WHICH COULD CAUSE DAMAGE.

MAKE SURE THAT THE FLIGHT CONTROL SAFETY-LOCKS AND THE WARNING NOTICES ARE IN POSITION.

R OBEY THE FUEL SAFETY PROCEDURES IN 28-00-00, P. BLOCK 301. THIS WILL
R PREVENT INJURY OR DAMAGE.

MAKE SURE THAT YOU HAVE THE CORRECT FIRE FIGHTING EQUIPMENT AVAILABLE.

1. Calibration Check

A. Reason for the Job

To test the accuracy of the Fuel Quantity Indicating (FQI) System.

B. Equipment and Materials

ITEM	DESIGNATION
A.	Bulk meter to measure the temperature and specified gravity of fuel
B.	Circuit Breakers safety clips and tags
C.	Pressure gage to measure the fuel pressure at the refuel coupling.
Referenced Procedures	
- 07-12-00, P. Block 1	Jacking For Wheel Change
- 08-20-00, P. Block 1	Leveling
- 08-21-00, P. Block 1	Quick Leveling
- 12-11-28, P. Block 301	Replenishing of Fuel Tanks
- 12-32-28, P. Block 301	Fuel
- 24-41-00, P. Block 301	AC External Power Control
- 27-40-00, P. Block 1	Trimmable Horizontal Stabilizer
R - 28-00-00, P. Block 301	Fuel - General
- 28-25-00, P. Block 301	Refuel/Defuel System
- 28-42-00, P. Block 501	Quantity Indicating - Adjustment/Test
- 28-42-38, P. Block 501	Fuel Quantity Computer - Adjustment/Test

C. Procedure

(1)Job Set-Up

(a)Energize the aircraft electrical network (Ref. 24-41-00, P. Block 301).

R CAUTION : WHEN SETTING THE AIRCRAFT ATTITUDE, JACK THE AIRCRAFT AT THE

UNDERCARRIAGE JACKING POINTS (Ref. 07-12-00, P. Block 1).
DO NOT JACK OR SUPPORT THE AIRCRAFT ON THE MAIN WING JACKING POINTS AS ALL TANKS WILL BE REFUELED DURING THE TEST.

(b)Set the aircraft attitude to 0 degrees pitch and 0 degrees roll (Ref. 08-20-00 and 08-21-00, P. Block 1).
(c)Set the tailplane to 0 degrees ±10' (Ref. 27-40-00, P. Block 1).
(d)Open the access door 144DR to the refuel/defuel panel 110VU.
(e)Connect the fuel tanker, the bulk meter and the pressure gage to the aircraft refuel couplings (Ref. 12-11-28, P. Block 301).
(f)Fill the refuel gallery by refueling and defueling the aircraft (Ref. 12-11-28, and 28-25-00, P. Block 301).
(g)Get a fuel sample from the fuel tanker, measure the density and temperature and write the results (Ref. 12-32-28, P. Block 301).
(h)Activate the ECAM display units (DU's) as follows:
1 On the flight-compartment center pedestal, press (in) the ECAM SGU 1 and 2 P/BSW's.
2 Turn the LEFT AND RIGHT DISPLAY rotary switches clockwise to switch on the display and adjust the brightness to the required level.
3 Press (in) the FUEL P/BSW to call up the fuel page.

NOTE : All refuel/defuel and transfer procedures can be monitered on the ECAM fuel page.

(2)Set the FQI zero datum.
(a)Open, safety and tag the following circuit breaker:

PANEL	SERVICE	IDENT.	LOCATION
132VU	FUEL/AUTO FEED/CTL	65QA	323/M55

R **ON A/C 001-100,

(b)Adjust the fuel quantity in each tank by the Refuel/Defuel or Transfer procedures (Ref. 12-11-28 or 28-25-00, P. Block 301) until these fuel quantities are shown:
- RH OUTER TANK - 600 kg (1320 lb)
- LH OUTER TANK - 400 kg (880 lb)
- RH INNER TANK - 400 kg (880 lb)
- LH INNER TANK - 400 kg (880 lb)
- CENTER TANK - 400 kg (880 lb)

R **ON A/C 101-200,

R (b)Adjust the fuel quantity in each tank by the Refuel/Defuel or Transfer
R procedures (Ref. 12-11-28 or 28-25-00, P. Block 301) until these fuel
R quantities are shown:
R - RH OUTER TANK - 1320 lb (600 kg)
R - LH OUTER TANK - 882 lb (400 kg)
R - RH INNER TANK - 882 lb (400 kg)
R - LH INNER TANK - 882 lb (400 kg)

- CENTER TANK - 882 lb (400 kg)

**ON A/C 001-100,

- TRIM TANK - 500 kg (1100 lb)

**ON A/C 101-200,

- TRIM TANK - 1100 lb (500 kg)
- ACT - 1100 lb (500 kg)

**ON A/C 101-200,

Post SB 28-2105 For A/C 101-200,

R Post SB 28-2126 For A/C 104-104,

- ACT 1 - 500 kg (1100 lb)
- ACT 2 - 500 kg (1100 lb)

**ON A/C ALL

(c) On the refuel panel 110VU, set all the REFUEL-DEFUEL VALVE switches to SHUT.
(d) On the overhead panel 430VU, set the INR and OUTR TK ISOL VALVE switches to OFF. The OFF legends come on.
(e) On the overhead panel 430VU, move the fuel in the trim tank to the center tank as follows:
- Make sure that the TRIM TK ISOL VALVE P/BSW is pressed (in) and the flowbar is on.
- Set the TRIM TK PUMPS 1 and 2 switches to on. The OFF legend goes off.
- Set the AUTO MODE P/BSW to FWD until the TRIM TK PUMP LO PR legend comes on.
- Let the pump run for 3 minutes, then set the AUTO MODE P/BSW to OFF and the FWD legend goes off. Also set the TRIM TK PUMPS 1 and 2 switches to OFF and the OFF legends come on.

**ON A/C 101-200,

(f) On the overhead panel 430VU, move the fuel in the ACT to the center tank as follows:
- Push (in) the AUX TK P/BSW until the ACT quantity is zero.
- Stop for 3 minutes, then release (out) the AUX TK P/BSW and the FWD legend goes off.

**ON A/C 101-200,

Post SB 28-2105 For A/C 101-200,

R Post SB 28-2126 For A/C 104-104,

(f)On the overhead panel 430VU, move the fuel in the ACT 1 and ACT 2 to the center tank as follows:
- Push (in) the ACT P/BSW until the both ACT quantities are zero.
- Stop for 3 minutes, then release (out) the ACT TK P/BSW and the FWD legend goes off.

**ON A/C 001-100,

(f)Not applicable.

**ON A/C 101-200,

- Use the two water drain valves to fully drain the ACT (Ref. 12-32-28, P. Block 301).

**ON A/C 101-200,

Post SB 28-2105 For A/C 101-200,

R Post SB 28-2126 For A/C 104-104,

- Use the two water drain valves for each ACT to fully drain the ACT 1 and ACT 2 (Ref. 12-32-28, P. Block 301).

**ON A/C ALL

(g)On the refuel panel 110VU, set the MODE SELECTOR switch to OFF.
(h)Set the fuel tanker to the DEFUEL configuration with the defuel valve shut.
(j)On the refuel panel 110VU, set the TRANSF VALVE switch to OPEN. The amber OPEN light comes on.
(k)On the overhead panel 430VU, set these switch positions:
- left and right INR TK ISOL VALVES to OPEN. The in-line flowbars come on.
- X FEED valve to OPEN. The cross-line flowbar goes off and the in-line flowbar comes on.
- left INR TK PUMP 2 to ON. The OFF legend goes off and the pump runs.
- right INR TK PUMP 1 to ON. The OFF legend goes off and the pump runs.

(l)Open the defuel valve on the fuel tanker. Stop until the two INR TK PUMP FAULT legends come on, then close the defuel valve on the fuel tanker.
(m)On the overhead panel 430VU, press (in) the CTR TK PUMP 1 and 2

P/BSW's. The OFF legend goes off.

(n)On the refuel panel 110VU, set these switch positions:
- L and R OUTER TK REFUEL-DEFUEL VALVE to OPEN.
- MODE SELECTOR to REFUEL.

(p)On the overhead panel 430VU, 5 minutes after the second CENTER TK PUMP FAULT legend comes on, set these switch positions:
- left and right INR TK ISOL VALVE to OFF. The OFF legend comes on and the in-line flowbar goes off.
- left INR TK PUMP 2 to OFF. The OFF legend comes on.
- right INR TK PUMP 1 to OFF. The OFF legend comes on.
- L and R CTR TK PUMPS to OFF. The OFF legends come on.

(q)On the refuel panel 110VU, set these switch positions:
- L and R OUTER TK REFUEL-DEFUEL VALVES to SHUT.
- MODE SELECTOR to OFF.

(r)On the overhead panel 430VU, set these switch positions:
- left and right OUTR TK ISOL VALVE to OPEN. The in-line flowbars come on.
- left and right OUTR TK PUMP 1 and 2 to ON. The OFF legend goes off and the pumps run.

(s)Open the defuel valve on the fuel tanker.

(t)On the overhead panel 430VU:
- After the left outer FQI shows 0.00 for 15 seconds, set the left OUTR ISOL VALVE switch to off. The OFF legend comes on and the in-line flowbar goes off.

(u)On the overhead panel 430VU, when the second LO PR legend of the right OUTR TK comes on, do as follows:
- set the right OUTR ISOL VALVE switch to off and at the same time shut the defuel valve on the fuel tanker.

(v)On the overhead panel 430VU, set the left OUTR ISOL VALVE switch to open. When the two left OUTER TK PUMP LO PR legends come on, set the left OUTR ISOL VALVE to shut.

NOTE : If the LO PR legends do not come on then set the ISOL VALVE to SHUT. Open and close the defuel valve on the fuel tanker and do step (v) again.

(w)On the overhead panel 430VU, set these switch positions:
- left and right OUTR TK PUMPS 1 and 2 to off. The OFF legends come on.
- X FEED valve switch to shut. The cross-line flowbar comes on.

(x)On the refuel panel 110VU, set the TRANSF.VALVE switch to the CLOSED and guarded position. The OPEN light goes off.

(y)Apply refuel pressure to the refuel gallery when the above procedure has been completed.

(3)Preselector calibration procedure.

**ON A/C 001-100,

(Ref. Fig. 601)

1 PRESELECT kg x 1000	2 TANKER liters	3 CORRECTION liters	4 CORRECTED UPLIFT kg (2+3)	5 PRESELECTED ACTUAL kg x 1000	6 ERROR kg (5-4)	7 TOLERANCE kg
0		280				+0 -375
2		285				+60 -390
4		290				+75 -405
H.L.OUTERS		300				+90 -420
10		300				+285 -450
15		300				+320 -490
20		300				+360 -525
25		300				+400 -560
H.L. INNERS		300				+420 -585
30		300				+590 -755
35		300				+640 -805
40		300				+690 -855
H.L. CENTER		300				+720 -885
46		300				+790 -955
47		300				+800 -965
48		300				+810 -975
H.L. T.T.		300				+820 -985

BM8 28 42 00 6 BAMO 00

Calculation of FQI Errors (kg) - Table
Figure 601

R EFFECTIVITY: 001-100,

PIA

**ON A/C 101-200,

Post SB 28-2105 For A/C 101-200,

R Post SB 28-2126 For A/C 104-104,

(Ref. Fig. 602)

**ON A/C 101-200,

(Ref. Fig. 603)

**ON A/C ALL

(a) Do an operation test of the fuel quantity computer (Ref. 28-42-38, P. Block 501) and make sure there are no system failures.
(b) On the refuel panel 110VU, set these switch positions:
- all REFUEL-DEFUEL VALVES to SHUT
- FQI PRESELECTOR to ZERO.

**ON A/C 001-100,

(c) Apply pressure of 3.5 bar (50.8 psi) to the refuel gallery. Make sure that the fuel-tanker flow-rate counter does not go more than 1 litre/min (0.26 USgal/min).

**ON A/C 101-200,

(c) Apply pressure of 50.8 psi (3.5 bar) to the refuel gallery. Make sure that the fuel-tanker flow-rate counter does not go more than 0.26 USgal/min (1 litre/min).

**ON A/C ALL

(d) Do the procedure that follows:
1 On the refuel panel 110VU, set all the REFUEL-DEFUEL VALVE switches to NORM.
2 On the FQI Preselector on 110VU, set the first preselect value from the table and refuel the aircraft until automatic cut off.
3 Make a note of:
- the fuel uplift from the tanker
- the total fuel quantity as shown on the PRESELECTOR ACTUAL.
4 Add the correction value to the quantity of fuel uplift. Change this volume to mass and subtract this quantity from the FQI total indication. The result is the FQI error and must be in the tolerance given in the table.
5 If the result is more than the tolerance then do an operational (BITE) test of the FQI system (Ref. 28-42-00, P. Block 501).

1 PRESELECT kg x 1000	2 TANKER liters	3 CORRECTION liters	4 CORRECTED UPLIFT kg (2+3)	5 PRESELECTED ACTUAL kg x 1000	6 ERROR kg (5-4)	7 TOLERANCE kg
0		297				+0 -375
2		302				+60 -390
4		307				+75 -405
H.L. OUTERS		317				+90 -420
10		317				+285 -450
15		317				+320 -490
20		317				+360 -525
25		317				+400 -560
H.L. INNERS		317				+420 -585
30		317				+590 -755
35		317				+640 -805
40		317				+690 -855
H.L. CENTER		317				+720 -885
46		317				+800 -968
48		317				+823 -988
50		317				+843 -1008
H.L. ACT 1		317				+853 -1018
52		317				+863 -1028
54		317				+883 -1048
56		317				+903 -1068
H.L. ACT 2		317				+923 -1088
58		317				+933 -1098
59		317				+943 -1108
60		317				+953 -1118
H.L. T.T.		317				+953 -1128

BM8 28 42 00 6 BEMO 00

Calculation of FQI Errors (kg) - Table
Figure 602

1 PRESELECT LB x 1000	2 TANKER gal	3 CORRECTION gal	4 CORRECTED UPLIFT LB (2+3)	5 PRESELECTED ACTUAL LB x 1000	6 ERROR LB (5-4)	7 TOLERANCE LB
0		78				+0 -827
4		80				+133 -860
8		81				+166 -894
H.L.OUTERS		84				+199 -927
20		84				+629 -993
30		84				+706 -1081
40		84				+794 -1158
50		84				+882 -1235
H.L. INNERS		84				+927 -1290
60		84				+1301 -1665
70		84				+1412 -1776
80		84				+1522 -1883
H.L.CENTER		84				+1588 -1952
92		84				+1764 -2135
94		84				+1793 -2157
96		84				+1814 -2179
H.L. ACT		84				+1837 -2201
113		84				+1985 -2315
115		84				+2007-2337
117		84				+2029-2360
H.L. T.T.		84				+2051-2382

BM8 28 42 00 6 BJMO 01

Calculation of FQI Errors (LB) - Table
Figure 603

R EFFECTIVITY: 101-200,

PIA

NOTE: During the preselector calibration procedure the fuel tanker must keep the pressure to the refuel gallery or the refuel gallery will drain.

6 Do steps 2, 3, 4 and 5 again for each outer-tank preselect value.
7 On the refuel panel 110VU, set the two **OUTER TK REFUEL-DEFUEL VALVE** switches to **OPEN**.
8 Refuel the outer tanks until the two outer-tank refuel valves shut as they get to high level and do steps 3, 4 and 5 again.
9 On the refuel panel 110VU, set the two **OUTER TK REFUEL-DEFUEL VALVE** switches to **NORM**.
10 Do steps 2, 3, 4 and 5 again for each inner-tank preselect value.
11 On the refuel panel 110VU, set the two **INNER TK REFUEL-DEFUEL VALVES** switches to **OPEN** until the refuel valves shut at high level.
12 Do steps 3, 4 and 5 again.
13 On the refuel panel 110VU, set the two **INNER TK REFUEL-DEFUEL VALVES** switches to **NORM**.
14 Do steps 2, 3, 4 and 5 again for each center-tank preselect valve.
15 On the refuel panel 110VU, set the **CTR TK REFUEL-DEFUEL VALVE** switch to **OPEN** until the refuel valve closes at high level.
16 Do steps 3, 4 and 5 again.
17 On the refuel panel 110VU, set the **CTR TK REFUEL-DEFUEL VALVE** switch to **NORM**.

**ON A/C 101-200,

18 Do steps 2, 3, 4 and 5 again for the Additional-Center-Tank (ACT) preselect values.
19 On the refuel panel 110VU, set the **AUX TK REFUEL-DEFUEL VALVE** switch to **OPEN** until the refuel valve shuts at high level.
20 Do steps 3, 4 and 5 again.
21 On the refuel panel 110VU, set the **AUX TK REFUEL-DEFUEL VALVE** switch to **NORM**.

**ON A/C 001-100,

18 Not applicable.
19 Not applicable.
20 Not applicable.
21 Not applicable.

**ON A/C 101-200,

Post SB 28-2105 For A/C 101-200,

22 Do steps 2, 3, 4 and 5 again for the second Additional-Center-tank (ACT 2) preselect values.
23 On the refuel panel 110VU, set the **ACT 2 REFUEL-DEFUEL VALVE** switch to open until the refuel valve shuts at high level.
24 Do steps 3, 4 and 5 again.

25 On the refuel panel 110VU, set the ACT 2 REFUEL-DEFUEL VALVE switch to NORM.

**ON A/C ALL

22 Not applicable.
23 Not applciable.
24 Not applicable.
25 Not applicable.
26 Do steps 2, 3, 4 and 5 again for the trim-tank preselect values.
27 On the refuel panel 110VU, set the TRIM TK REFUEL-DEFUEL VALVE switch to OPEN until the refuel valve shuts at high level.
28 Do steps 3, 4 and 5 again.
29 On the refuel panel 110VU, set the TRIM TK REFUEL-DEFUEL VALVE switch to NORM.

(e) On the overhead panel 430VU:
1 Make sure that all the PUMP P/BSW's are released (out) and that the OFF legends are on.
2 Make sure that all the ISOL VALVES P/BSW's are released (out) and that the OFF legends are on.
3 Make sure that the X FEED P/BSW is released (out) and that the cross-line flowbar is on.
4 Make sure that the AUTO MODE P/BSW is released (out) and that the FWD legend is off.

(f) On the refuel panel 110VU:
1 Make sure that all the REFUEL-DEFUEL VALVE switches are in the NORM position and guarded.
2 Make sure that the TRANSF.VALVE switch is in the CLOSED position, guarded and the amber OPEN light is off.
3 Make sure that the MODE SELECTOR switch is in the OFF position and guarded.

(4) Close-Up
(a) Make sure that the work area is clean and clear of tools and other items of equipment.
(b) If necessary, defuel the aircraft (Ref. 28-25-00, P. Block 301).
(c) Disconnect the fuel tanker, bulkmeter and pressure gage from the aircraft.
(d) Close the access door 144DR.
(e) On the flight-compartment center pedestal, turn the ECAM LEFT and RIGHT DISPAY rotary switches to OFF.
(f) Release (out) the ECAM SGU 1 and 2 P/BSW's.
(g) Remove the safety clips and tags and close the circuit breaker 65QA.

R Ref. MMEL 1-28, Items 16 and 17

CAUTION : YOU MUST REFER TO THE MMEL WHEN YOU DO THIS PROCEDURE.

WARNING: LANDING GEAR - MAKE SURE GROUND SAFETIES AND WHEEL CHOCKS ARE IN POSITION.

FLIGHT CONTROLS - MAKE SURE THAT GROUND SAFETIES AND NOTICES ARE IN POSITION.

OBSERVE THE SAFETY PRECAUTIONS IN 28-00-00, P. BLOCK 301

MAKE SURE THAT FIRE FIGHTING EQUIPMENT IS AVAILABLE AND ADEQUATE.

1. Left Inner, Left Outer and Center Tanks Fuel Quantity Indications - Failure Before Fuel Loading

A. Reason for the job

(1)To refuel the aircraft to the required fuel state after the failure of the tank FQI display.

B. Equipment and Materials

ITEM	DESIGNATION
A.	Tanker, capable of 3.45 bar (50 psi) delivery
B.	Warning Placard(s) stating Fuel Quantity Indicator(s) is (are) inoperative
Referenced Procedures	
- 12-11-28, P. Block 301	Replenishing of Fuel Tanks
- 24-41-00, P. Block 301	AC External Power Control
- 28-00-00, P. Block 301	Fuel - General

R C. Procedure

R (1)Job Set-up

R (a)Connect the refueling tanker to the aircraft (Ref. 12-11-28, P. Block R 301).

R (b)Energize the aircraft electrical network (Ref. 24-41-00, P. Block 301).

R (2)Test

R (a)Find out the residual fuel on board by use of the Magnetic Level R Indicators (MLI's) on all the tanks (Ref. 12-11-28, P. Block 301). R Check the MLI agreement against the operative FQI readings.

R NOTE : Refuel by manual control (Ref. 12-11-28, P. Block 301).

R (b)Calculate the revised fuel loading requirements including a 2000 kg R (4400 lb) increase on the original requirements.

R (c)Find out which tanks need filling to high level and fill until the
R blue HI LVL light (FULL annunciator) comes on.
R (d)Check fuel load to this point from the initial residual fuel plus
R the increase against the nominal high level quantities.

R NOTE : If the inner tanks are to be partially filled, determine
R the quantity required in each tank to give a symmetrical
R loading and calculate the increase for each tank.

R (e)Fill the right inner tank to the required quantity by FQI reading.
R (f)Load the left inner tank by calculated increase. Use the refueling
R tankers meter.
R (g)Check both tank quantities by MLI readings and check they are
R symmetrical.
R (h)If the center tank has to be filled, find out the remaining increase
R required. Fill to this quantity using the refueling tankers meter
R and check by MLI reading.

R (3)Close-up
R (a)Make sure that the work area is clean and clear of tools and all
R other items of equipment.
R (b)De-energize the aircraft electrical network (Ref. 24-41-00,
R P. Block 301).
R (c)Disconnect the refueling tanker from the aircraft (Ref. 12-11-28,
R P. Block 301).
R (d)Put the warning placard in the flight compartment and make an entry
R in the aircraft technical log.

2. Left Inner, Left Outer and Center Tanks Fuel Quantity Indications - Failure During Fuel Loading

A. Reason for the job
(1)To continue loading aircraft fuel after the failure of the tank FQI display.

B. Equipment and Materials

ITEM	DESIGNATION
A.	Tanker, capable of 3.45 bar (50 psi) delivery
B.	Warning Placard(s) stating Fuel Quantity Indicator(s) is (are) inoperative
Referenced Procedures	
- 12-11-28, P. Block 301	Replenishing of Fuel Tanks
- 24-41-00, P. Block 301	AC External Power Control
- 28-00-00, P. Block 301	Fuel - General

C. Procedure
(1)Job Set-up
N/A.

(2)Test

NOTE: When this failure occurs during automatic refueling, all the aircraft refuel/defuel valves will close.

(a)Calculate the revised fuel loading requirements including a 2000 kg (4400 lb) increase on the original requirements.

R NOTE: Continue refueling in manual control (Ref. 12-11-28,
R P. Block 301).

R
R (b)Find out which tanks are to be filled to high level and fill until the
R blue HI LVL light (FULL annunciator) comes on.
R (c)If the inner tanks are to be partially filled, determine the fuel
R quantity required in each tank to give symmetrical loading and
R calculate the increase for each tank.
R (d)Fill the right inner tank to the required quantity by FQI reading.
R (e)Load the left inner tank by calculated increase. Use the refueling
R tankers meter.
R (f)Check both tank quantities by MLI readings (Ref. 12-11-28, P. Block
R 301) and check they are symmetrical.
R (g)If the center tank has to be filled, determine the remaining increase
R required. Fill to this quantity using the refueling tankers
R meter and check by MLI reading.

R (3)Close-up

R (a)Make sure that the work area is clean and clear of tools and all other
R items of equipment.
R (b)De-energize the aircraft electrical network (Ref. 24-41-00,
R P. Block 301).
R (c)Disconnect the refueling tanker from the aircraft (Ref. 12-11-28,
R P. Block 301).
R (d)Put the warning placard in the flight compartment and make an entry
R in the aircraft technical log.

3. Left Inner, Left Outer and Center Tanks Fuel Quantity Indications - Failure After Fuel Loading

A. Reason for the Job
(1)To revise the fuel loading requirements after the failure of the tank FQI display.

B. Equipment and Materials

ITEM	DESIGNATION
A.	Tanker, capable of 3.45 bar (50 psi) delivery
B.	Warning Placard(s) stating Fuel Quantity Indicator(s) is (are) inoperative
Referenced Procedures	
- 12-11-28, P. Block 301	Replenishing of Fuel Tanks
- 24-41-00, P. Block 301	AC External Power Control
- 28-00-00, P. Block 301	Fuel - General

C. Procedure
(1)Job Set-up
(a)Connect the refueling tanker to the aircraft (Ref. 12-11-28, P. Block 301).
(b)Energize the aircraft electrical network (Ref. 24-41-00, P. Block 301).

(2)Test
(a)Calculate the revised fuel loading requirements including a 2000 kg (4400 lb) increase on the original requirements.

R NOTE: Refuel by manual control (Ref. 12-11-28, P. Block 301).

R (b)Load the additional fuel equally into the wing tanks, if space exists, or into the center tank. Use the refueling tankers meter.
R (c)Check the correct total fuel quantity and symmetrical loading by use of the MLIs (Ref. 12-11-28, P. Block 301) and check that the MLI readings correspond with the FQI readings, where available.

R (3)Close-up
R (a)Make sure that the work area is clean and clear of tools and all other items of equipment.
R (b)De-energize the aircraft electrical network (Ref. 24-41-00, P. Block 301).
R (c)Disconnect the refueling tanker from the aircraft (Ref. 12-11-28, P. Block 301).
R (d)Put the warning placard in the flight compartment and make an entry in the aircraft technical log.

4. Right Inner and Right Outer Tanks Fuel Quantity Indications - Failure Before Fuel Loading

A. Reason for the job
(1)To refuel the aircraft to the required fuel state after the failure of the tank FQI display.

B. Equipment and Materials

ITEM	DESIGNATION
A.	Tanker, capable of 3.45 bar (50 psi) delivery
B.	Warning Placard(s) stating Fuel Quantity Indicator(s) is (are) inoperative
Referenced Procedures	
- 12-11-28, P. Block 301	Replenishing of Fuel Tanks
- 24-41-00, P. Block 301	AC External Power Control
- 28-00-00, P. Block 301	Fuel - General

R C. Procedure
R (1)Job Set-up
R (a)Connect the refueling tanker to the aircraft (Ref. 12-11-28, P. Block 301).
R (b)Energize the aircraft electrical network (Ref. 24-41-00, P. Block 301).

R (2)Test
R (a)Find out the residual fuel on board by use of the Magnetic Level Indicators (MLIs) on all the tanks (Ref. 12-11-28, P. Block 301). Check the MLI agreement against the operative FQI readings.

R NOTE : Refuel by manual control (Ref. 12-11-28, P. Block 301).

R (b)Calculate the revised fuel loading requirements including a 2000 kg (4400 lb) increase on the original requirements.
R (c)Find out which tanks are to be filled to high level and fill until the blue HI LVL light (FULL annunciator) comes on.
R (d)Check the fuel load to this point from the initial residual fuel plus the increase against the nominal high level quantities.

R NOTE : If the inner tanks are to be partially filled, determine the quantity required in each tank to give symmetrical loading and calculate the increase for each tank.

R (e)Fill the left inner tank to the required quantity to the FQI reading.
R (f)Load the right inner tank by calculated increase. Use the refueling tankers meter.
R (g)Check both tank quantities by MLI readings and check they are symmetrical.
R (h)If the center tank has to be filled, fill to the required quantity by

R the FQI readings.

R (3)Close-up
R (a)Make sure that the work area is clean and clear of tools and all other
R items of equipment.
R (b)De-energize the aircraft electrical network (Ref. 24-41-00,
R P. Block 301).
R (c)Disconnect the refueling tanker from the aircraft (Ref. 12-11-28,
R P. Block 301).
R (d)Put the warning placard in the flight compartment and make an entry in
R the aircraft technical log.

5. Right Inner and Right Outer Tanks Fuel Quantity Indications - Failure During Fuel Loading

A. Reason for Job
(1)To continue loading the aircraft with fuel after the failure of the tank FQI display.

B. Equipment and Materials

ITEM	DESIGNATION
A.	Tanker, capable of 3.45 bar (50 psi) delivery
B.	Warning Placard(s) stating Fuel Quantity Indicator(s) is (are) inoperative
Referenced Procedures	
- 12-11-28, P. Block 301	Replenishing of Fuel Tanks
- 24-41-00, P. Block 301	AC External Power Control
- 28-00-00, P. Block 301	Fuel - General

C. Procedure
(1)Job Set-up
N/A

(2)Test

NOTE: When this failure occurs during automatic refueling, all aircraft refuel/defuel valves will close.

**ON A/C 001-100,

(a)Calculate the revised fuel loading requirements including a 2000 kg (4400 lb) increase on the original requirement.

**ON A/C 101-200,

(a)Calculate the revised fuel loading requirements including a 4400 lb (2000 kg) increase on the original requirement.

R **ON A/C ALL

R NOTE: Continue refueling in manual control (Ref. 12-11-28,
R P. Block 301).

R (b)Find out which tanks are to be filled to high level and fill until
R the blue HI LVL light (FULL annunciator) comes on.
R (c)If the inner tanks are to be partially filled, determine the fuel
R quantity required in each tank to give a symmetrical loading and
R calculate the increase for each tank.

R (d)Fill the left inner tank to the required quantity by FQI reading.
R (e)Load the right inner tank by estimated increase. Use the refueling tankers meter.
R (f)Check both tank quantities by MLI readings (Ref. 12-11-28, P. Block 301) and check they are symmetrical.
R (g)If the center tank is to be filled, fill to the required quantity by FQI reading.

R (3)Close-up
R (a)Make sure that the work area is clean and clear of tools and all other items of equipment.
R (b)De-energize the aircraft electrical network (Ref. 24-41-00, P. Block 301).
R (c)Disconnect the refueling tanker from the aircraft (Ref. 12-11-28, P. Block 301).
R (d)Put the warning placard in the flight compartment and make an entry in the aircraft technical log.

6. Right Inner and Right Outer Tanks Fuel Quantity Indications - Failure After Fuel Loading

A. Reason for the Job
(1)To revise the fuel loading requirement after the failure of the tank FQI display.

B. Equipment and Materials

ITEM	DESIGNATION
A.	Tanker, capable of 3.45 bar (50 psi) delivery
B.	Warning Placard(s) stating Fuel Quantity Indicator(s) is (are) inoperative
Referenced Procedures	
- 12-11-28, P. Block 301	Replenishing of Fuel Tanks
- 24-41-00, P. Block 301	AC External Power Control
- 28-00-00, P. Block 301	Fuel - General

C. Procedure
(1)Job Set-up
(a)Connect the refueling tanker to the aircraft (Ref. 12-11-28, P. Block 301).
(b)Energize the aircraft electrical network (Ref. 24-41-00, P. Block 301).
(2)Test
(a)Calculate the revised fuel loading requirement including a 2000 kg (4400 lb) increase on the original requirement.

R NOTE: Refuel by manual control (Ref. 12-11-28, P. Block 301).

R (b)Load the additional fuel equally into the wing tanks, if space exists, R or into the center tank. Use the refueling tankers meter.
R (c)Check for correct total fuel quantity and symmetrical loading by use R of the MLI's (Ref. 12-11-28, P. Block 301) and check that the MLI R readings correspond with the FQI readings where available.

R (3)Close-up
R (a)Make sure that the work area is clean and clear of tools and all other R items of equipment.
R (b)De-energize the aircraft electrical network (Ref. 24-41-00, R P. Block 301).
R (c)Disconnect the refueling tanker from the aircraft (Ref. 12-11-28, R P. Block 301).
R (d)Put the warning placard in the flight compartment and make an entry R in the aircraft technical log.

7. Reactivation

A. Trouble shoot to determine the cause of the inoperative Fuel Quantity

Indicator(s) (Ref. TSM 28-42-00) and rectify as necessary.

B. Remove the warning placard(s).

R 8. Inner, Outer and Center Tanks Fuel Quantity Indications -
R Failure Before Fuel Loading

R Ref. MMEL 1-28, Items 12, 14 and 15

R WARNING : LANDING GEAR - MAKE SURE THE GROUND SAFETIES AND WHEEL CHOCKS ARE
R IN POSITION.

R FLIGHT CONTROLS - MAKE SURE THAT THE GROUND SAFETIES AND NOTICES ARE
R IN POSITION.

R OBSERVE THE SAFETY PRECAUTIONS IN 28-00-00, P. BLOCK 301.

R MAKE SURE THAT FIRE FIGHTING EQUIPMENT IS AVAILABLE AND ADEQUATE.

R CAUTION : YOU MUST REFER TO THE MMEL WHEN YOU DO THIS PROCEDURE.

R A. Reason for the job
R (1)To do a manual refuel and to use the Magnetic Level Indicators to do a
R check of the fuel tank level.

R B. Equipment and Materials

ITEM	DESIGNATION
A.	Tanker, capable of 3.45 bar (50 psi) delivery
B.	Warning Placard(s) stating Fuel Quantity Indicator(s) is (are) inoperative
Referenced Procedures	
- 12-11-28, P. Block 301	Replenishing of Fuel Tanks
- 24-41-00, P. Block 301	AC External Power Control
- 28-00-00, P. Block 301	Fuel - General

R C. Procedure
R (1)Job Set-up
R (a)Connect the refueling tanker to the aircraft
R (Ref. 12-11-28, P. Block 301).
R (b)Energize the aircraft electrical network
R (Ref. 24-41-00, P. Block 301).

R (2)Do a manual refuel of the aircraft and use the Magnetic Level
R Indicators to monitor the fuel levels (Ref. 12-11-28, P. Block 301).

R (3)Close-up
R (a)Make sure that the work area is clean and clear of tools and all
R other items of equipment.

R (b)De-energize the aircraft electrical network (Ref. 24-41-00, P. Block 301).
R (c)Disconnect the refueling tanker from the aircraft (Ref. 12-11-28, P. Block 301).
R (d)Put the warning placard in the flight compartment and make an entry in the aircraft technical log.

INNER TANK SENSOR HARNESS - REMOVAL/INSTALLATION

WARNING: PUT THE SAFETY DEVICES AND THE WARNING NOTICES IN POSITION BEFORE YOU START A TASK ON OR NEAR:
- THE FLIGHT CONTROLS
- THE FLIGHT CONTROL SURFACES
- THE LANDING GEAR AND RELATED DOORS
- COMPONENTS THAT MOVE.

OBEY THE SAFETY PRECAUTIONS IN 28-00-00, P. BLOCK 301 AND 28-10-00, P. BLOCK 301.

MAKE SURE YOU HAVE THE CORRECT FIRE FIGHTING EQUIPMENT AVAILABLE.

MAKE SURE THAT ALL THE CIRCUITS IN MAINTENANCE ARE ISOLATED BEFORE YOU SUPPLY ELECTRICAL POWER TO THE AIRCRAFT.

USE SOLVENTS/CLEANING AGENTS, SEALANTS AND OTHER SPECIAL MATERIALS ONLY WITH A GOOD SUPPLY OF AIR.
OBEY THE MANUFACTURERS INSTRUCTIONS.
DO NOT GET THEM IN YOUR MOUTH.
PUT ON PROTECTIVE CLOTHING.
DO NOT SMOKE.
DO NOT BREATHE THE GAS.
THESE MATERIALS ARE POISONOUS AND FLAMMABLE AND SKIN IRRITANTS.
GET MEDICAL HELP IF YOUR SKIN OR EYES BECOME IRRITATED.

1. Reason for the Job

A. To replace the inner tank sensor harness.

NOTE: To replace the sensor harness it will be necessary to remove the complete harness assembly which consists of the sensor harness and the probe harness.

2. Equipment and Materials

ITEM	DESIGNATION
A.	Access Platform, 4 m (13 ft)
B.	Circuit Breaker Safety Clips and Tags
C. Material No.09-002	Sealants (Ref. 20-31-00)
D. Material No.11-003	Cleaning Agents (Ref. 20-31-00)
E.	Torque Wrench capable of 33 - 90 lbf.in (0.37 - 1.1 m.daN)
F.	Lint-free Cloth.
G.	Lockwire, Corrosion Resistant Steel,

ITEM	DESIGNATION
	Dia 0.71 mm (0.028 in.).
H.	Plastic Spatula
J.	Warning Notices - Open Fuel Tanks
K.	Adhesive Tape

Referenced Procedures

- 12-11-28, P. Block 301	Replenishing of Fuel Tanks
- 27-50-00, P. Block 301	Flaps
- 28-00-00, P. Block 301	Fuel - General
- 28-10-00, P. Block 301	Storage
- 28-11-22, P. Block 401	Manhole Cover (Wing)
- 28-25-00, P. Block 301	Refuel/Defuel System
- 28-42-00, P. Block 501	Quantity Indicating
- 28-42-32, P. Block 401	Fuel Quantity Probes
- 28-46-21, P. Block 401	Fuel Level Sensors
- 28-46-28, P. Block 401	Calibration Sensor

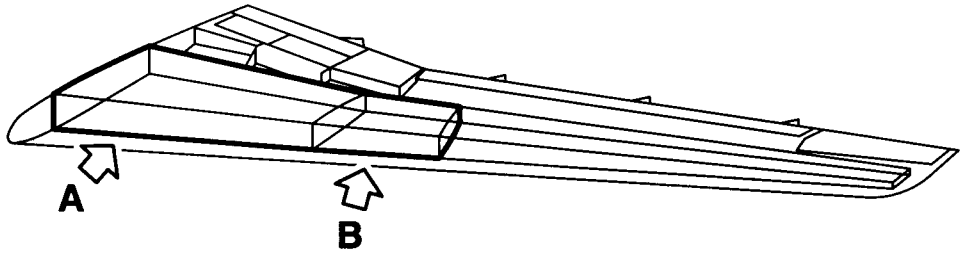
3. Procedure
(Ref. Fig. 401)
(Ref. Fig. 401)
(Ref. Fig. 401)

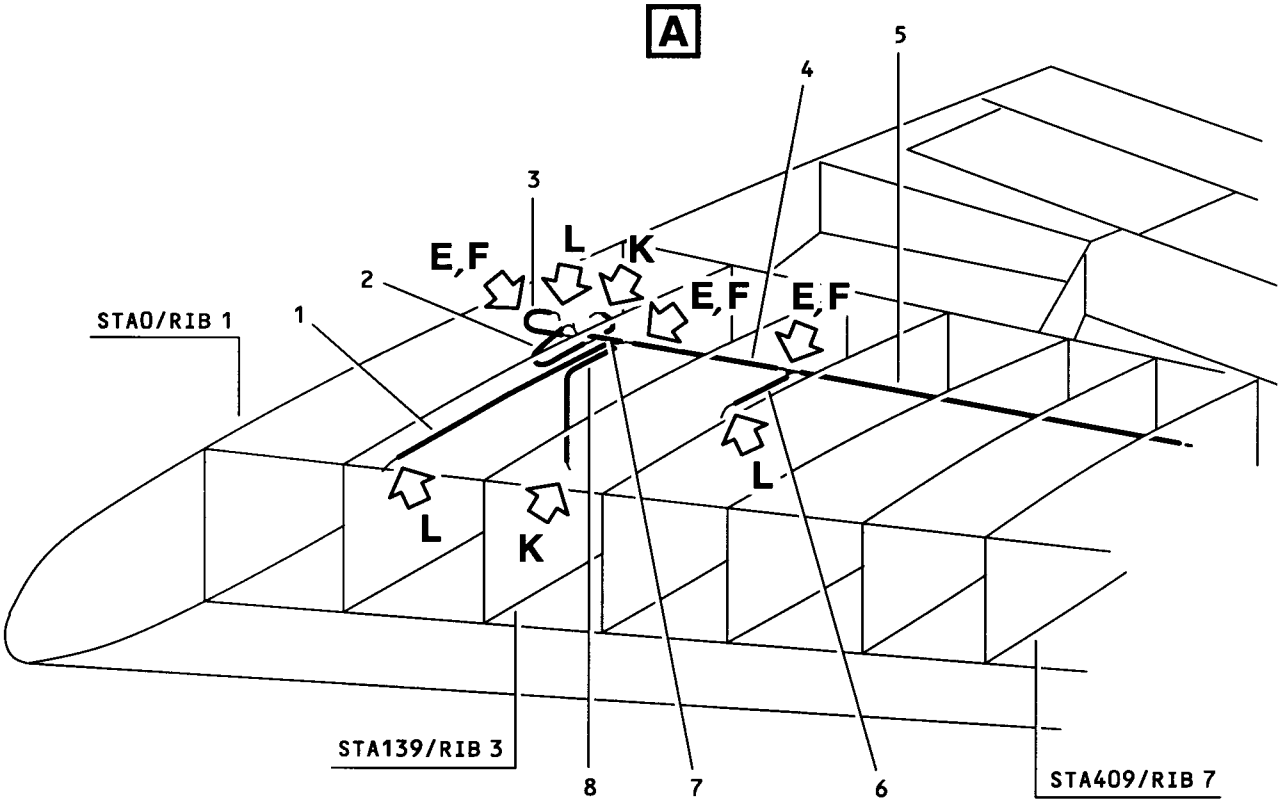
A. Job Set-Up
(1)Fully extend the flaps (Ref. 27-50-00, P. Block 301).
(2)Put the warning notices in position.
(3)Defuel the applicable inner tank (Ref. 28-25-00, P. Block 301).
(4)Put the access platform in position below zone 581(681) and remove the access panels 581CB(681CB).
(5)Remove the manhole covers 540AB(640AB), 540BB(640BB), 540CB(640CB), 540DB(640DB), 540EB(640EB), 540FB(640FB), 540GB(640GB), 540HB(640HB), (Ref. 28-11-22, P. Block 401).
(6)Open safety and tag the circuit breakers that follow:

PANEL	SERVICE	IDENT.	LOCATION
132VU	FUEL/FQI/SUPPLY AND IND	1QT	321/P59
132VU	FUEL/FQI/CHAN SUPPLY 1	3QT	321/P60
132VU	FUEL/FQI/CHAN SUPPLY 2	4QT	321/P61
22VU	FUEL/TK LO LVL/L OUTR & R INR & CTR R	1QJ	208/B26
22VU	FUEL/TK LO LVL/R OUTR & L INR & CTR L	2QJ	208/B27
132VU	FUEL/FUELLING/OVERFLOW	5QJ	321/J58
132VU	FUEL/FUELLING/HI LVL	6QJ	321/J57

B. Removal

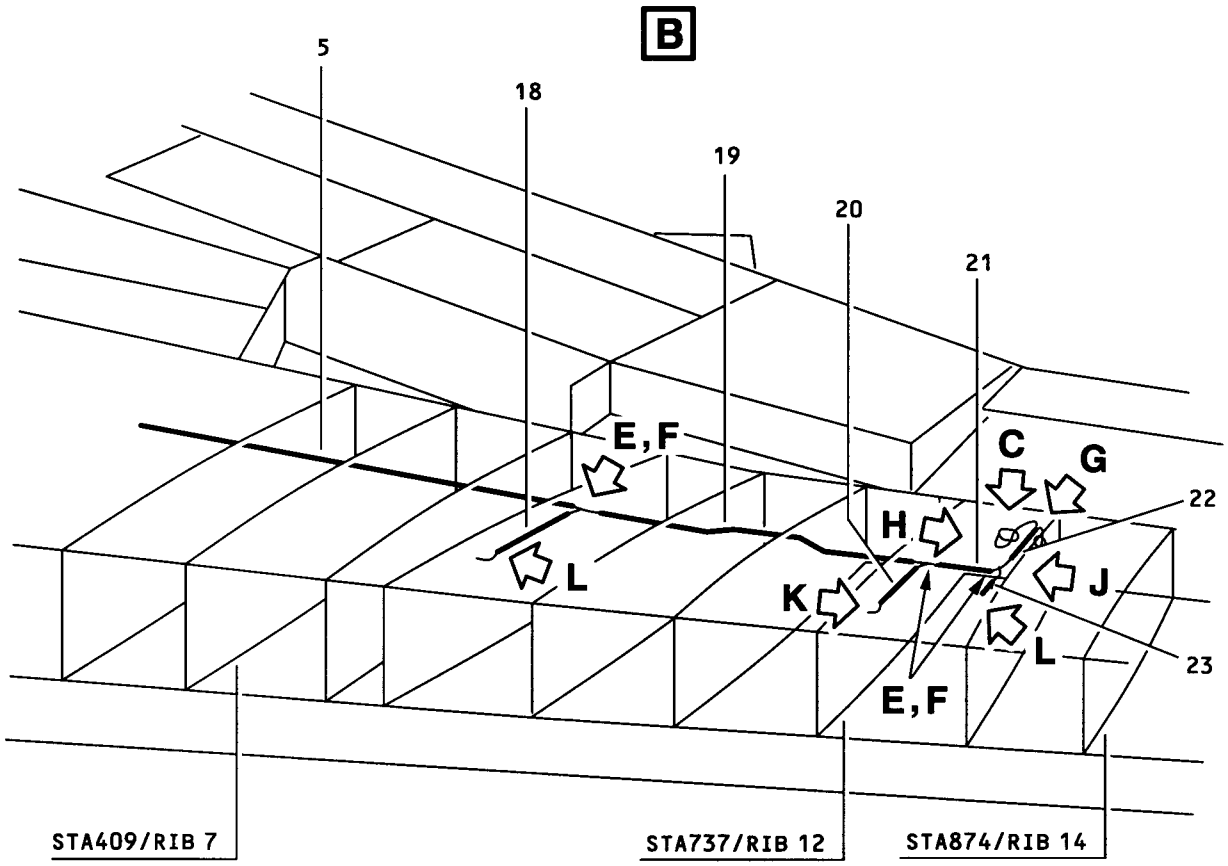
(1)Disconnect the probe harness from the fuel-quantity probes 1 thru 5 (Ref. 28-42-32, P. Block 401).
(2)Disconnect the sensor harness from the fuel-level sensors (Ref. 28-46-21,





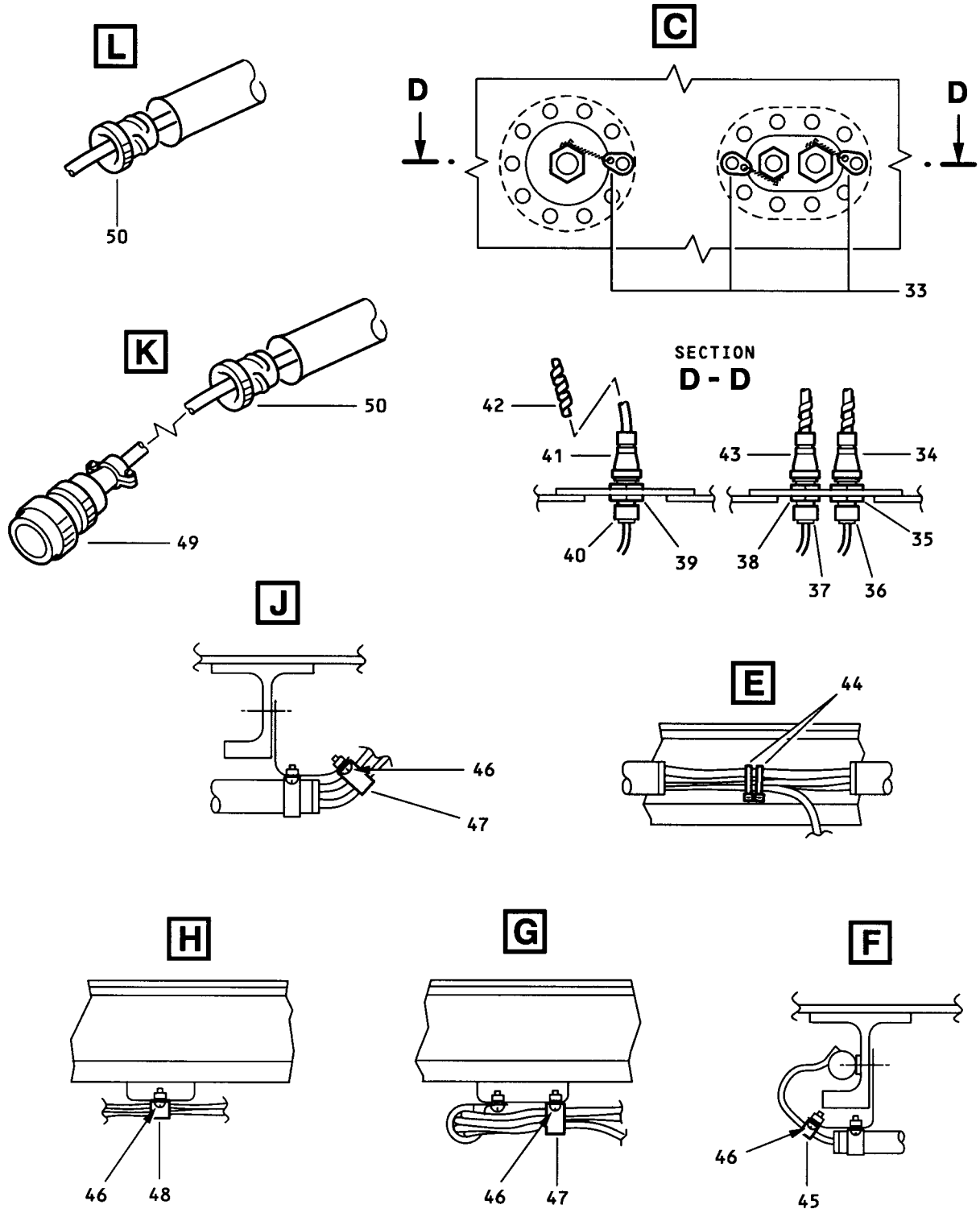
BM8 28 42 23 4 DARA 00

Harness - Installation
(Sheet 1/3)
Figure 401



BM8 28 42 23 4 DARJ 00

Harness - Installation
(Sheet 2/3)
Figure 401



Harness - Installation
(Sheet 3/3)
Figure 401

P. Block 401).

(3)Disconnect the sensor harness from the calibration sensor (Ref. 28-46-28, P. Block 401).

(4)Outside the tank at the rear-spar between RIB 12 (STA 737) and RIB 13 (STA 813):
- (a)Disconnect the plugs (36) and (37) from the probe harness connectors (34) and (43).
- (b)Disconnect the plug (40) from the sensor harness connector (41).
- (c)Remove the sealant from the harness connector retaining-nuts (35), (38) and (39) with a plastic spatula.
- (d)Remove and discard the lockwire from the locking tabs (33) and the harness connector retaining-nuts.
- (e)Remove the harness connector retaining-nuts (35), (38) and (39).

(5)Inside the tank at the rear-spar between RIB 12 (STA 737) and RIB 13 (STA 813):
- (a)Pull the probe harness connectors (34) and (43) through the tank-wall into the tank.
- (b)Pull the sensor harness connector (41) through the tank-wall into the tank.
- (c)At each location K, disconnect the sensor harness connectors (49) from:
  - the high-level sensor cable (between RIB 12 and RIB 13).
  - the low-level sensor cable (between RIB 1 (STA 0) and RIB 2 (STA 67))
  - the calibration sensor cable (between RIB 2 (STA 67) and RIB 3 (STA 139)).

CAUTION: YOU MUST REMOVE ALL THE DISCARDED ITEMS FROM THE FUEL TANKS, THEY CAN CAUSE DAMAGE.

- (d)Cut and remove the cable ties (44) from the harness assembly and carefully remove them from the tank.
- (e)Remove the screws (46) and all the cable clips (45), (47) and (48) from the harness assembly.

(6)At each probe and sensor position, put adhesive tape around the ends of the disconnected harness assembly. This will help the removal of the harness assembly through the conduits.

(7)Pull the harness through the conduits at locations K and L.

(8)Start at RIB 2 (STA 67) and carefully pull the complete harness assembly through the conduits in an outboard direction to RIB 13 (STA 813).

CAUTION: DO NOT DAMAGE THE HARNESS CONNECTORS DURING THE REMOVAL OF THE HARNESS ASSEMBLY FROM THE FUEL TANK.

(9)Remove the complete harness assembly through the manhole 540GB(640GB).

(10)Put the harness assembly on a protective surface.

(11)Isolate the sensor harness from the probe harness.

(12)If a new sensor harness is to be installed, remove the coiled strip (42) from the harness. Measure the length of the coiled strip (42) and write it on a piece of paper.

C. Preparation for installation
(1)If the original sensor harness is to be installed, proceed to step (3).
(2)If a new sensor harness is to be installed, do the steps that follow:
(a)Cut the new coiled strip (42) to the same length as the measurement on the piece of paper in step B. (12).
(b)Install the new coiled strip (42) to come against the probe harness connector (41).
(3)Put the sensor harness adjacent to the probe harness on a protective surface.
(4)Wind adhesive tape tightly around the ends of the harness assembly at each probe and sensor position. Make sure the harness assembly does not twist or bend .
(5)Use a clean lint-free cloth with cleaning agent (Material. No.11-003) to remove all the sealant from the harness connector/rear-spar interface.

D. Installation.

CAUTION: DO NOT DAMAGE THE HARNESS CONNECTORS WHEN PUTTING THE HARNESS ASSEMBLY INTO THE FUEL TANK.

(1)Carefully put the harness assembly through the manhole 540GB(640GB) into the tank.

CAUTION: DO NOT USE A DRAW-WIRE OR EQUIVALENT TO INSTALL THE HARNESS ASSEMBLY THROUGH THE CONDUITS.
DO NOT USE FORCE TO INSTALL THE HARNESS ASSEMBLY THROUGH THE CONDUITS.

(2)At conduit 22:
(a)Carefully push the taped ends of the harness assembly into the end of the conduit adjacent to the rear-spar.
(b)Remove the end cap (50) from the opposite end of the conduit and push the harness assembly through the conduit.
(c)When the harness assembly comes out of the conduit, install the end cap (50) onto the harness assembly and push it into the conduit.
(3)Repeat the procedure at step (2) for conduits (23), (21), (20), (19), (18), (6), (14), (4), (8), (1), (7), (2) and (3).

NOTE 1: When installing the harness assembly through the conduits (21), (19), (5), (4), (7), and (3), push the harness assembly in an inboard direction.

NOTE 2: If the harness assembly does not move freely inside the conduit, remove the harness assembly and replace the adhesive tape.

(4)When the cables are in the correct position for connection, remove the adhesive tape from the ends of the harness assembly.
(5)At the rear-spar between RIB 12 (STA 737) and RIB 13 (STA 813):
(a)Put the probe harness connectors (34) and (43) through the rear-spar.
(b)Install the probe harness connector retaining-nuts (35) and (38).

(c)Put the sensor harness connector (41) through the rear-spar tank-wall.
(d)Install the sensor harness connector retaining-nut (39).
(e)Torque the harness connector retaining-nuts (39) and (35) to between 79 and 89 lbf. in. (0.9 and 1.0 m.daN).
(f)Torque the harness connector retaining-nut (38) to between 33.6 and 38.4 lbf. in. (0.38 and 0.43 m.daN).
(g)Safety the harness connector retaining-nuts (35), (39) to the locking tabs (33) with lockwire.
(h)Apply sealant (Material No. 09-002) to the harness connector retaining -nuts (35), (38) and (39). Make sure the sealant does not go into the harness connector body.
(j)Connect the plug (40) to the sensor harness connector (41).
(k)Connect the plugs (36) and (37) to the probe harness connectors (34) and (43).

(6)At each location K, connect the harness connector (49) to:
- the high-level sensor cable (between RIB 12 and RIB 13)
- the low-level sensor cable (between RIB 1 and RIB 2)
- the calibration sensor cable (between RIB 2 and RIB 3).

(7)Connect the fuel quantity probes 1 thru 5 (Ref 28-42-32, P. Block 401).
(8)Connect the fuel level sensors (Ref. 28-46-21, P. Block 401).
(9)Connect the calibration sensor (Ref. 28-46-28, P. Block 401).
(10)Install the cable ties (44) onto the harness assembly.
(11)Install the cable clips (45), (47) and (48) onto the harness with the screws (46).
(12)Make sure that the work area is clean and clear of tools and other items of equipment.
(13)Install the manhole covers: 540AB(640AB), 540BB(640BB), 540CB(640CB), 540DB(640DB), 540EB(640EB), 540FB(640FB), 540GB(640GB), 540HB(640HB), (Ref. 28-11-22, P. Block 401).

E. Preparation for Test

(1)Remove the safety clips and the tags and close the circuit breakers 1QT (321/P59), 3QT (321/P60), and 4QT (321/P61) 1QJ (208/B26), 2QJ (208/B27), 5QJ (321/J58) and 6QJ (321/J57).
(2)Refuel the applicable inner tank (Ref. 12-11-28, P. Block 301).
(3)Make sure the harness connectors (34), (43) and (41) at the rear-spar/ tank-wall interfaces do not leak.

F. Test

(1)Do a functional test of the fuel-quantity indicating system (Ref. 28-42-00, P. Block 501).

G. Close-Up

(1)In zone 581(681):
(a)Make sure that the work area is clean and clear of tools and other items of equipment.
(b)Install the access panels 581CB (681CB).
(c)Remove the access platform.
(2)Remove the warning notices.
(3)Fully retract the flaps (Ref. 27-50-00. P. Block 301).
(4)Make sure that the work area is clean and clear of tools and other

items of equipment.

OUTER TANK SENSOR HARNESS - REMOVAL/INSTALLATION

WARNING : PUT THE SAFETY DEVICES AND THE WARNING NOTICES IN POSITION BEFORE YOU START A TASK ON OR NEAR:
- THE FLIGHT CONTROLS
- THE FLIGHT CONTROL SURFACES
- THE LANDING GEAR AND RELATED DOORS
- COMPONENTS THAT MOVE.

OBEY THE SAFETY PRECAUTIONS IN 28-00-00, P. BLOCK 301 AND 28-10-00, P. BLOCK 301.

R MAKE SURE THAT THE FIRE FIGHTING EQUIPMENT IS AVAILABLE AND ADEQUATE

R MAKE SURE THAT YOU ISOLATE THE ELECTRICAL CIRCUITS UPON WHICH WORK IS
R IN PROGRESS.

USE SOLVENTS/CLEANING AGENTS, SEALANTS AND OTHER SPECIAL MATERIALS ONLY WITH A GOOD SUPPLY OF AIR.
OBEY THE MANUFACTURERS INSTRUCTIONS.
R - DO NOT GET THEM IN YOUR MOUTH.
R - PUT ON PROTECTIVE CLOTHING.
R - DO NOT SMOKE.
R - DO NOT BREATHE THE GAS.
THESE MATERIALS ARE POISONOUS AND FLAMMABLE AND SKIN IRRITANTS.
GET MEDICAL HELP IF YOUR SKIN OR EYES BECOME IRRITATED.

1. Reason for the Job

A. To replace the outer tank sensor harness.

NOTE : To replace the sensor harness it will be necessary to remove the complete harness assembly which consists of the sensor harness and the probe harness.

2. Equipment and Materials

ITEM	DESIGNATION
A.	Access Platform, 4 m (13 ft)
B.	Circuit Breaker Safety Clips and Tags
R C.	Torque Wrench capable of 33 - 90 lbf.in (0.37 - 1.1 m.daN)
R D.	Lint-free Cloth.
R E.	Lockwire, Corrosion Resistant Steel, Dia 0.8 mm (0.032 in.).
R F.	Plastic Spatula
R G.	Warning Notices - Open Fuel Tanks
R H.	Adhesive Tape

ITEM		DESIGNATION
R	J. Material No. 09-002	Sealants (Ref. 20-31-00)
R	K. Material No. 11-026	Cleaning Agents (Ref. 20-31-00)
	Referenced Procedures	
	- 12-11-28, P. Block 301	Replenishing of Fuel Tanks
	- 27-50-00, P. Block 301	Flaps
	- 28-00-00, P. Block 301	Fuel - General
	- 28-10-00, P. Block 301	Storage
	- 28-11-22, P. Block 401	Manhole Cover (Wing)
	- 28-25-00, P. Block 301	Refuel/Defuel System
	- 28-42-00, P. Block 501	Quantity Indicating
	- 28-42-33, P. Block 401	Fuel Quantity Probes
	- 28-46-21, P. Block 401	Fuel Level Sensors
	- 28-46-22, P. Block 401	Fuel overflow sensors

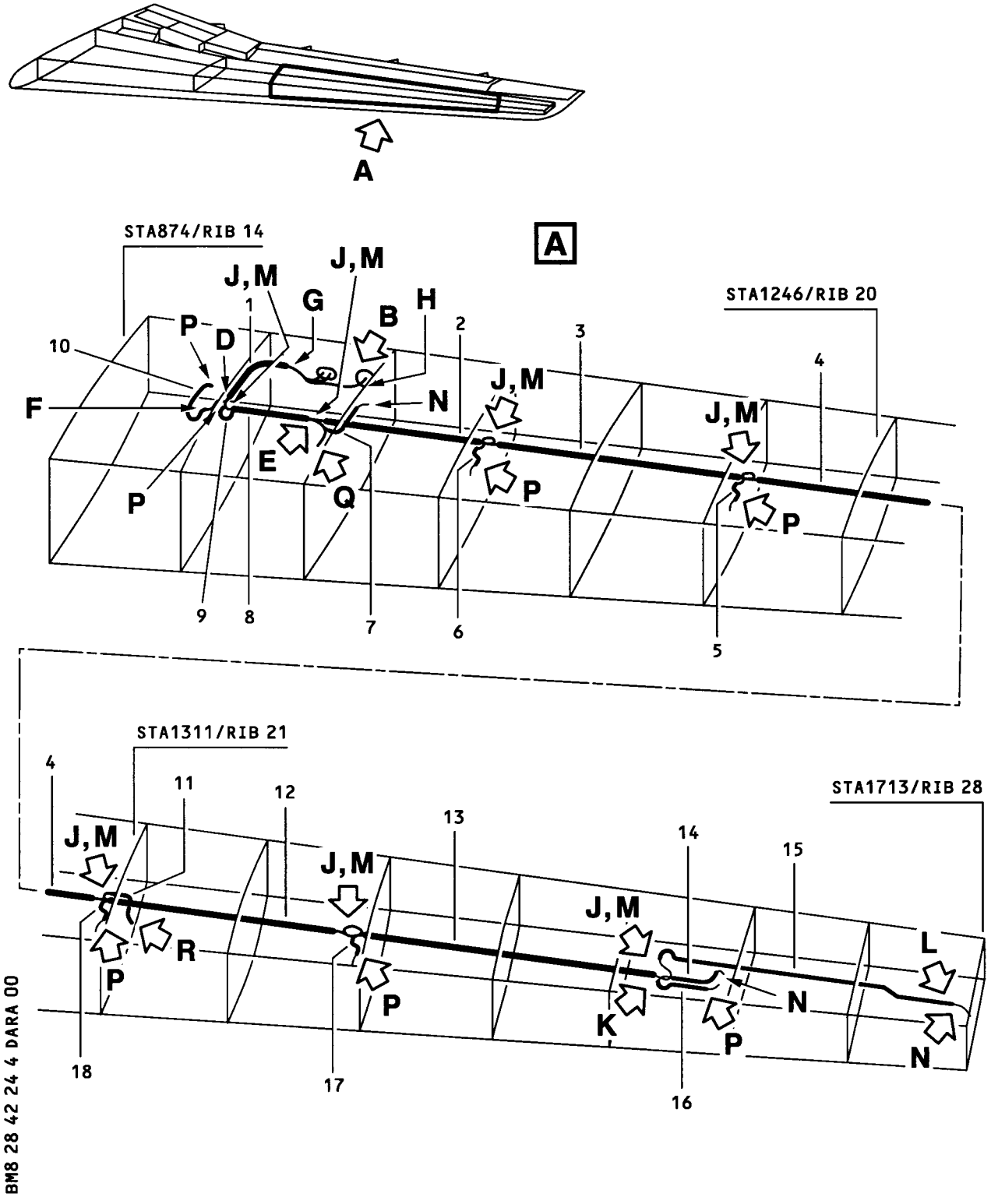
3. Procedure
   (Ref. Fig. 401) (Sheet 1/3)
   (Ref. Fig. 401) (Sheet 2/3)
   (Ref. Fig. 401) (Sheet 3/3)

A. Job Set-Up
(1)Fully extend the flaps (Ref. 27-50-00, P. Block 301).
(2)Put the warning notices in position.
(3)Defuel the applicable outer tank (Ref. 28-25-00, P. Block 301).
(4)Put the access platform in position below zone 581(681) and remove the access panels 581CB(681CB).
(5)Remove the manhole covers 550AB(650AB), 550BB(650BB), 550CB(650CB), 550DB(650DB), 550EB(650EB), 550FB(650FB), 550GB(650GB), 550HB(650HB), 550JB(650JB), 550KB(650KB), 550LB(650LB), 550MB(650MB), 550NB(650NB) and 550PB(650PB) (Ref. 28-11-22, P. Block 401).
(6)Open safety and tag the circuit breakers that follow:

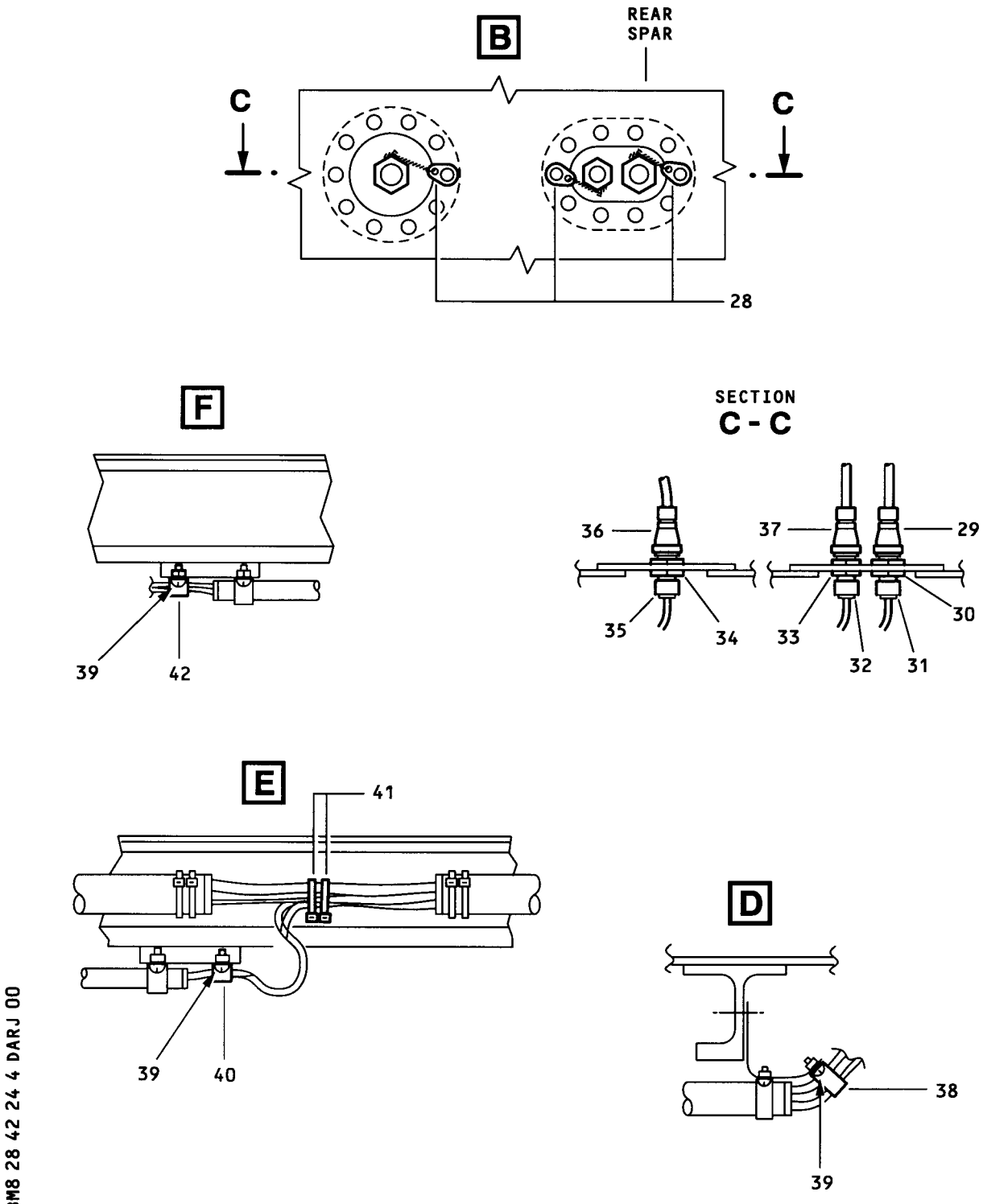
PANEL	SERVICE	IDENT.	LOCATION
132VU	FUEL/FQI/SUPPLY AND IND	1QT	321/P59
132VU	FUEL/FQI/CHAN SUPPLY 1	3QT	321/P60
132VU	FUEL/FQI/CHAN SUPPLY 2	4QT	321/P61
22VU	FUEL/TK LO LVL	1QJ	208/B26
22VU	FUEL/TK LO LVL	2QJ	208/B27
132VU	FUEL/FUELLING/OVERFLOW	5QJ	321/J58
132VU	FUEL/FUELLING/HI LVL	6QJ	321/J57

B. Removal

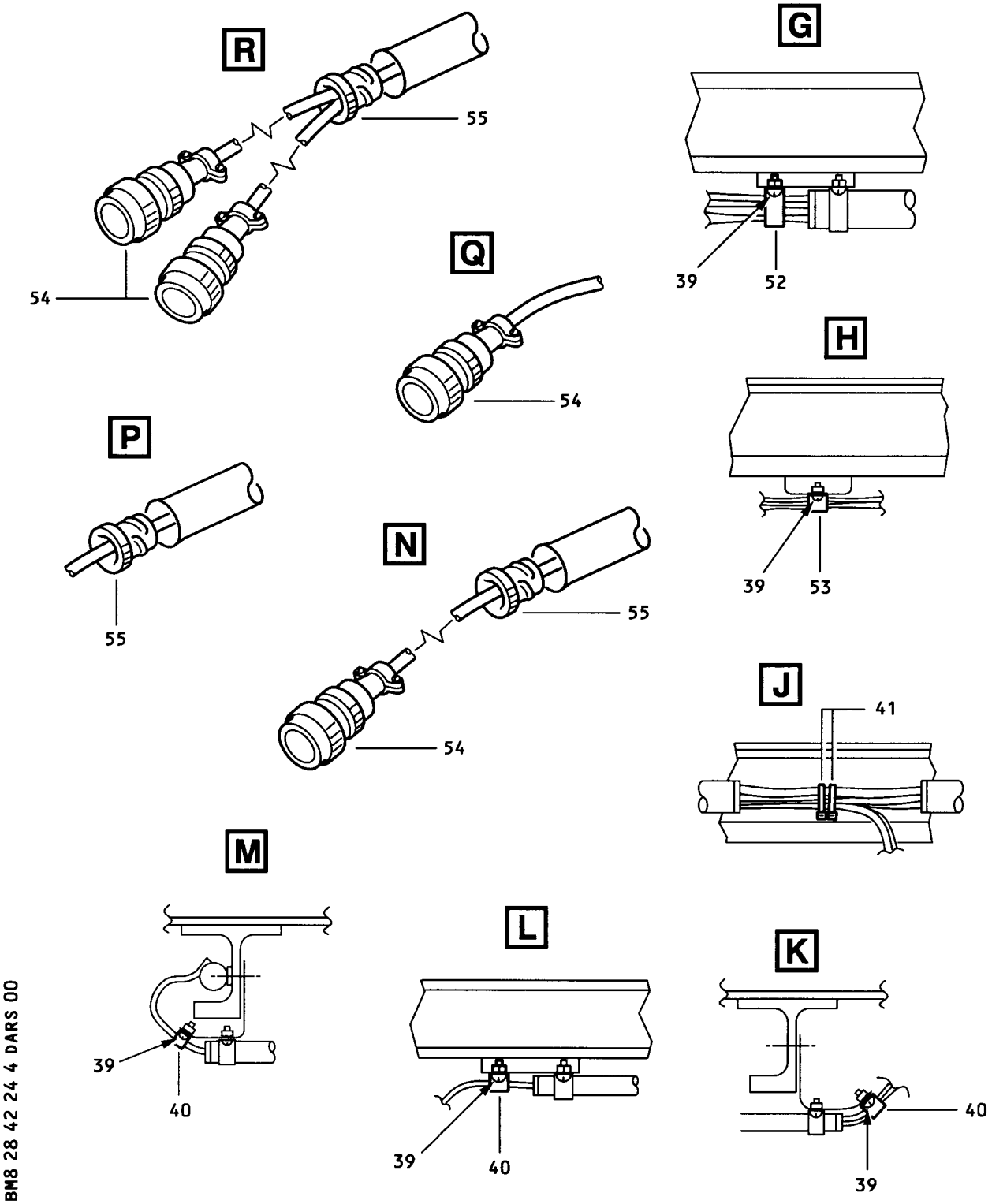
(1)Disconnect the sensor harness from the fuel overflow sensor (Ref. 28-46-22, P. Block 401).



Harness - Installation
Figure 401



Harness - Installation
Figure 401



Harness - Installation
Figure 401

(2)Disconnect the sensor harness from the fuel-level sensors (Ref. 28-46-21, P. Block 401).
(3)Disconnect the probe harness from the fuel-quantity probes 1 thru 7 (Ref. 28-42-33, P. Block 401).

(4)Outside the tank at the rear-spar between RIB 15 (STA 935) and RIB 16 (STA 996)):
(a)Disconnect the plug (35) from the sensor harness connector (36).
(b)Disconnect the plugs (32) and (31) from the probe harness connectors (37) and (29).
(c)Remove the sealant from the harness connector retaining-nuts (34), (33) and (30) with a plastic spatula.
(d)Remove and discard the lockwire from the locking tabs (28) and the harness connector retaining-nuts.
(e)Remove the harness connector retaining-nuts (34), (33) and (30).

(5)Inside the tank at the rear-spar between RIB 15 (STA 935) and RIB 16 (STA 996):
(a)Pull the sensor harness connector (36) through the tank-wall into the tank.
(b)Pull the probe harness connectors (37) and (29) through the tank-wall into the tank.
(c)At each location N, R and Q disconnect the sensor harness connectors (54) from:
- the high-level sensor cable (between RIB 15 (STA 935), RIB 16 (STA 996) RIB 25 (STA 1550) and RIB 26 (STA 1604))
- the low-level sensor cable (between RIB 15 and RIB 16)
- the overflow sensor cable (at RIB 28 (STA 1713)
- the underfull sensor cable (between RIB 21 (STA 1311) and RIB 22 (STA 1372)).

CAUTION: YOU MUST REMOVE ALL THE DISCARDED ITEMS FROM THE FUEL TANKS. THEY CAN CAUSE DAMAGE.

(d)Cut and remove the cable ties (41) from the harness assembly and carefully remove them from the tank.
(e)Remove the screws (39) and all the cable clips (42), (40), (38), (52) and (53) from the harness assembly.
(6)At each sensor and probe position, put adhesive tape around the ends of the disconnected harness assembly. This will help the removal of the harness assembly through the conduits.
(7)Pull the harness through the conduits at locations P, R and N.
(8)Start at RIB 28 (STA 1713) and carefully pull the complete harness assembly through the conduits in an inboard direction to RIB 15 (STA 935).

CAUTION: DO NOT DAMAGE THE HARNESS CONNECTORS DURING THE REMOVAL OF THE HARNESS ASSEMBLY FROM THE FUEL TANK.

(9)Remove the complete harness assembly through the manhole 550BB(650BB).
(10)Put the harness assembly on a protective surface.

(11)Isolate the sensor harness from the probe harness.

C. Preparation for installation
(1)Put the sensor harness adjacent to the probe harness on a protective surface.
(2)Wind adhesive tape tightly around the ends of the harness assembly at each sensor and probe position. Make sure the harness assembly does not twist or bend .
R (3)Use a clean lint-free cloth moistened with cleaning agent (Material
R No. 11-026) to remove all the sealant from the harness connector/
R rear-spar interface.

D. Installation.

CAUTION: DO NOT DAMAGE THE HARNESS CONNECTORS WHEN PUTTING THE HARNESS ASSEMBLY INTO THE FUEL TANK.

(1)Carefully put the harness assembly through the manhole 550BB(650BB) into the tank.

CAUTION: DO NOT USE A DRAW-WIRE OR EQUIVALENT TO INSTALL THE HARNESS ASSEMBLY THROUGH THE CONDUITS.
DO NOT USE FORCE TO INSTALL THE HARNESS ASSEMBLY THROUGH THE CONDUITS.

(2)At conduit (1):
(a)Carefully push the taped ends of the harness assembly into the end of the conduit adjacent to the rear-spar.
(b)Remove the end cap (55) from the opposite end of the conduit and push the harness assembly through the conduit.
(c)When the harness assembly comes out of the conduit, install the end cap (55) onto the harness assembly and push it into the conduit.
(3)Repeat the procedure at step (2) for conduits (10), (9), (8), (7), (2), (6), (3), (5), (4), (18), (11). (12), (17), (13), (16), (14) and (15).

NOTE 1: When installing the harness assembly through the conduits (10) and (9), push the harness assembly in an inboard direction.

NOTE 2: If the harness assembly does not move freely inside the conduit, remove the harness assembly and replace the adhesive tape.

(4)When the cables are in the correct position for connection, remove the adhesive tape from the ends of the harness assembly.
(5)At the rear-spar between RIB 15 (STA 935) and RIB 16 (STA 996):
(a)Put the probe harness connectors (37) and (29) through the rear-spar.
(b)Install the probe harness connector retaining-nuts (33) and (30).
(c)Put the sensor harness connector (36) through the rear-spar tank-wall.
(d)Install the sensor harness connector retaining-nut (34).
(e)Torque the harness connector retaining-nuts (34) and (30) to between 79 and 89 lbf. in. (0.9 and 1.0 m.daN).

(f)Torque the harness connector retaining-nut (33) to between 33.6 and 38.4 lbf. in. (0.38 and 0.43 m.daN).
(g)Safety the harness connector retaining-nuts (34), (33) and (30) to the the locking tabs (28) with lockwire.
(h)Apply sealant (Material No. 09-002) to the harness connector retaining -nuts (34), (33) and (30). Make sure the sealant does not go into the harness connector body.
(j)Connect the plug (35) to the sensor harness connector (36).
(k)Connect the plugs (32) and (31) to the probe harness connectors (37) and (29).

(6)At each location N, Q and R, connect the harness connectors (54) to:
- the high-level sensor cable (between RIB 15 (STA 935), RIB 16 (STA 996), RIB 25 (STA 1550) and RIB 26 (STA 1604)).
- the low-level sensor cable (between RIB 15 and RIB 16).
- the overflow sensor cable (at RIB 28 (STA 1713)).
- the underfull sensor cable between RIB 21 (STA 1311) and RIB 22 (STA 1372)).

(7)Connect the overflow sensors (Ref. 28-46-22, P. Block 401).
(8)Connect the fuel level sensors (Ref. 28-46-21, P. Block 401).
(9)Connect the fuel quantity probes 1 thru 7 (Ref 28-42-33, P. Block 401).
(10)Install the cable ties (41) onto the harness assembly.
(11)Install the cable clips (42), (40), (38), (52) and (53) onto the harness with the screws (39).
(12)Make sure that the work area is clean and clear of tools and other items of equipment.
(13)Install the manhole covers: 550AB(650AB), 550BB(650BB), 550CB(650CB), 550DB(650DB), 550EB(650EB), 550FB(650FB), 550GB(650GB), 550HB(650HB), 550JB(650JB), 550KB(650KB), 550LB(650LB), 550MB(650MB), 550NB(650NB), and 550PB(650PB) (Ref. 28-11-22, P. Block 401).

E. Preparation for Test
(1)Remove the safety clips and the tags and close the circuit breakers 1QT (321/P59), 3QT (321/P60), and 4QT (321/P61)
(2)Refuel the applicable outer tank (Ref. 12-11-28, P. Block 301).
(3)Make sure the harness connectors (36), (37) and (29) at the rear-spar/ tank-wall interfaces do not leak.

F. Test
(1)Do a functional test of the fuel-quantity indicating system (Ref. 28-42-00, P. Block 501).

G. Close-Up
(1)In zone 581(681):
(a)Make sure that the work area is clean and clear of tools and other items of equipment.
(b)Install the access panels 581CB(681CB).
(c)Remove the access platform.
(2)Remove the warning notices.
(3)Fully retract the flaps (Ref. 27-50-00. P. Block 301).
(4)Make sure that the work area is clean and clear of tools and other items of equipment.

CENTER-TANK GAGING-HARNESS - REMOVAL/INSTALLATION

WARNING: PUT THE SAFETY DEVICES AND WARNING NOTICES IN POSITION BEFORE YOU START A TASK ON OR NEAR:
- THE LANDING GEAR AND RELATED DOORS.

WARNING: OBEY THE SAFETY PRECAUTIONS IN 28-00-00, P. BLOCK 301 AND 28-10-00, P. BLOCK 301.

WARNING: MAKE SURE THAT ALL CIRCUITS IN MAINTENANCE ARE ISOLATED BEFORE YOU SUPPLY ELECTRIC POWER TO THE AIRCRAFT.

WARNING: USE SOLVENTS/CLEANING AGENTS, SEALANTS AND OTHER SPECIAL MATERIALS ONLY WITH A GOOD SUPPLY OF AIR.
OBEY THE MANUFACTURERS INSTRUCTIONS.
DO NOT GET THEM IN YOUR MOUTH.
PUT ON PROTECTIVE CLOTHING.
DO NOT SMOKE.
DO NOT BREATHE THE GAS.
THESE MATERIALS ARE POISONOUS AND FLAMMABLE AND SKIN IRRITANTS.
GET MEDICAL HELP IF YOUR SKIN OR EYES BECOME IRRITATED.

1. Reason for the Job

A. To replace the center-tank probe-harness (Ref. Para.2).

B. To replace the center-tank level-sensor harness (Ref. Para.3).

2. Replacement of the Center-Tank Probe-Harness

A. Equipment and Materials

ITEM	DESIGNATION
A.	Access Platform 2.5 m (8 ft 3 in)
B.	Circuit Breaker Safety Clips and Tags
C.	Plastic Spatula
D.	Torque Wrench capable of 58-64 lbf.in. (0.6533-0.7231 m.daN)
E.	Warning Notices - Open Fuel Tanks
F.	Adhesive Tape
G.	Cable Ties
H.	Lint-Free Cloth
J.	Lockwashers
K. Material No. 09-002	Sealants (Ref. 20-31-00)
L. Material No. 11-003	Cleaning Agents (Ref. 20-31-00)
Referenced Procedures	
- 12-11-28, P. Block 301	FUEL
- 28-00-00, P. Block 301	Fuel - General
- 28-10-00, P. Block 301	Storage

ITEM	DESIGNATION
- 28-11-29, P. Block 401	Manhole Cover (Center Tank)
- 28-25-00, P. Block 301	Refuel/Defuel System
- 28-42-00, P. Block 501	Quantity Indicating
- 28-42-31, P. Block 401	Fuel Quantity Probes
- 32-12-11, P. Block 301	Main Gear Main Door

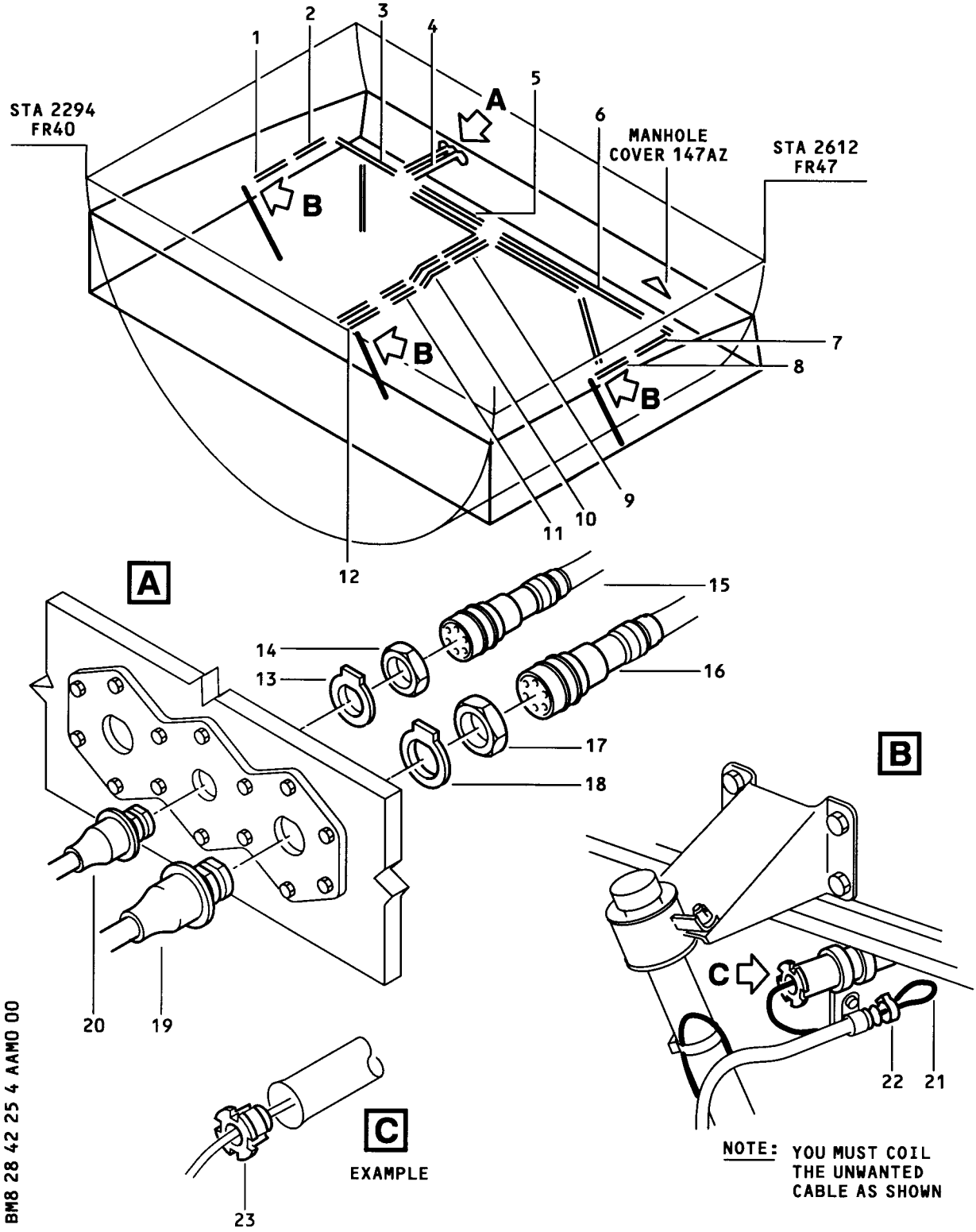
B. Procedure
(Ref. Fig. 401)

(1)Job Set-Up
(a)Put the warning notices in position on:
- the refuel/defuel panel
- the overhead panel 430VU in the flight compartment
- the ground adjacent to the aircraft access routing.

(b)Defuel the center tank (Ref. 28-25-00, P. Block 301).
(c)Open the applicable main-gear main-door (Ref. 32-12-11, P. Block 301).
(d)Put the access platform in position.
(e)Remove the manhole cover 147AZ (Ref. 28-11-29, P. Block 401).
(f)Open, safety and tag these circuit breakers:

PANEL	SERVICE	IDENT.	LOCATION
22VU	FUEL/TK LO LVL/L OUTR & R INR & CTR R	1QJ	208/B26
22VU	FUEL/TK LO LVL/R OUTR & L INR & CTR L	2QJ	208/B27
132VU	FUELLING HI LVL	6QJ	321/P57

(2)Removal
(a)Disconnect the fuel quantity-probes 1 thru 4 (Ref. 28-42-31, P. Block 401).
(b)Disconnect the plug (15) from the harness connector (20) on the rear-spar tank-wall at STA 2612/FR47.
(c)Use a plastic spatula to remove the sealant from the harness-connector retaining-nut (14).
(d)Remove the harness-connector retaining-nut (14) and the lockwasher (13) and pull the harness connector (20) into the tank.
(e)Discard the lockwasher (13).
(f)Disconnect the plug (16) from the harness-connector (19) on the rear-spar tank-wall at STA 2612/FR47.
(g)Use a plastic spatula to remove the sealant from the harness-connector retaining-nut (17).
(h)Remove the harness-connector retaining-nut (17) and the lockwasher (18) and pull the harness-connector (19) into the tank.
(j)Discard the lockwasher (18).
(k)Remove the cable ties (22) from the harness (21).
(l)Remove the bungs (23) from the conduits (1), (2), (3), (4), (5), (6), (7), (8), (9), (10), (11) and (12).



Harness Installation
Figure 401

R

(m)Put adhesive tape around the ends of the disconnected harness assembly. This will help the removal of the harness assembly through the conduits.
(n)Start at conduit (12) and carefully pull the complete harness assembly through the conduits in a rearward direction to the rear spar tank-wall STA 2612/FR47.
(p)Remove the complete harness assembly through the manhole 147AZ.

(3)Preparation for installation.
(a)Wind adhesive tape tightly around the connectors and the harness at all the connector location. Make sure the harness assembly does not twist or bend.
(b)Use a clean lint-free cloth with cleaning agent (Material No. 11-003) to remove all the sealant from the harness rear-spar tank-wall interface.

(4)Installation.

CAUTION: DO NOT USE A DRAW-WIRE OR EQUIVALENT TO INSTALL THE HARNESS THROUGH THE CONDUITS. A DRAW-WIRE OR EQUIVALENT COULD DAMAGE THE CONDUITS AND THE HARNESS.

(a)Carefully put the harness assembly through the manhole 147AZ.
(b)Carefully push the harness assembly in a rearward direction through conduit (4). Then, carefully push the harness assembly in a forward direction through conduits (3), (2), (1), (5), (6), (7), (8), (9), (10), (11) and (12). Do not use force.
(c)When the cables are in the correct position for connection remove the adhesive tape from the connectors and the harness.
(d)Install the bungs (23) in the conduits (1), (2), (3), (4), (5), (6), (7), (8), (9), (10), (11) and (12).
(e)Put the harness connector (20) through the rear-spar tank-wall at STA 2612/FR47 and install the new lockwasher (13) and the retaining-nut (14).
(f)TORQUE the harness-connector retaining-nut (14) to between 58 and 64 lbf. in. (0.6553 and 0.7231 m.daN).
(g)Safety the harness-connector retaining-nut (14) with the lockwasher (13).
(h)Apply sealant (Material No. 09-002) to the harness-connector retaining-nut (14), make sure the sealant does not go into the harness-connector body.
(j)Connect the plug (15) to the harness-connector (20) on the rear spar tank-wall at STA 2612/FR47.
(k)Put the harness connector (19) through the rear-spar tank-wall at STA 2612/FR47 and install the new lockwasher (18) and the retaining-nut (17).
(l)TORQUE the harness-connector retaining-nut (17) to between 58 and 64 lbf. in. (0.6553 and 0.7231 m.daN).
(m)Safety the harness-connector retaining-nut (17) with the lockwasher (18).
(n)Apply sealant (Material No. 09-002) to the harness-connector

retaining nut (17), make sure the sealant does not go into the harness-connector body.
(p)Connect the plug (16) to the harness-connector (19) on the rear-spar tank-wall at STA 2612/FR47.
(q)Attach the cable ties (22) to the harness (21).
(r)Connect the fuel-quantity probes 1 thru 4 (Ref. 28-42-31, P. Block 401).
(s)Make sure that the work area is clean and clear of tools and miscellaneous items of equipment.
(t)Install the manhole cover 147AZ (Ref. 28-11-29, P. Block 401).

(5)Preparation for test.

R
R
R (a)On panels 22VU and 132VU, remove the safety clips and the tags and
R close the circuit breakers 1QJ, 2QJ and 6QJ.
R (b)Refuel the center tank to the high-level sensor cut-off level (Ref.
R 12-11-28, P.Block 301).

(6)Test.
(a)Make sure that the connectors/rear-spar tank-wall interfaces do not leak.
(b)Do a functional test for Capacitance and Insulation Resistance (Ref. 28-42-00, P. Block 501).

(7)Close-Up.
(a)Remove the access platform.
(b)Close the applicable main-gear main-doors (Ref. 32-12-11, P. Block 301).
(c)Remove the warning notices.
(d)Make sure that the work area is clean and clear of tools and other items.

3. Replacement of the Center-Tank Level-Sensor Harness

A. Equipment and Materials

ITEM	DESIGNATION
A.	Access Platform 2.5 m (8 ft 3 in)
B.	Circuit Breakers Safety Clips and Tags
C.	Plastic Spatula
D.	Torque Wrench capable of 58-64lbf.in (0.6533-0.7231 m.daN)
E.	Warning Notices - Open Fuel Tanks
F.	Cable Ties
G.	Lint-Free Cloth
H.	Lockwashers
J. Material No. 09-002	Sealants (Ref. 20-31-00)
K. Material No. 11-003	Cleaning Agents (Ref. 20-31-00)

Referenced Procedures

ITEM	DESIGNATION
- 12-11-28, P. Block 301	Fuel
- 28-00-00, P. Block 301	Fuel General
- 28-10-00, P. Block 301	Storage
- 28-11-29, P. Block 401	Manhole Cover (Center Tank)
- 28-25-00, P. Block 301	Refuel/Defuel System
- 28-42-00, P. Block 501	Quantity Indicating
- 28-46-21, P. Block 401	Fuel Level - Sensors
- 32-12-11, P. Block 301	Main Gears Main Door

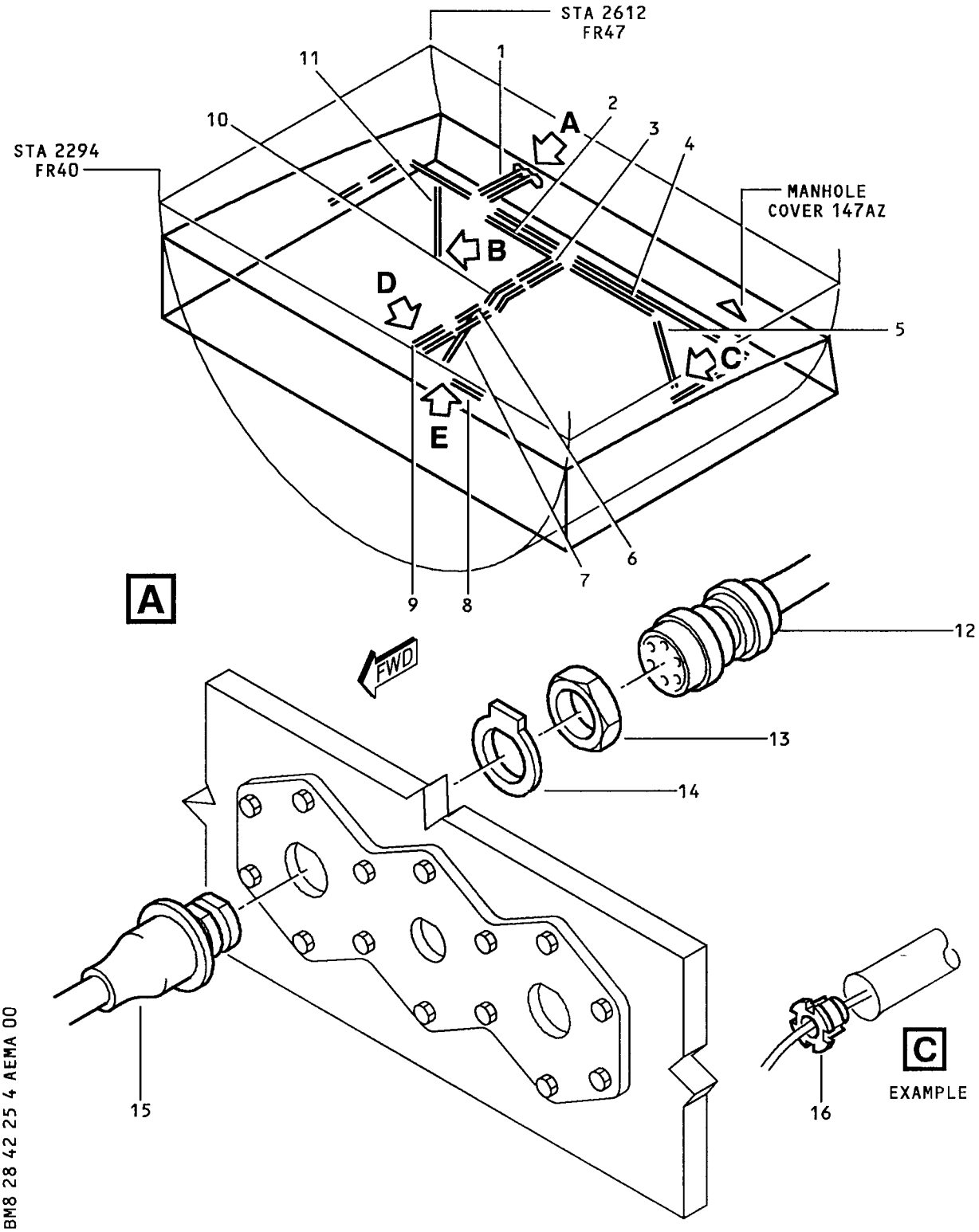
B. Procedure
(Ref. Fig. 402)
(Ref. Fig. 402)
(Ref. Fig. 402)

(1)Job Set-Up.
(a)Put the warning notices in position on:
- the refuel/defuel panel
- the overhead panel 430VU in the flight compartment
- the ground adjacent to the aircraft access routing.

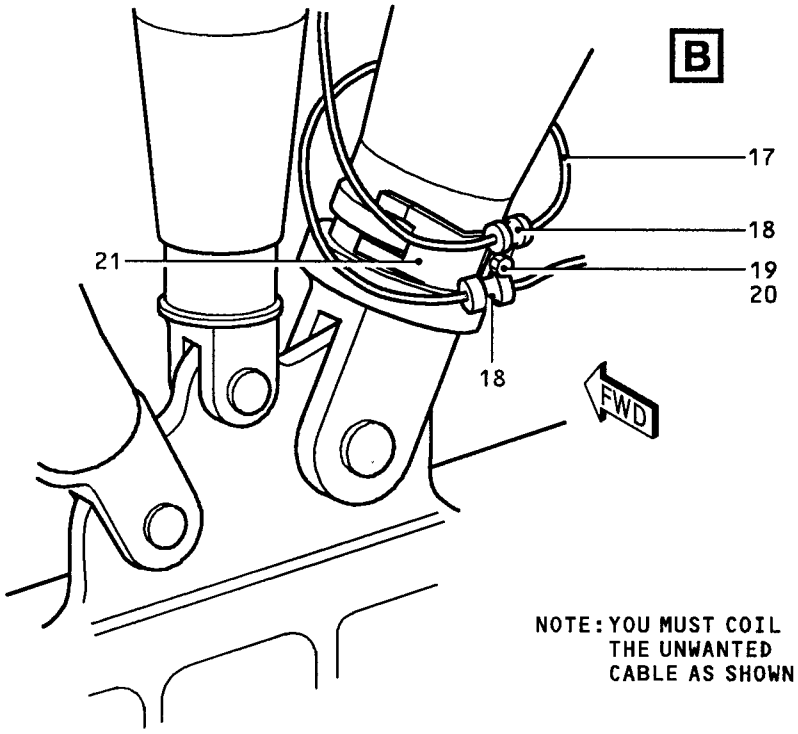
(b)Defuel the center tank (Ref. 28-25-00, P. Block 301).
(c)Open the applicable main-gear main-door (Ref. 32-12-11, P. Block 301).
(d)Put the access platform in position.
(e)Remove the manhole cover 147AZ (Ref. 28-11-29, P. Block 401).
(f)Open, safety and tag these circuit breakers:

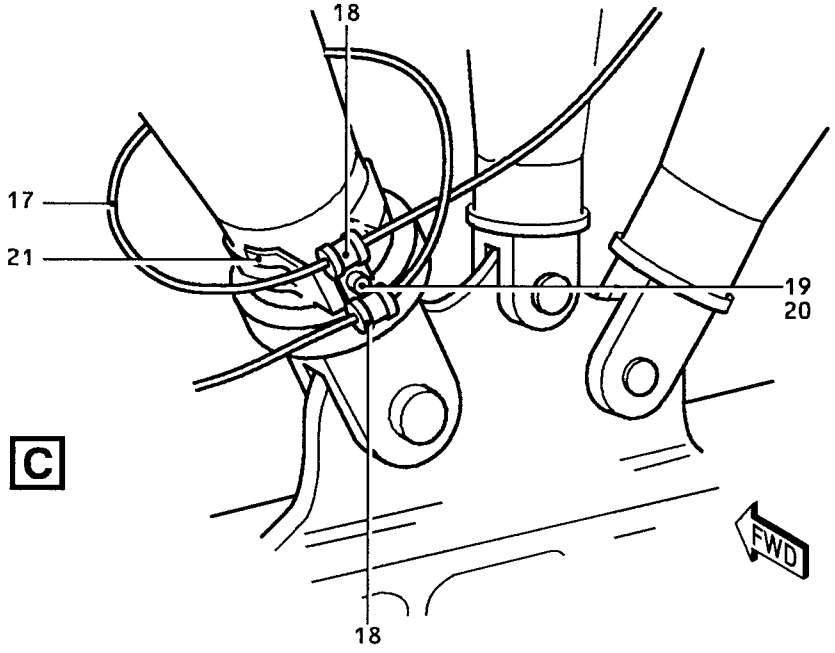
PANEL	SERVICE	IDENT.	LOCATION
22VU	FUEL/TK LO LVL/L OUTR & R INR & CTR R	1QJ	208/B26
22VU	FUEL/TK LO LVL/R OUTR & L INR & CTR L	2QJ	208/B27
132VU	FUELLING HI LVL	6QJ	321/P57

(2)Removal.
(a)Disconnect the fuel level-sensors (Ref. 28-46-21, P. Block 401).
(b)Disconnect the plug (12) from the harness connector (15) on the rear-spar tank-wall at STA 2612/FR47.
(c)Use a plastic spatula to remove the sealant from the harness-connector retaining nut (13).
(d)Remove the harness-connector retaining-nut (13) and the lockwasher (14) and pull the harness connector (15) into the tank.
(e)Discard the lockwasher (14).
(f)Remove the cable ties (22) from the harness (17).
(g)Remove the bungs (16) from the conduits (1), (2), (3), (4), (5), (6), (7), (8) and (9), (10) and (11).
(h)Remove the bolts (19) and the washers (20) to release the P-clips (18) from the support assemblies (21).
(j)Remove the P-clips (18) from the harness (17).
(k)Start at conduit (9) and carefully pull the complete harness



Harness Installation
(Sheet 1/3)
Figure 402





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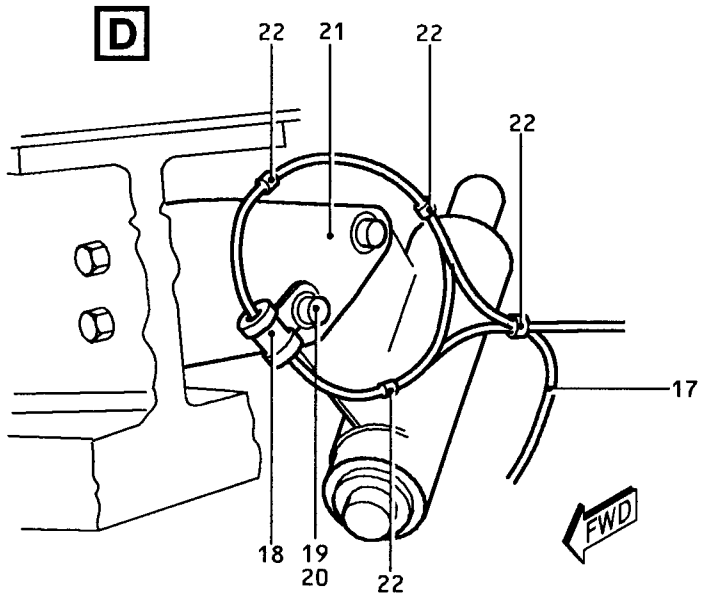
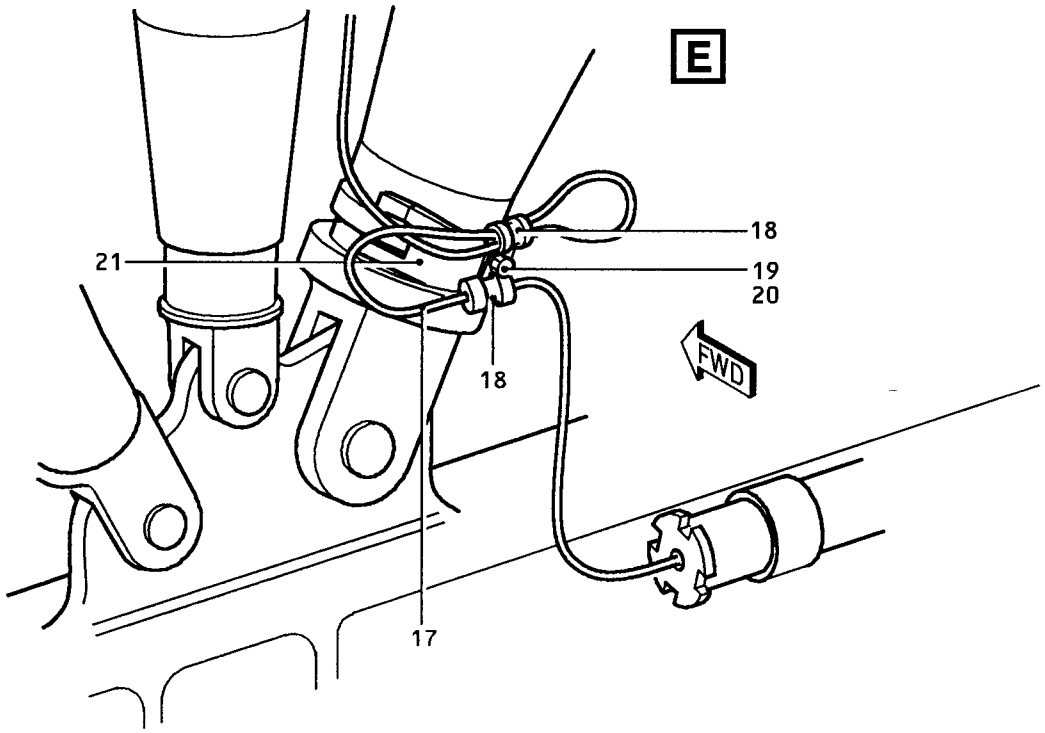
Harness Installation
(Sheet 2/3)
Figure 402



NOTE: YOU MUST COIL
THE UNWANTED
CABLE AS SHOWN



BM8 28 42 25 4 AEMS 00

Harness Installation
(Sheet 3/3)
Figure 402

assembly through the conduits in a rearward direction to the rear-spar tank-wall at STA 2612/FR47.

(l)Remove the complete harness assembly through the manhole 147AZ.

(3)Preparation for Installation.

(a)Use a clean lint-free cloth with cleaning agent (Material No. 11-003) to remove all the sealant from the harness rear-spar tank-wall interface.

(4)Installation.

CAUTION: DO NOT USE A DRAW-WIRE OR EQUIVALENT TO INSTALL THE HARNESS THROUGH THE CONDUIT. A DRAW-WIRE OR EQUIVALENT COULD DAMAGE THE CONDUITS AND THE HARNESS.

(a)Carefully put the harness assembly through the manhole 147AZ.
(b)Carefully push the harness assembly in a rearward direction through conduit (1). Then, carefully push the harness assembly in a forward direction through the conduits (11), (2), (4), (5), (3), (10), (8) and (9). Do not use force.
(c)Make sure the cables are in the correct position for connection.
(d)Install the bungs (16) in the conduits (1), (2), (3), (4), (5), (6), (7), (8), (9), (10) and (11).
(e)Put the harness connector (15) through the rear-spar tank-wall at STA 2612/FR47 and install the new lockwasher (14) and the harness-connector retaining-nut (13).
(f)TORQUE the harness-connector retaining-nut (13) to between 58 and 64 lbf. in. (0.6553 and 0.7231 m.daN).
(g)Safety the harness-connector retaining-nut (13) with the lockwasher (14).
(h)Apply sealant (Material No. 09-002 to the harness-connector retaining-nut (13), make sure the sealant does not go into the harness connector body.
(j)Connect the plug (12) to the harness connector (15) on the rear-spar tank-wall at STA 2612/FR47.
(k)Put the P-clips (18) on the harness (17).
(l)Attach the P-clips (18) to the support assemblies (21) with the bolts (19) and the washers (20).
(m)Attach the cable ties (22) to the harness (17).
(n)Connect the fuel level-sensors (Ref. 28-46-21, P. Block 401).
(p)Make sure that the working area is clean and clear of tools and miscellaneous items of equipment.
(q)Install the manhole cover 147AZ (Ref. 28-11-29, P. Block 401).

(5)Preparation for test.

R
R
R (a)On panels 22VU and 132VU, remove the safety clips and the tags and close the circuit breakers 1QJ, 2QJ and 6QJ.
R (b)Refuel the center tank to the high-level sensor cut-off level (Ref.
R 12-11-28, P. Block 301).

(6)Test.
  (a)Make sure that the connector/rear-spar tank wall interface does not leak.
  (b)Do a functional test of the fuel quantity indicating system (Ref. 28-42-00, P. Block 501).

(7)Close-Up.
  (a)Remove the access platform.
  (b)Close the applicable main-gear main-door (Ref. 32-12-11, P. Block 301).
  (c)Remove the warning notices.
  (d)Make sure that the work area is clean and clear of tools and miscellaneous items of equipment.

FUEL QUANTITY PROBES - CENTER TANK
REMOVAL/INSTALLATION

R **WARNING** : THIS PROCEDURE USES A FUEL SYSTEM ITEM THAT IS IN A CATEGORY KNOWN AS
R A CRITICAL DESIGN CONFIGURATION CONTROL LIMITATION (CDCCL).
R CDCCL IDENTIFIES AN ITEM THAT CAN BE THE SOURCE OF A POSSIBLE FUEL
R TANK IGNITION. YOU MUST KEEP ALL CDCCL ITEMS IN THE APPROVED
R CONFIGURATION. DAMAGE, WEAR OR CHANGES TO A CDCCL ITEM CAN CAUSE A
R POSSIBLE FUEL TANK EXPLOSION.

R LANDING GEAR - MAKE SURE THAT THE GROUND SAFETIES AND CHOCKS ARE IN
R POSITION

R FLIGHT CONTROLS - MAKE SURE THAT THE GROUND SAFETIES AND NOTICES ARE
IN POSITION.

R OBEY THE SAFETY PRECAUTIONS IN 28-00-00, P. BLOCK 301 AND 28-10-00,
R P. BLOCK 301.

R MAKE SURE THAT THE FIRE FIGHTING EQUIPMENT IS AVAILABLE AND ADEQUATE.

R MAKE SURE THAT YOU ISOLATE THE ELECTRICAL CIRCUITS UPON WHICH WORK IS
R IN PROGRESS.

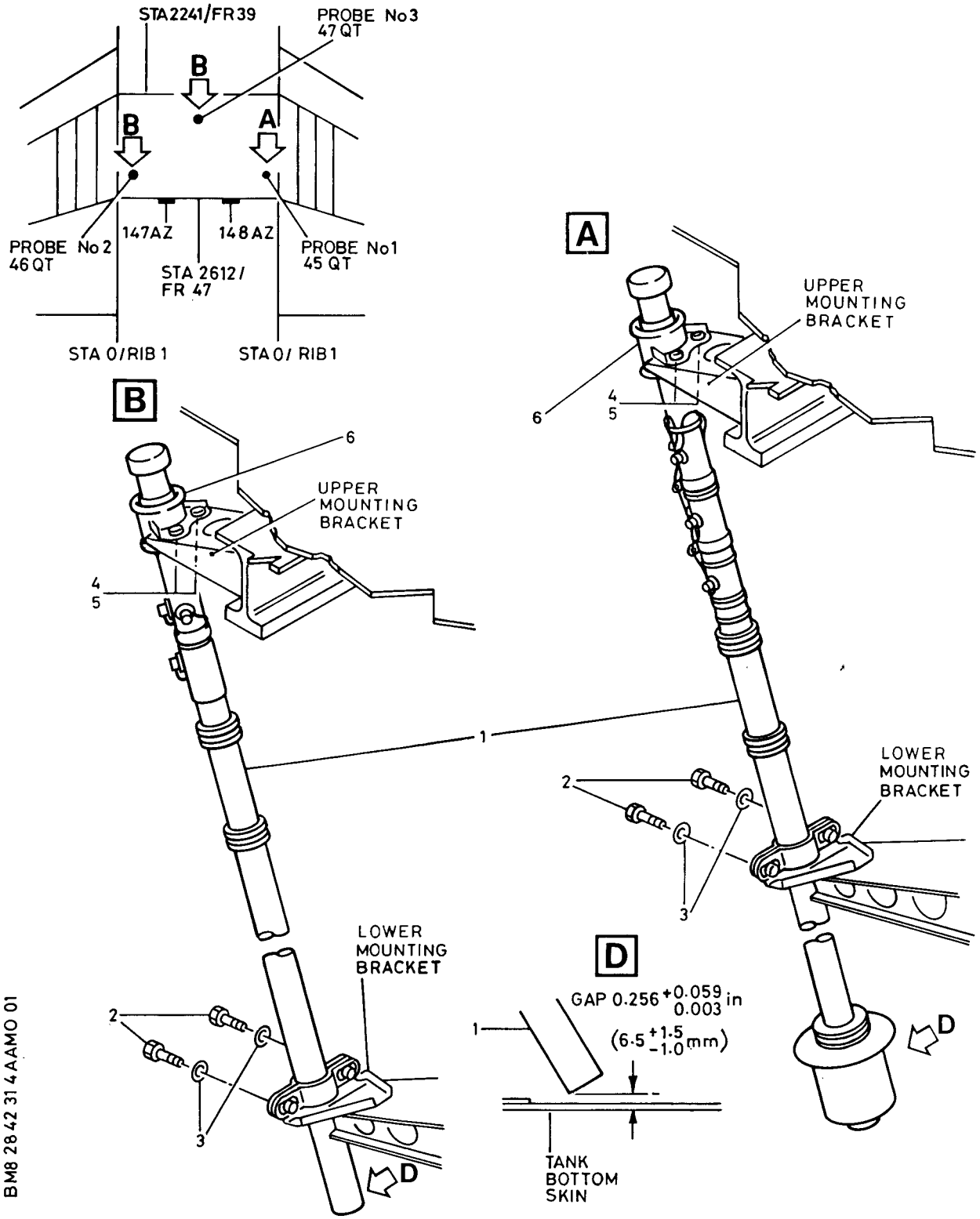
1. Equipment and Materials

ITEM	DESIGNATION
A.	Access Platform 2.5 m (8.5 ft)
B.	Cable Ties
C.	Circuit Breaker Safety Clips and Tags
Referenced Procedures	
- 28-00-00, P. Block 301	Fuel - General
- 28-10-00, P. Block 301	Storage
- 28-11-29, P. Block 401	Manhole Cover Center Tank
- 28-25-00, P. Block 301	Refuel/Defuel System
- 28-42-00, P. Block 501	Quantity Indicating
- 32-12-11, P. Block 301	Main Gear Main Door

2. Procedure

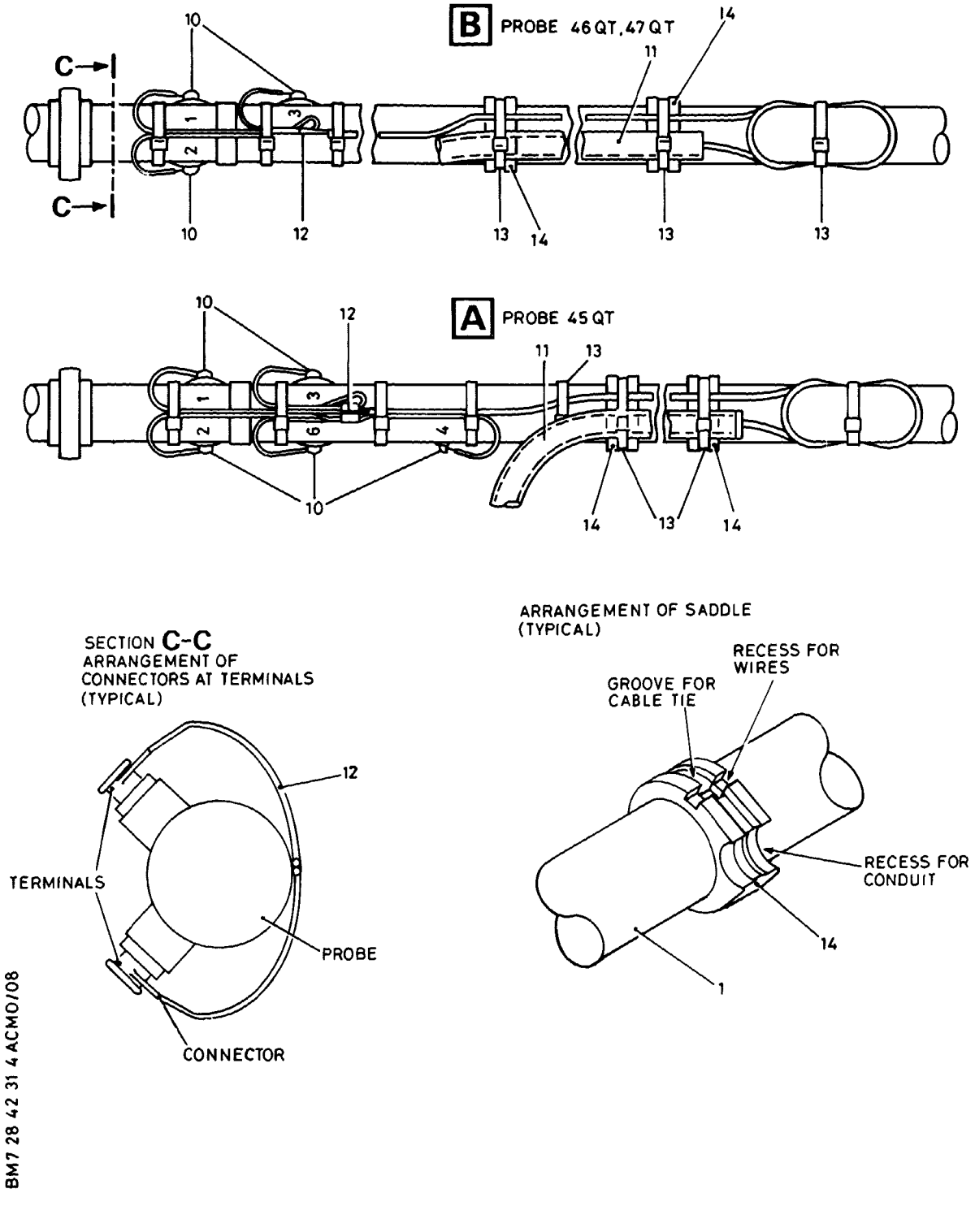
(Ref. Fig. 401)
(Ref. Fig. 402)

A. Job Set-Up
(1)Defuel center tank or transfer center tank contents to wing tanks (Ref. 28-25-00, P. Block 301).
(2)Open, safety, and tag the following circuit breakers:



Fuel Quantity Probes Center Tank - Installation
Figure 401

R



Fuel Quantity Probes Center Tank - Wiring
Figure 402

PANEL	SERVICE	IDENT.	LOCATION
132VU	FUEL/FQI/SUPPLY & IND	1QT	321/P59
132VU	FUEL/FQI/CHAN SUPPLY 1	3QT	321/P60
132VU	FUEL/FQI/CHAN SUPPLY 2	4QT	321/P61

(3)Open right main landing gear bay door (Ref. 32-12-11, P. Block 301).
(4)Position access platform.
(5)Remove center tank manhole cover 147(148)AZ (Ref. 28-11-29, P. Block 401).

B. Removal
(1)Slacken terminal studs (10) and disconnect electrical connectors from probe (1).

NOTE : The attachment of each probe is identical.

(2)Cap electrical connectors.
(3)Cut cable ties (13) securing conduit (11) and tank wiring (12).
(4)Remove bolts (4) and washers (5).
(5)Manually support probe (1) and remove bolts (2) and washers (3).
(6)Remove probe (1) from upper and lower mounting brackets.
(7)Remove upper attachment tube (6) from probe (1).

C. Installation
(1)Clean and inspect for correct condition of the component interfaces, conduit, wiring and electrical connectors.
(2)Remove caps from electrical connectors.
(3)Install upper attachment tube (6) on probe (1).
(4)Manually support probe (1) and connect electrical connectors to probe. TORQUE terminal studs (10) to 9 lbf.in (0.102 m.daN).
(5)Secure wiring (12) to probe (1), between terminals and saddle (14), with specified cable ties (13).

NOTE : Center and LH probes: make certain the wiring to terminal 2 is routed at least 130 deg clear of terminal 3.

RH probe: make certain the wiring to terminal 2 is routed opposite to terminals 3 and 6.

Wiring and probe terminals are color coded. Probe terminals are numbered.

Use colored cable ties (not yellow or white) to aid location of ties when covered by residual fuel.

CAUTION : THE BOLTS SECURING THE PROBE TO ITS LOWER ATTACHMENT BRACKET ARE OF DIFFERENT DIAMETERS

(6)Position probe (1) and upper attachment tube (6).

(7)Secure upper attachment tube (6) to upper mounting bracket using washers (5) and bolts (4).

R WARNING : THIS INSTRUCTION IS APPLICABLE TO A CRITICAL DESIGN CONFIGURATION
R CONTROL LIMITATION (CDCCL) ITEM. CAREFULLY OBEY ALL GIVEN
R INSTRUCTIONS WHEN YOU DO THIS STEP. IF YOU DO NOT OBEY THESE
R INSTRUCTIONS, A DANGEROUS CONDITION CAN OCCUR THAT CAN CAUSE A
R POSSIBLE FUEL TANK EXPLOSION.

(8)Secure probe (1) to lower mounting bracket using washers (3) and bolts (2). Make certain that gap between probe (1) and bottom skin is correct as shown.
(9)Make certain that compensator wiring of RH probe is routed clear of the structure.
(10)Position conduit (11) and wiring (12) in recesses in saddles (14) coiling any surplus wiring and secure with specified cable ties (13). The cable ties should be tightened using the proprietary tool at minimum tension setting.

D. Test
(1)Perform a functional test for Capacitance and Insulation Resistance (Ref. 28-42-00, P. Block 501).

E. Close-Up
(1)Make certain that working area is clean and clear of tools and miscellaneous items of equipment.
(2)Install manhole cover (Ref. 28-11-29, P. Block 401).
(3)Close right main landing gear bay door (Ref. 32-12-11, P. Block 301).
(4)Remove safety clips and tags and close Fuel FQI circuit breakers 1QT, 3QT and 4QT.

FUEL QUANTITY PROBES - INNER TANK - REMOVAL/INSTALLATION

R **WARNING** : THIS PROCEDURE USES A FUEL SYSTEM ITEM THAT IS IN A CATEGORY KNOWN AS
R A CRITICAL DESIGN CONFIGURATION CONTROL LIMITATION (CDCCL).
R CDCCL IDENTIFIES AN ITEM THAT CAN BE THE SOURCE OF A POSSIBLE FUEL
R TANK IGNITION. YOU MUST KEEP ALL CDCCL ITEMS IN THE APPROVED
R CONFIGURATION. DAMAGE, WEAR OR CHANGES TO A CDCCL ITEM CAN CAUSE A
R POSSIBLE FUEL TANK EXPLOSION.

R LANDING GEAR - MAKE SURE THAT THE GROUND SAFETIES AND CHOCKS ARE IN
R POSITION.

R FLIGHT CONTROLS - MAKE SURE THAT THE GROUND SAFETIES AND NOTICES ARE
R IN POSITION.

R OBEY THE SAFETY PRECAUTIONS IN 28-00-00, P. BLOCK 301, AND 28-10-00,
R P. BLOCK 301.

R MAKE SURE THAT THE FIRE FIGHTING EQUIPMENT IS AVAILABLE AND ADEQUATE.

R MAKE SURE THAT YOU ISOLATE THE ELECTRICAL CIRCUITS UPON WHICH WORK IS
R IN PROGRESS.

1. Equipment and Materials

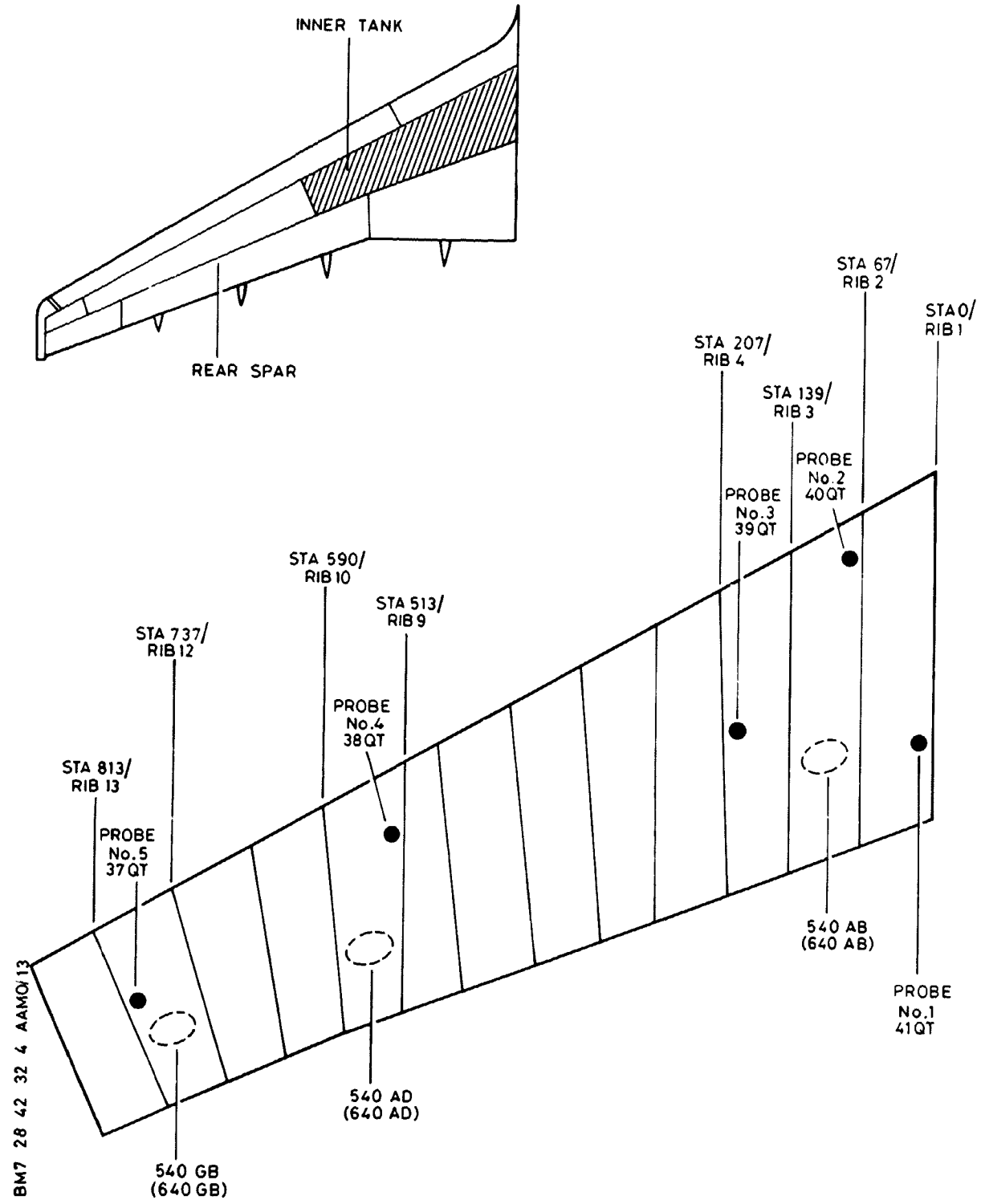
ITEM	DESIGNATION
A.	Access Platforms 2.5 m and 4 m (8 ft and 13 ft)
Referenced Procedures	
- 24-41-00, P. Block 301	AC External Power Control
- 28-00-00, P. Block 301	Fuel - General
- 28-11-00, P. Block 301	Tanks
- 28-11-22, P. Block 401	Manhole Covers (Wings)
- 28-42-00, P. Block 501	Quantity Indicating

2. Procedure

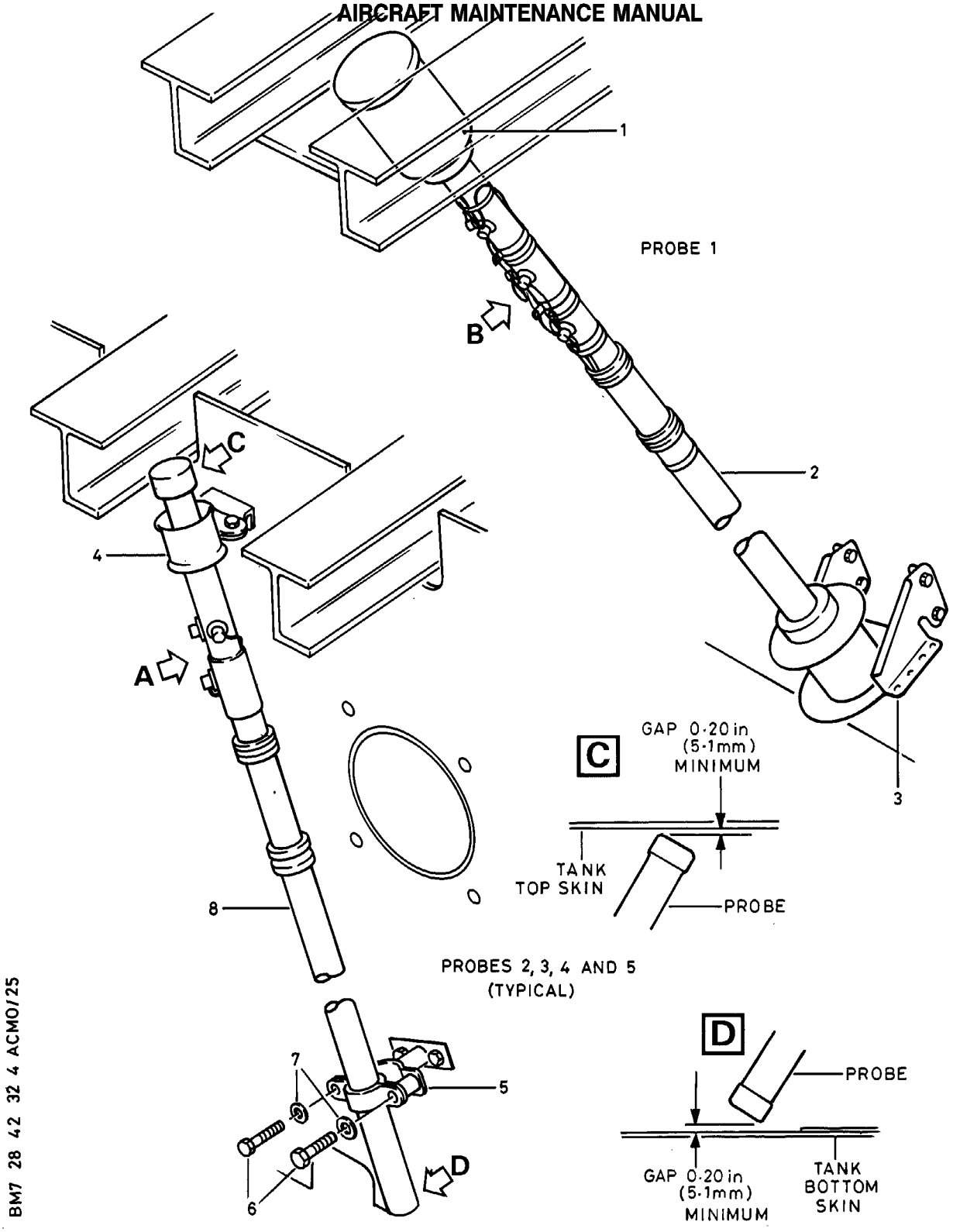
(Ref. Fig. 401)
(Ref. Fig. 402)
(Ref. Fig. 403)

A. Job Set-Up

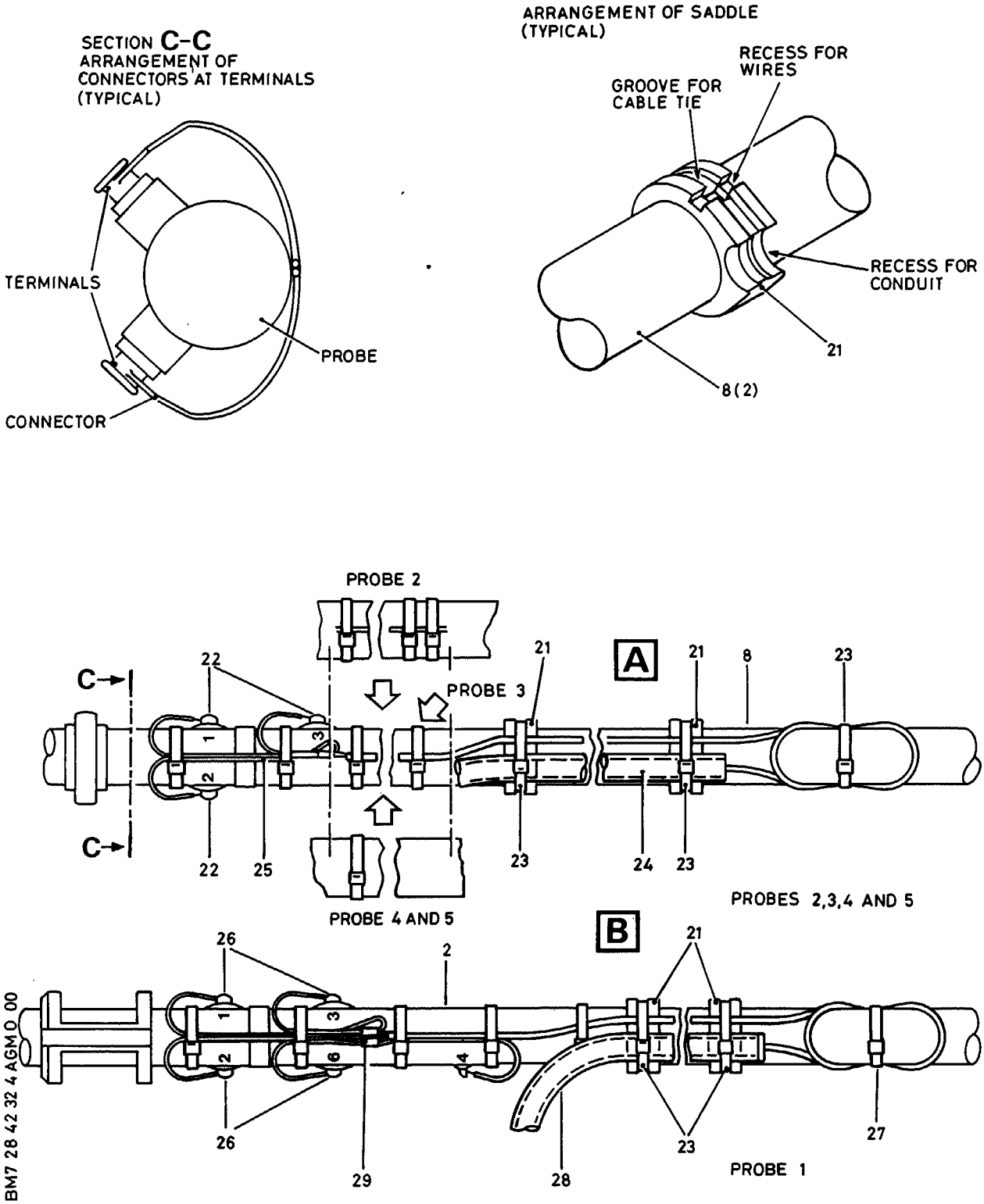
(1)Energize the aircraft electrical network (Ref. 24-41-00, P. Block 301). Make certain that the electronics racks are ventilated.
(2)Defuel the inner tanks (Ref. 28-25-00, P. Block 301).
(3)Open, safety and tag the following circuit breakers:



Probe Location
Figure 401



Probe Installation
Figure 402



Probe Wiring
Figure 403

R

PANEL	SERVICE	IDENT.	LOCATION
132VU	FUEL/FQI/SUPPLY & IND	1QT	321/P59
132VU	FUEL/FQI/CHAN SUPPLY 1	3QT	321/P60
132VU	FUEL/FQI/CHAN SUPPLY 2	4QT	321/P61

(4)Position access platform and remove the appropriate manhole cover (Ref. 28-11-23, P. Block 401).

PROBE NO.	ACCESS DOOR (Manhole Cover) LEFT WING	RIGHT WING
1	540 AB	(640 AB)
2	540 AB	(640 AB)
3	540 AB	(640 AB)
4	540 DB	(640 DB)
5	540 GB	(640 GB)

B. Removal (Ref. Fig. 401, 402, 403)
(1)Probe No.1 only
(a)Cut cable ties (23) securing conduit (28) and wiring (29) in position: collect all cut cable ties.
(b)Loosen five terminal studs (26) from probe (2), disconnect wiring (29), then cap the five electrical connectors.
(c)Lift probe (2), compressing spring in upper support bracket (1), sufficiently to enable the bottom of probe to be removed from lower support bracket (3); remove the probe.
(2)Probes Nos.2, 3, 4 and 5
(a)Cut cable ties (23) securing conduit (24) and wiring (25) in position: collect all cut cable ties.
(b)Loosen three terminal studs (22) from probe (8), disconnect wiring (25), then cap the three electrical connectors.
(c)Remove bolts (6) and washers (7) securing probe (8) to lower attachment assembly (5).
(d)Slide probe (8) away from upper attachment assembly (4).

C. Installation (Ref. Fig. 401, 402, 403)
(1)Clean and inspect for correct condition of the component interfaces, conduit, wiring and electrical connectors.
(2)Probe No.1 only
(a)Remove caps from connectors. Connect tank wiring connectors to appropriate terminals on probe (2), ensuring that the wire to terminal No.2 is routed opposite to terminals 3 and 6, then secure with terminal studs (26) and TORQUE to 9 lbf.in (0.1 m.daN).

NOTE: Wiring and probe terminals are color coded.

R WARNING : THIS INSTRUCTION IS APPLICABLE TO A CRITICAL DESIGN
R CONFIGURATION CONTROL LIMITATION (CDCCL) ITEM. CAREFULLY OBEY
R ALL GIVEN INSTRUCTIONS WHEN YOU DO THIS STEP. IF YOU DO NOT
R OBEY THESE INSTRUCTIONS, A DANGEROUS CONDITION CAN OCCUR THAT
R CAN CAUSE A POSSIBLE FUEL TANK EXPLOSION.

(b)Locate top end of probe (2) into upper support bracket (1), checking keyway is aligned, compressing the spring sufficiently to enable the bottom end to be located into the lower support bracket (3). Make certain that gaps between probe and top and

bottom skins are correct.

(c)Position conduit (28) and wiring (29) in recesses in saddles (21) coiling any surplus wiring and secure with specified cable ties (23). Tighten the cable ties using the proprietary tool at the minimum tension setting.

NOTE: Use colored cable ties (not yellow or white) to aid location of ties when covered by residual fuel.

(3)Probes Nos.2, 3, 4 and 5

(a)Remove caps from connectors. Connect tank wiring connectors to appropriate terminals on probe (8), then secure with terminal studs (21) and TORQUE to 9 lbf.in (0.1 m.daN).

NOTE: Wiring and probe terminals are color coded.

R WARNING : THIS INSTRUCTION IS APPLICABLE TO A CRITICAL DESIGN
R CONFIGURATION CONTROL LIMITATION (CDCCL) ITEM. CAREFULLY OBEY
R ALL GIVEN INSTRUCTIONS WHEN YOU DO THIS STEP. IF YOU DO NOT
R OBEY THESE INSTRUCTIONS, A DANGEROUS CONDITION CAN OCCUR THAT
R CAN CAUSE A POSSIBLE FUEL TANK EXPLOSION.

(b)Locate top of probe (8) through upper support bracket (4), then position probe against lower attachment assembly (5) and secure with washers (7) and bolts (6). Make certain that gaps between probe and top and bottom skins are correct.

NOTE: The two bolts securing the probe to its lower attachment bracket are of different sizes.

(c)Position conduit (24) and wiring (25) in recesses in saddles (21), coiling any surplus wiring, and secure with specified cable ties ensuring terminal No.2 wiring is routed at least 130 deg away from terminal 3. Tighten the cable ties (23) using the proprietary tool at the minimum tension setting.

NOTE: Use colored cable ties (not yellow or white) to aid location of ties when covered by residual fuel.

D. Test

(1)Perform a functional test - Capacitance and Insulation Resistance (Ref. 28-42-00, P. Block 501).

E. Close-Up

(1)Make certain that working area is clean and free of tools and miscellaneous items of equipment.
(2)Install removed manhole covers (Ref. 28-11-22, P. Block 401).
(3)Remove safety clips and tags and close circuit breakers 1QT, 3QT and 4QT.
(4)De-energize the aircraft electrical network (Ref. 24-41-00, P. Block 301).

FUEL QUANTITY PROBES - OUTER TANK
REMOVAL/INSTALLATION

R **WARNING** : THIS PROCEDURE USES A FUEL SYSTEM ITEM THAT IS IN A CATEGORY KNOWN AS
R A CRITICAL DESIGN CONFIGURATION CONTROL LIMITATION (CDCCL).
R CDCCL IDENTIFIES AN ITEM THAT CAN BE THE SOURCE OF A POSSIBLE FUEL
R TANK IGNITION. YOU MUST KEEP ALL CDCCL ITEMS IN THE APPROVED
R CONFIGURATION. DAMAGE, WEAR OR CHANGES TO A CDCCL ITEM CAN CAUSE A
R POSSIBLE FUEL TANK EXPLOSION.

R LANDING GEAR - MAKE SURE THAT THE GROUND SAFETIES AND CHOCKS ARE IN POSITION.

FLIGHT CONTROLS - MAKE SURE THAT THE GROUND SAFETIES AND NOTICES ARE IN POSITION.

R OBEY THE SAFETY PRECAUTIONS IN 28-00-00, P. BLOCK 301 AND 28-10-00,
R P. BLOCK 301.

MAKE SURE THAT THE FIRE FIGHTING EQUIPMENT IS AVAILABLE AND ADEQUATE.

MAKE SURE THAT YOU ISOLATE THE ELECTRICAL CIRCUITS UPON WHICH WORK IS IN PROGRESS.

1. Equipment and Materials

ITEM	DESIGNATION
A.	Access Platform 2.5 m to 4 m (8.3 ft to 13 ft)
B.	Torque wrench 0 - 10 lbf.in (0 - 0.113 m.daN)
Referenced Procedures	
- 28-11-22, P. Block 401	Manhole Covers (Wings)
- 28-25-00, P. Block 301	Refuel/Defuel System
- 28-42-00, P. Block 501	Quantity Indicating

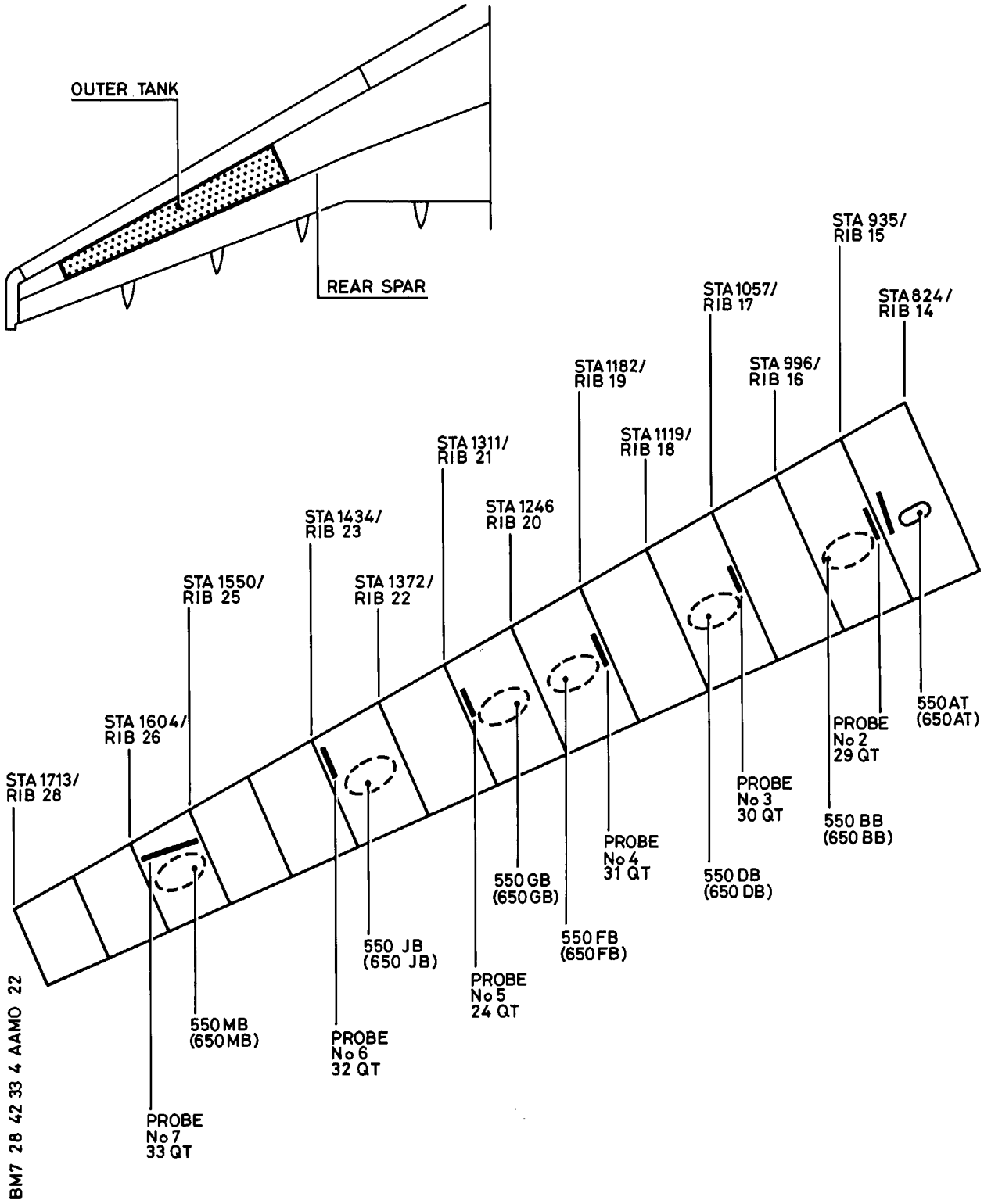
2. Procedure

(Ref. Fig. 401)
(Ref. Fig. 402)
(Ref. Fig. 403)

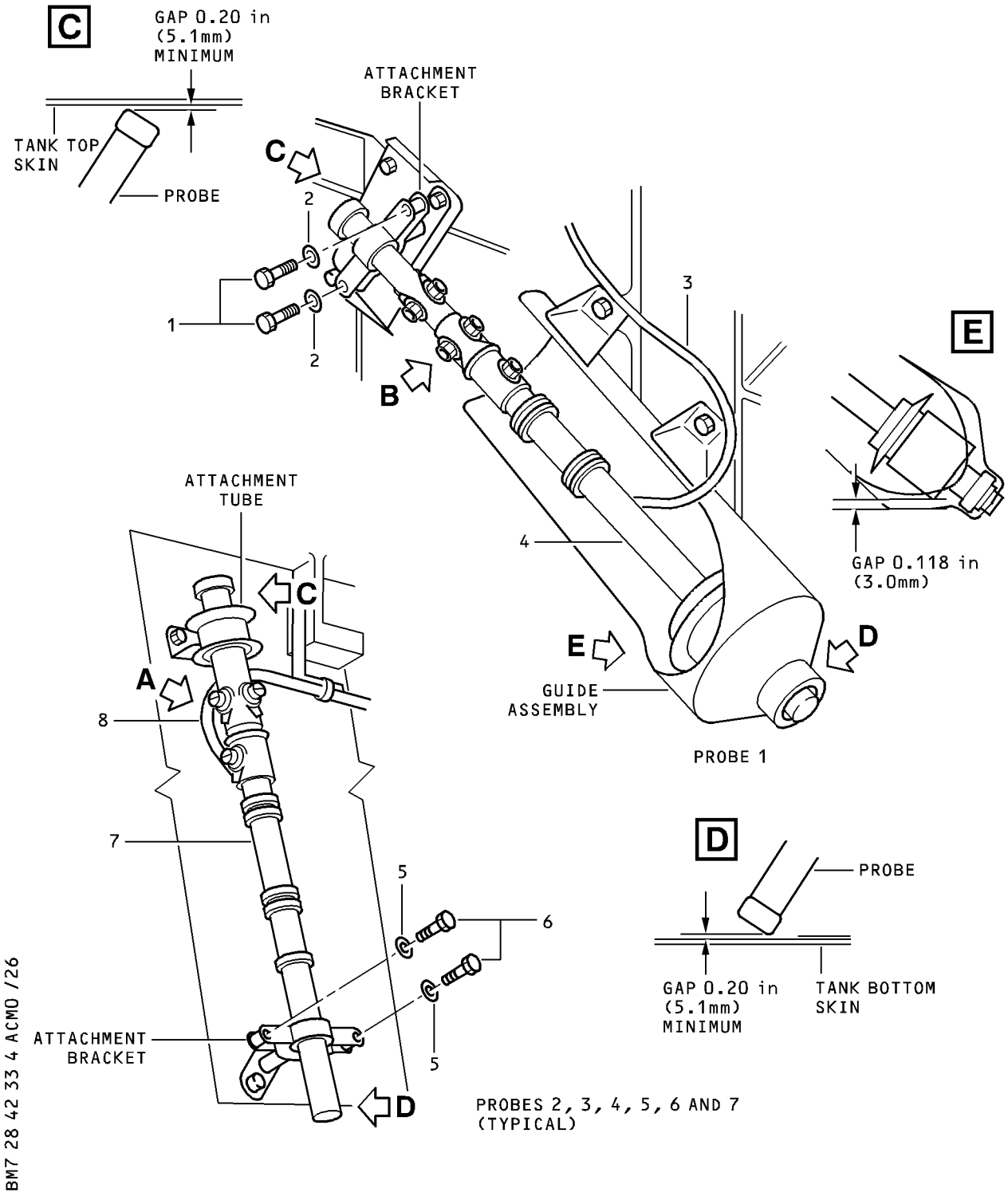
A. Job Set-Up
(1)Defuel tank (Ref. 28-25-00, P. Block 301).
(2)Open, safety and tag the following circuit breakers:

PANEL	SERVICE	IDENT.	LOCATION
132VU	FUEL/FQI/SUPPLY & IND	1QT	321/P59
132VU	FUEL/FQI/CHAN SUPPLY 1	3QT	321/P60
132VU	FUEL/FQI/CHAN SUPPLY 2	4QT	321/P61

(3)Position the access platform.

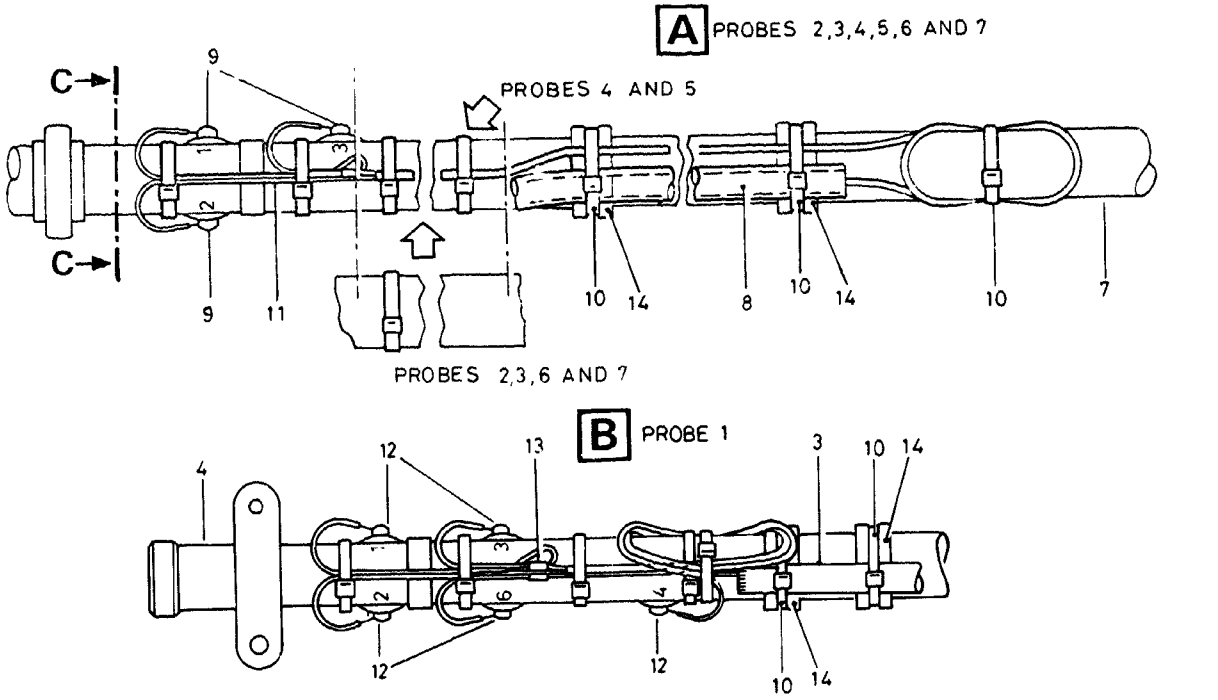


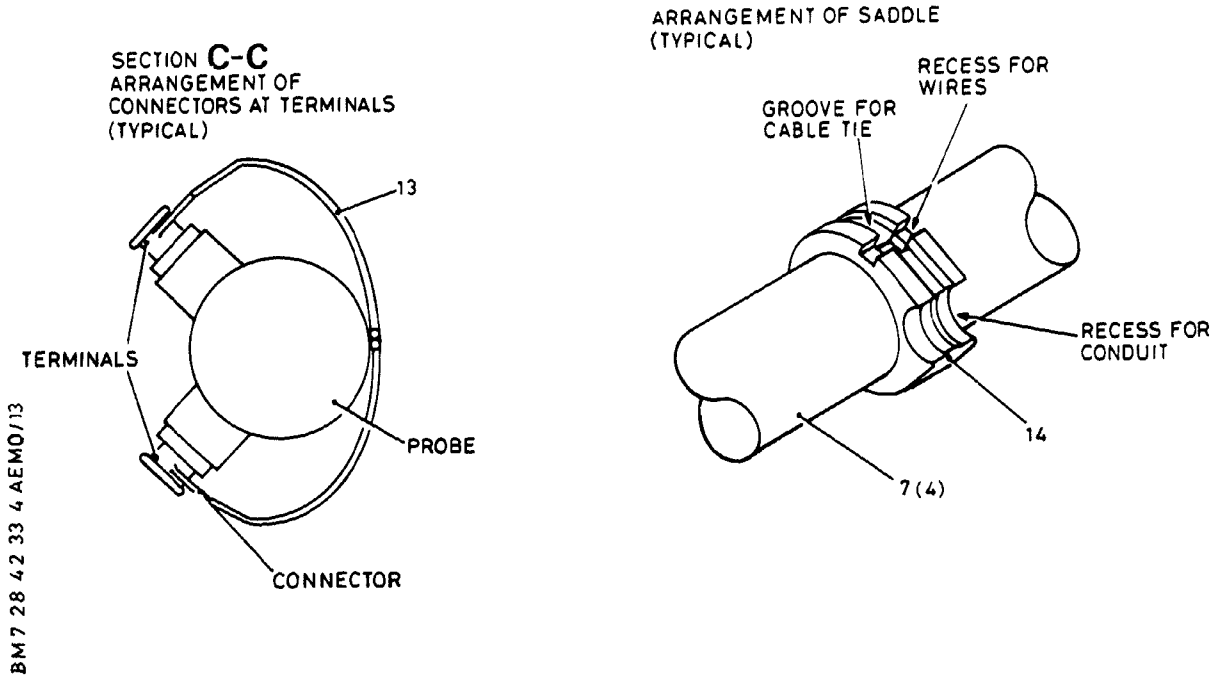
Outer Tank Probes - Location
Figure 401



Outer Tank Probes - Installation
Figure 402

R





Outer Tank Probes - Wiring
Figure 403

(4)Open the appropriate manhole cover (Ref. 28-11-22, P. Block 401).

B. Removal (Ref. Fig. 401, 402, 403)
(1)Probe 1 only
(a)Slacken terminal studs (12) and disconnect wiring from probe (4). Cap the tank electrical connectors.
(b)Cut cable ties (10) securing conduit (3) and tank wiring (13).
(c)Remove bolts (1) and washers (2) securing probe (4) to attachment bracket. Lift the probe clear of the guide assembly and remove probe from tank.

(2)Probes 2,3,4,5,6 and 7
(a)Slacken terminal studs (9) and disconnect wiring from probe (7). Cap the tank electrical connectors.
(b)Cut cable ties (10) securing conduit (8) and tank wiring (11).
(c)Remove bolts (6) and washers (5) securing probe (7) to lower attachment bracket. Slide probe clear of upper attachment tube assembly and remove probe from tank.

C. Preparation for Installation
(1)Inspect conduit, wiring and electrical connectors for serviceability.

D. Installation (Ref. Fig. 401, 402, 403)
(1)Clean and inspect for correct condition of the component interfaces, wiring and electrical connectors.

(2)Probe 1 only
(a)Remove caps from electrical connectors on tank wiring.
(b)Connect tank wiring connectors to appropriate terminals on probe (4) and torque tighten terminal studs (12) to 9 lbf.in (0.102 m.daN).

NOTE : Make certain the wire to terminal 2 is routed on the opposite side of the probe to terminals 3 and 6.

(c)Position conduit (3) and wiring(13) in recesses in saddles (14) coiling any surplus wiring and secure with specified cable ties (10). Tighten the cable ties using the proprietary tool at the minimum tension setting.

NOTE: Use colored cable ties (not yellow or white) to aid location of ties when covered by residual fluid.

R WARNING : THIS INSTRUCTION IS APPLICABLE TO A CRITICAL DESIGN
R CONFIGURATION CONTROL LIMITATION (CDCCL) ITEM. CAREFULLY OBEY
R ALL GIVEN INSTRUCTIONS WHEN YOU DO THIS STEP. IF YOU DO NOT
R OBEY THESE INSTRUCTIONS, A DANGEROUS CONDITION CAN OCCUR THAT
R CAN CAUSE A POSSIBLE FUEL TANK EXPLOSION.

(d)Locate lower end of probe (4) into guide assembly and secure probe to attachment bracket with washers (2) and bolts (1). Make sure

that the gaps between the probe and top and bottom skins are correct. Make sure that the gap between the compensator and the guide assembly is correct.

NOTE : The two bolts securing the probe to its attachment bracket are of different sizes.

(3)Probes 2,3,4,5,6 and 7
(a)Remove caps from electrical connectors on tank wiring.
(b)Connect tank wiring connectors to appropriate terminals on probe (7) and torque-tighten terminal studs to 9 lbf.in (0.102 m.daN).

NOTE : Make certain the wire to terminal 2 is routed at least 130 deg away from terminal 3.

(c)Position conduit (8) and wiring (11) in recesses in saddles (14) any surplus wiring and secure with specified cable ties (10). Tighten the cable ties using the proprietary tool at the minimum tension setting.

NOTE: Use colored cable ties (not yellow or white) to aid location of ties when covered by residual fuel.

R WARNING : THIS INSTRUCTION IS APPLICABLE TO A CRITICAL DESIGN
R CONFIGURATION CONTROL LIMITATION (CDCCL) ITEM. CAREFULLY OBEY
R ALL GIVEN INSTRUCTIONS WHEN YOU DO THIS STEP. IF YOU DO NOT
R OBEY THESE INSTRUCTIONS, A DANGEROUS CONDITION CAN OCCUR THAT
R CAN CAUSE A POSSIBLE FUEL TANK EXPLOSION.

(d)Slide probe (7) into upper attachment tube and secure probe to lower attachment with washers (5) and bolts (6). Make certain that gaps between probe and top and bottom skins are correct.

NOTE : The two bolts securing the probe to its attachment bracket are of different sizes.

E. Test
(1)Perform the following tests (Ref. 28-42-00, P. Block 501):
- the functional test (capacitance measurement - input to computer).
- the operational (BITE) test.

F. Close-Up
(1)Make certain that working area is clean and free of tools and miscellaneous items of equipment.
(2)Install the manhole cover (Ref. 28-11-22, P. Block 401.)
(3)Remove safety clips and tags and close circuit breakers 1QT, 3QT and 4QT.
(4)Remove all ground handling and maintenance equipment, standard and special tools, together with ground power and replenish equipment, all access equipment and miscellaneous items.

INNER TANK PROBE HARNESS - REMOVAL/INSTALLATION

WARNING: PUT THE SAFETY DEVICES AND THE WARNING NOTICES IN POSITION BEFORE YOU START A TASK ON OR NEAR:
- THE FLIGHT CONTROLS
- THE FLIGHT CONTROL SURFACES
- THE LANDING GEAR AND RELATED DOORS
- COMPONENTS THAT MOVE.

OBEY THE SAFETY PRECAUTIONS IN 28-00-00, P. BLOCK 301 AND 28-10-00, P. BLOCK 301.

MAKE SURE YOU HAVE THE CORRECT FIRE FIGHTING EQUIPMENT AVAILABLE.

MAKE SURE THAT ALL THE CIRCUITS IN MAINTENANCE ARE ISOLATED BEFORE YOU SUPPLY ELECTRICAL POWER TO THE AIRCRAFT.

USE SOLVENTS/CLEANING AGENTS, SEALANTS AND OTHER SPECIAL MATERIALS ONLY WITH A GOOD SUPPLY OF AIR.
OBEY THE MANUFACTURERS INSTRUCTIONS.
DO NOT GET THEM IN YOUR MOUTH.
PUT ON PROTECTIVE CLOTHING.
DO NOT SMOKE.
DO NOT BREATHE THE GAS.
THESE MATERIALS ARE POISONOUS AND FLAMMABLE AND SKIN IRRITANTS.
GET MEDICAL HELP IF YOUR SKIN OR EYES BECOME IRRITATED.

1. Reason for the Job

A. To replace the inner tank probe harness.

NOTE: To replace the probe harness it will be necessary to remove the complete harness assembly which consists of the probe harness and the sensor harness.

2. Equipment and Materials

ITEM	DESIGNATION
A.	Access Platform, 4 m (13 ft)
B.	Circuit Breaker Safety Clips and Tags
C. Material No. 09-002	Sealants (Ref. 20-31-00)
D. Material No. 11-003	Cleaning Agents (Ref. 20-31-00)
E.	Torque Wrench capable of 33 - 90 lbf.in (0.372 - 1.100 m.daN)
F.	Lint-free Cloth.
G.	Lockwire, Corrosion Resistant Steel,

ITEM	DESIGNATION
	Dia 0.8 mm (0.032 in.).
H.	Plastic Spatula
J.	Warning Notices - Open Fuel Tanks
K.	Adhesive Tape

Referenced Procedures

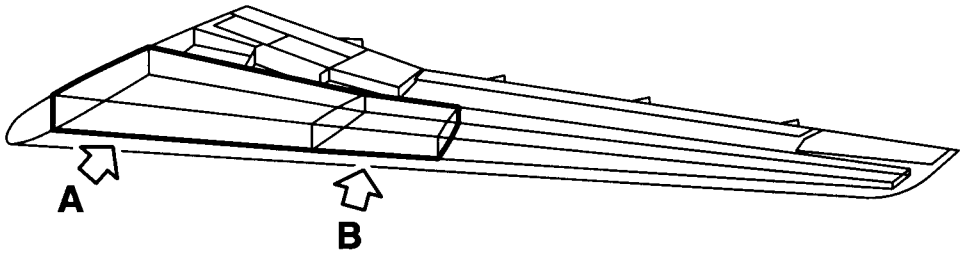
- 12-11-28, P. Block 301	Replenishing of Fuel Tanks
- 27-50-00, P. Block 301	Flaps
- 28-00-00, P. Block 301	Fuel - General
- 28-10-00, P. Block 301	Storage
- 28-11-22, P. Block 401	Manhole Cover (Wing)
- 28-25-00, P. Block 301	Refuel/Defuel System
- 28-42-00, P. Block 501	Quantity Indicating
- 28-42-32, P. Block 401	Fuel Quantity Probes
- 28-46-21, P. Block 401	Fuel Level Sensors
- 28-46-28, P. Block 401	Calibration Sensor

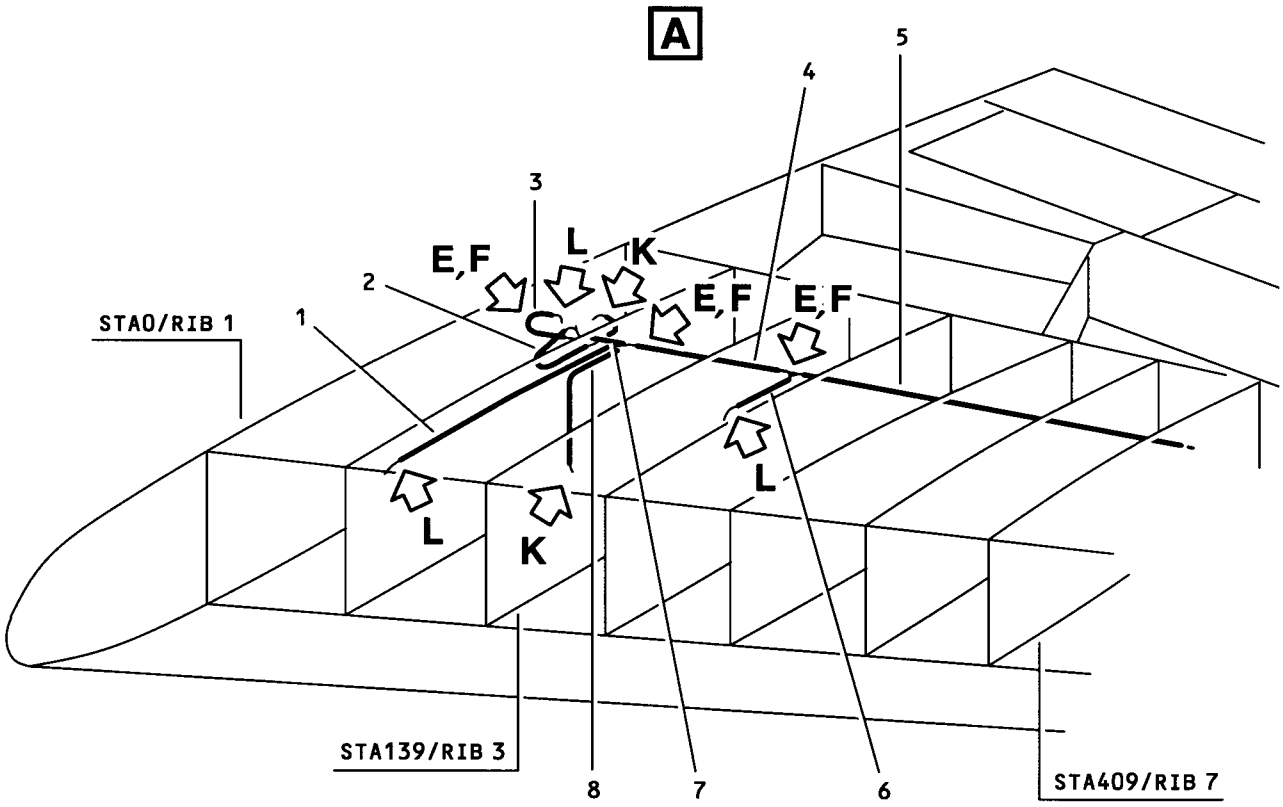
3. Procedure
   (Ref. Fig. 401) (Sheet 1/3)
   (Ref. Fig. 401) (Sheet 2/3)
   (Ref. Fig. 401) (Sheet 3/3)

A. Job Set-Up
   (1)Fully extend the flaps (Ref. 27-50-00, P. Block 301).
   (2)Put the warning notices in position.
   (3)Defuel the applicable inner tank (Ref. 28-25-00, P. Block 301).
   (4)Put the access platform in position below zone 581(681) and remove the access panels 581CB(681CB).
   (5)Remove the manhole covers 540AB(640AB), 540BB(640BB), 540CB(640CB), 540DB(640DB), 540EB(640EB), 540FB(640FB), 540GB(640GB), 540HB(640HB) (Ref. 28-11-22, P. Block 401).
   (6)Open safety and tag the circuit breakers that follow:

PANEL	SERVICE	IDENT.	LOCATION
132VU	FUEL/FQI/SUPPLY AND IND	1QT	321/P59
132VU	FUEL/FQI/CHAN SUPPLY 1	3QT	321/P60
132VU	FUEL/FQI/CHAN SUPPLY 2	4QT	321/P61
22VU	FUEL/TK LO LVL	1QJ	208/B26
22VU	FUEL/TK LO LVL	2QJ	208/B27
132VU	FUEL/FUELLING/OVERFLOW	5QJ	321/J58
132VU	FUEL/FUELLING/HI LVL	6QJ	321/J57

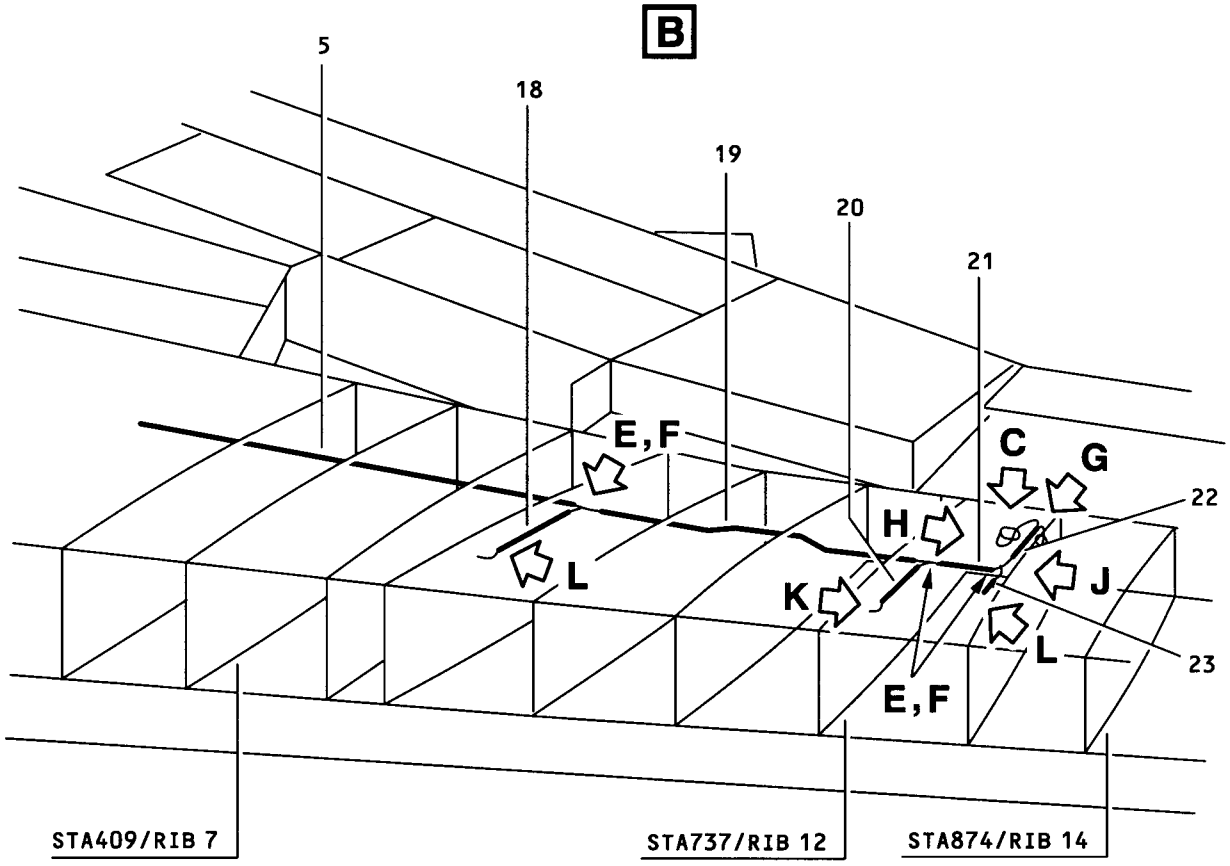
B. Removal





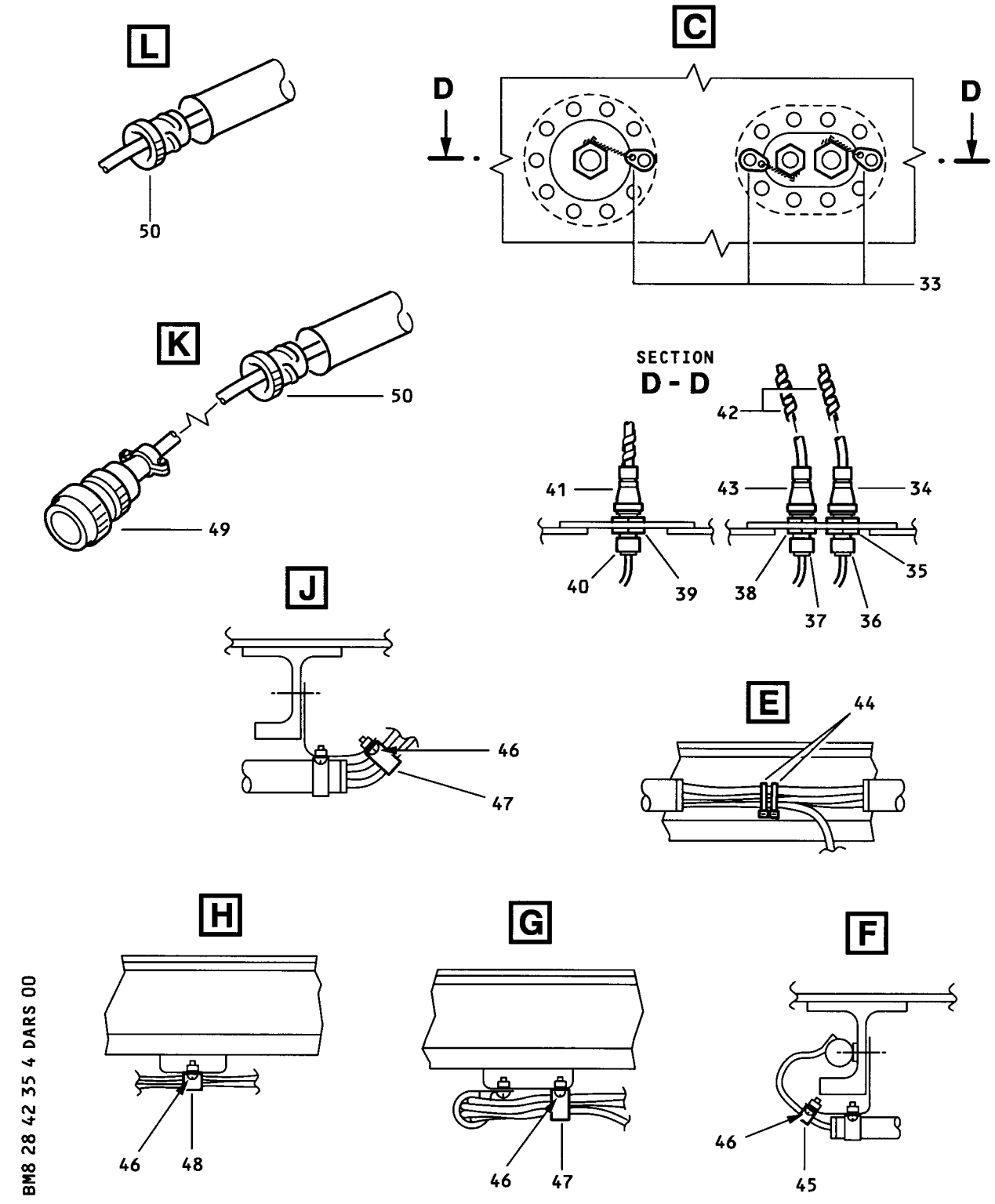
BM8 28 42 35 4 DARA 00

Harness - Installation
Figure 401



BM8 28 42 35 4 DARJ 00

Harness - Installation
Figure 401



Harness - Installation
Figure 401

(1)Disconnect the probe harness from the fuel-quantity probes 1 thru 5 (Ref. 28-42-32, P. Block 401).
(2)Disconnect the sensor harness from the fuel-level sensors (Ref. 28-46-21, P. Block 401).
(3)Disconnect the sensor harness from the calibration sensor (Ref. 28-46-28, P. Block 401).

(4)Outside the tank at the rear-spar between RIB 12 (STA 737) and RIB 13 (STA 813)):
  (a)Disconnect the plugs (36) and (37) from the probe harness connectors (34) and (43).
  (b)Disconnect the plug (40) from the sensor harness connector (41).
  (c)Remove the sealant from the harness connector retaining-nuts (35), (38) and (39) with a plastic spatula.
  (d)Remove and discard the lockwire from the locking tabs (33) and the harness connector retaining-nuts.
  (e)Remove the harness connector retaining-nuts (35), (38) and (39).

(5)Inside the tank at the rear-spar between RIB 12 (STA 737) and RIB 13 (STA 813):
  (a)Pull the probe harness connectors (34) and (43) through the tank-wall into the tank.
  (b)Pull the sensor harness connector (41) through the tank-wall into the tank.
  (c)At each location K, disconnect the sensor harness connectors (49) from:
    - the high-level sensor cable (between RIB 12 and RIB 13).
    - the low-level sensor cable (between RIB 1 (STA 0) and RIB 2 (STA 67))
    - the calibration sensor cable (between RIB 2 (STA 67) and RIB 3 (STA 139)).

  CAUTION: YOU MUST REMOVE ALL THE DISCARDED ITEMS FROM THE FUEL TANKS. THEY CAN CAUSE DAMAGE.

  (d)Cut and remove the cable ties (44) from the harness assembly and carefully remove them from the tank.
  (e)Remove the screws (46) and all the cable clips (45), (47) and (48) from the harness assembly.
(6)At each probe and sensor position, put adhesive tape around the ends of the disconnected harness assembly. This will help the removal of the harness assembly through the conduits.
(7)Pull the harness through the conduits at locations K and L.
(8)Start at RIB 2 (STA 67) and carefully pull the complete harness assembly through the conduits in an outboard direction to RIB 13 (STA 813).

CAUTION: DO NOT DAMAGE THE HARNESS CONNECTORS DURING THE REMOVAL OF THE HARNESS ASSEMBLY FROM THE FUEL TANK.

(9)Remove the complete harness assembly through the manhole 540GB(640GB).
(10)Put the harness assembly on a protective surface.
(11)Isolate the probe harness from the sensor harness.
(12)If a new harness is to be installed, remove the coiled strips (42)

from the probe harness. Measure the length of the coiled strips (42) and write it on a piece of paper.

C. Preparation for installation

(1)If the original probe harness is to be installed, proceed to step (3).

(2)If a new probe harness is to be installed, do the steps that follow:

(a)Cut the new coiled strips (42) to the same length as the measurement on the piece of paper in step B. (12).

(b)Install the new coiled strips (42) to come against the probe harness connectors (35) and (36).

(3)Put the probe harness adjacent to the sensor harness on a protective surface.

(4)Wind adhesive tape tightly around the ends of the harness assembly at each probe and sensor position. Make sure the harness assembly does not twist or bend.

(5)Use a clean lint-free cloth with cleaning agent (Material No. 11-003) to remove all the sealant from the harness connector/rear-spar interface.

D. Installation.

CAUTION: DO NOT DAMAGE THE HARNESS CONNECTORS WHEN PUTTING THE HARNESS ASSEMBLY INTO THE FUEL TANK.

(1)Carefully put the harness assembly through the manhole 540GB(640GB) into the tank.

CAUTION: DO NOT USE A DRAW-WIRE OR EQUIVALENT TO INSTALL THE HARNESS ASSEMBLY THROUGH THE CONDUITS.
DO NOT USE FORCE TO INSTALL THE HARNESS ASSEMBLY THROUGH THE CONDUITS.

(2)At conduit 22:

(a)Carefully push the taped ends of the harness assembly into the end of the conduit adjacent to the rear-spar.

(b)Remove the end cap (50) from the opposite end of the conduit and push the harness assembly through the conduit.

(c)When the harness assembly comes out of the conduit, install the end cap (50) onto the harness assembly and push it into the conduit.

(3)Repeat the procedure at step (2) for conduits (23), (21), (20), (19), (18), (5), (6), (4), (8), (7), (3). (2) and (1).

NOTE 1: When installing the harness assembly through the conduits (21), (19), (5), (4), (7), and (3), push the harness assembly in an inboard direction.

NOTE 2: If the harness assembly does not move freely inside the conduit, remove the harness assembly and replace the adhesive tape.

(4)When the cables are in the correct position for connection, remove the adhesive tape from the ends of the harness assembly.

(5)At the rear-spar between RIB 12 (STA 737) and RIB 13 (STA 813):
(a)Put the probe harness connectors (34) and (43) through the rear-spar.
(b)Install the probe harness connector retaining-nuts (35) and (38).
(c)Put the sensor harness connector (41) through the rear-spar tank-wall.
(d)Install the sensor harness connector retaining-nut (39).
(e)Torque the harness connector retaining-nuts (39) and (35) to between 79 and 89 lbf. in. (0.9 and 1.0 m.daN).
(f)Torque the harness connector retaining-nut (38) to between 33.6 and 38.4 lbf. in. (0.38 and 0.43 m.daN).
(g)Safety the harness connector retaining-nuts (35), (38) and (39) to the the locking tabs (33) with lockwire.
(h)Apply sealant (Material No. 09-002) to the harness connector retaining -nuts (35), (38) and (39). Make sure the sealant does not go into the harness connector body.
(j)Connect the plug (40) to the sensor harness connector (41).
(k)Connect the plugs (36) and (37) to the probe harness connectors (34) and (43).
(6)At each location K, connect the harness connector (49) to:
- the high-level sensor cable (between RIB 12 and RIB 13)
- the low-level sensor cable (between RIB 1 and RIB 2)
- the calibration sensor cable (between RIB 2 and RIB 3).
(7)Connect the fuel quantity probes 1 thru 5 (Ref 28-42-32, P. Block 401).
(8)Connect the fuel level sensors (Ref. 28-46-21, P. Block 401).
(9)Connect the calibration sensor (Ref. 28-46-28, P. Block 401).
(10)Install the cable ties (44) onto the harness assembly.
(11)Install the cable clips (45), (47) and (48) onto the harness with the screws (46).
(12)Make sure that the work area is clean and clear of tools and other items of equipment.
(13)Install the manhole covers: 540AB(640AB), 540BB(640BB), 540CB(640CB), 540DB(640DB), 540EB(640EB), 540FB(640FB), 540GB(640GB), 540HB(640HB) (Ref. 28-11-22, P. Block 401).

E. Preparation for Test
(1)Remove the safety clips and the tags and close the circuit breakers 1QT (321/P59), 3QT (321/P60), and 4QT (321/P61) 1QJ (208/B26), 2QJ (208/B27), 5QJ (321/J58) and 6QJ (321/J57).
(2)Refuel the applicable inner tank (Ref. 12-11-28, P. Block 301).
(3)Make sure the harness connectors (34), (43) and (41) at the rear-spar/ tank-wall interfaces do not leak.

F. Test
(1)Do a functional test of the fuel-quantity indicating system (Ref. 28-42-00, P. Block 501).

G. Close-Up
(1)In zone 581(681):
(a)Make sure that the work area is clean and clear of tools and other items of equipment.
(b)Install the access panels 581CB(681CB).
(c)Remove the access platform.

(2)Remove the warning notices.
(3)Fully retract the flaps (Ref. 27-50-00. P. Block 301).
(4)Make sure that the work area is clean and clear of tools and other items of equipment.

OUTER TANK PROBE HARNESS - REMOVAL/INSTALLATION

WARNING: PUT THE SAFETY DEVICES AND THE WARNING NOTICES IN POSITION BEFORE YOU START A TASK ON OR NEAR:
- THE FLIGHT CONTROLS
- THE FLIGHT CONTROL SURFACES
- THE LANDING GEAR AND RELATED DOORS
- COMPONENTS THAT MOVE.

OBEY THE SAFETY PRECAUTIONS IN 28-00-00, P. BLOCK 301 AND 28-10-00, P. BLOCK 301.

MAKE SURE YOU HAVE THE CORRECT FIRE FIGHTING EQUIPMENT AVAILABLE.

MAKE SURE THAT ALL THE CIRCUITS IN MAINTENANCE ARE ISOLATED BEFORE YOU SUPPLY ELECTRICAL POWER TO THE AIRCRAFT.

USE SOLVENTS/CLEANING AGENTS, SEALANTS AND OTHER SPECIAL MATERIALS ONLY WITH A GOOD SUPPLY OF AIR.
OBEY THE MANUFACTURERS INSTRUCTIONS.
DO NOT GET THEM IN YOUR MOUTH.
PUT ON PROTECTIVE CLOTHING.
DO NOT SMOKE.
DO NOT BREATHE THE GAS.
THESE MATERIALS ARE POISONOUS AND FLAMMABLE AND SKIN IRRITANTS.
GET MEDICAL HELP IF YOUR SKIN OR EYES BECOME IRRITATED.

1. Reason for the Job

A. To replace the outer tank probe harness.

NOTE: To replace the probe harness it will be necessary to remove the complete harness assembly which consists of the probe harness and the sensor harness.

2. Equipment and Materials

ITEM	DESIGNATION
A.	Access Platform, 4 m (13 ft)
B.	Circuit Breaker Safety Clips and Tags
C. Material No. 09-002	Sealants (Ref. 20-31-00)
D. Material No. 11-003	Cleaning Agents (Ref. 20-31-00)
E.	Torque Wrench capable of 33 - 90 lbf.in (0.372 - 1.100 m.daN)
F.	Lint-free Cloth.
G.	Lockwire, Corrosion Resistant Steel,

ITEM	DESIGNATION
	Dia 0.8 mm (0.032 in.).
H.	Plastic Spatula
J.	Warning Notices - Open Fuel Tanks
K.	Adhesive Tape

Referenced Procedures

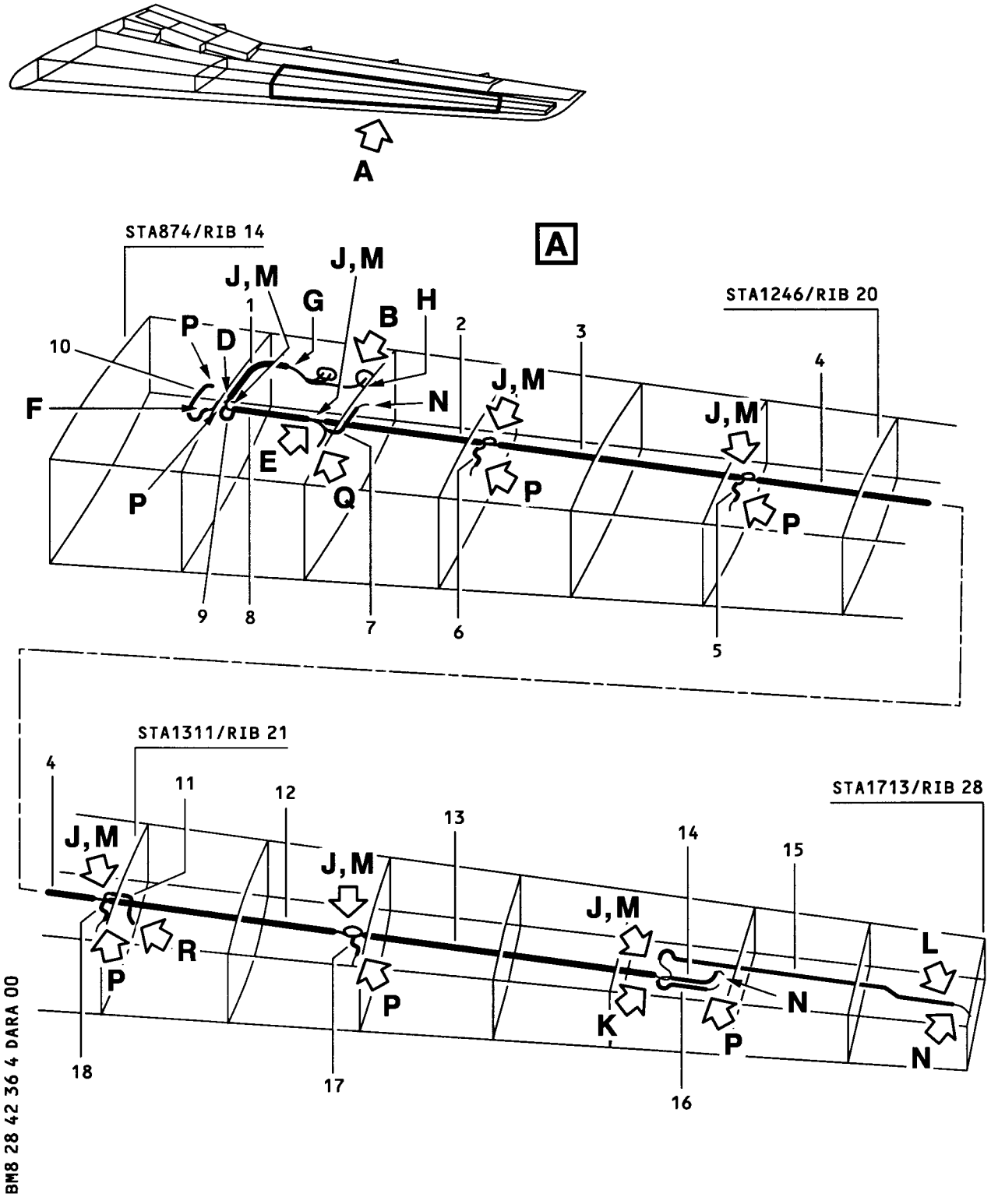
- 12-11-28, P. Block 301	Replenishing of Fuel Tanks
- 27-50-00, P. Block 301	Flaps
- 28-00-00, P. Block 301	Fuel - General
- 28-10-00, P. Block 301	Storage
- 28-11-22, P. Block 401	Manhole Cover (Wing)
- 28-25-00, P. Block 301	Refuel/Defuel System
- 28-42-00, P. Block 501	Quantity Indicating
- 28-42-33, P. Block 401	Fuel Quantity Probes
- 28-46-21, P. Block 401	Fuel Level Sensors
- 28-46-22, P. Block 401	Fuel overflow sensors

3. Procedure
   (Ref. Fig. 401)
   (Sheet 1/3)
   (Ref. Fig. 401)
   (Sheet 2/3)
   (Ref. Fig. 401)
   (Sheet 3/3)

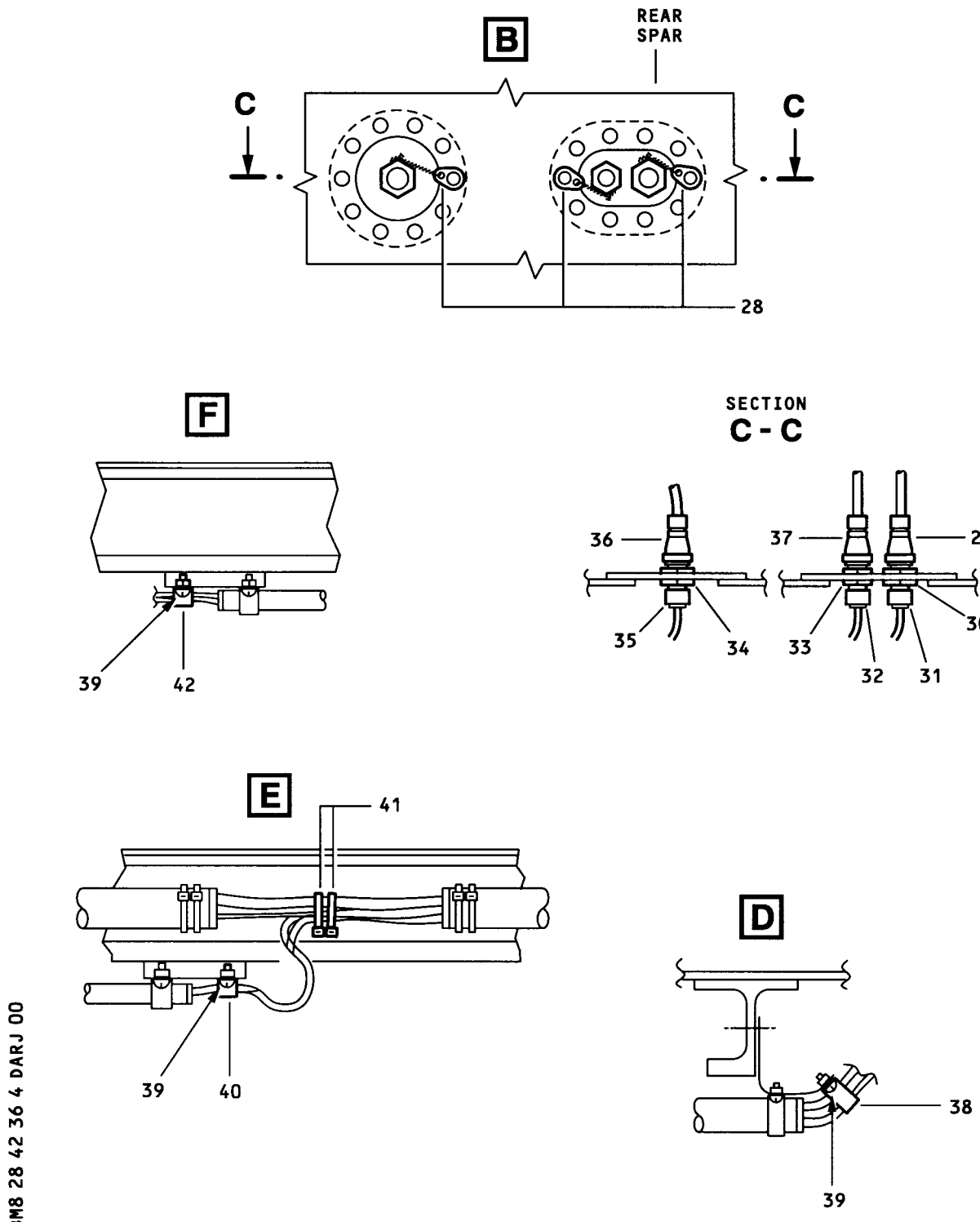
A. Job Set-Up
   (1)Fully extend the flaps (Ref. 27-50-00, P. Block 301).
   (2)Put the warning notices in position.
   (3)Defuel the applicable outer tank (Ref. 28-25-00, P. Block 301).
   (4)Put the access platform in position below zone 581(681) and remove the access panels 581CB(681CB).
   (5)Remove the manhole covers 550AB(650AB), 550BB(650BB), 550CB(650CB), 550DB(650DB), 550EB(650EB), 550FB(650FB), 550GB(650GB), 550HB(650HB), 550JB(650JB), 550KB(650KB), 550LB(650LB), 550MB(650MB), 550NB(650NB) and 550PB(650PB) (Ref. 28-11-22, P. Block 401).
   (6)Open safety and tag the circuit breakers that follow:

PANEL	SERVICE	IDENT.	LOCATION
132VU	FUEL/FQI/SUPPLY AND IND	1QT	321/P59
132VU	FUEL/FQI/CHAN SUPPLY 1	3QT	321/P60
132VU	FUEL/FQI/CHAN SUPPLY 2	4QT	321/P61
22VU	FUEL/TK LO LVL	1QJ	208/B26
22VU	FUEL/TK LO LVL	2QJ	208/B27
132VU	FUEL/FUELLING/OVERFLOW	5QJ	321/J58
132VU	FUEL/FUELLING/HI LVL	6QJ	321/J57

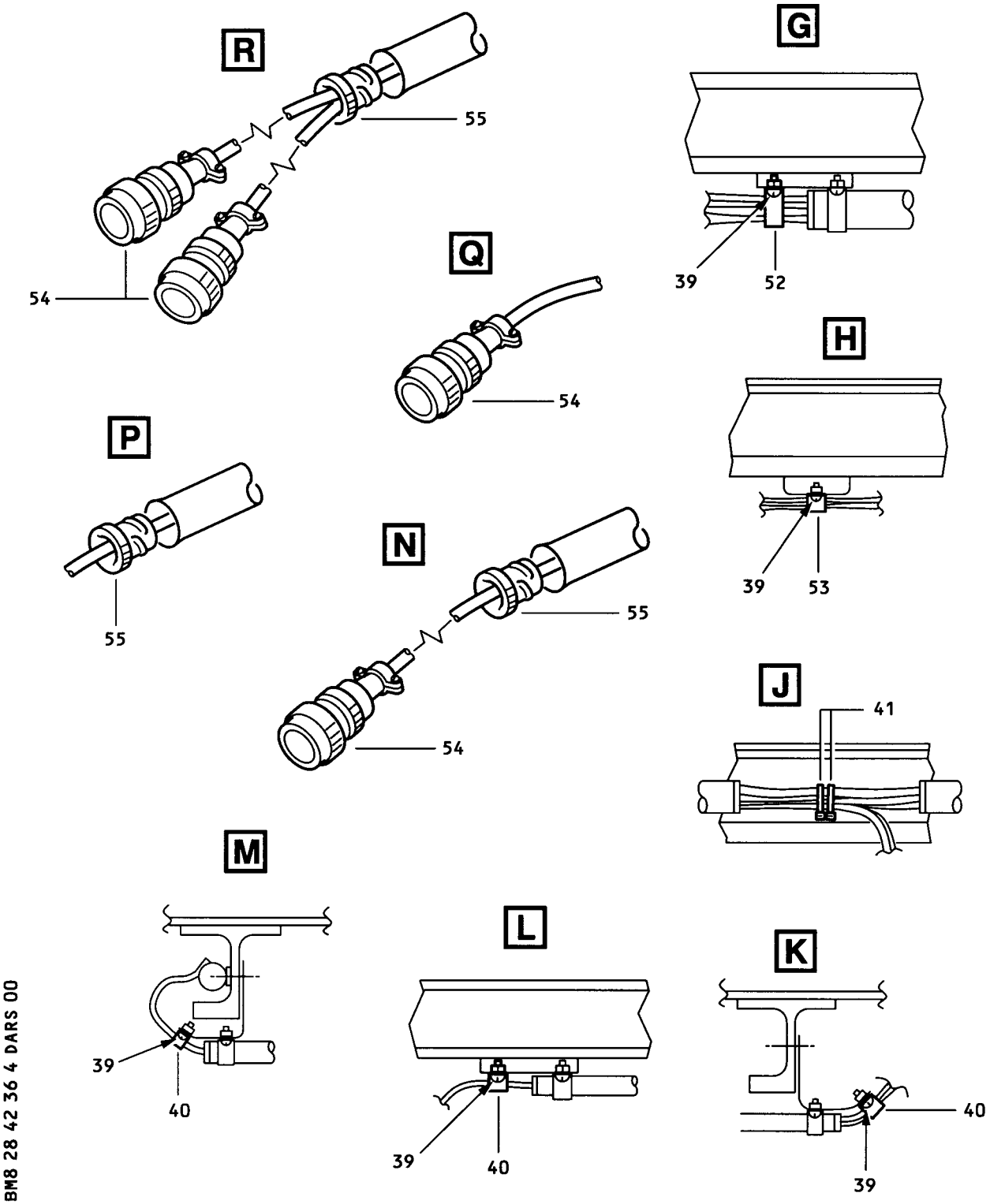
B. Removal



Harness - Installation
Figure 401



Harness - Installation
Figure 401



Harness - Installation
Figure 401

(1)Disconnect the probe harness from the fuel-quantity probes 1 thru 7 (Ref. 28-42-33, P. Block 401).
(2)Disconnect the sensor harness from the fuel overflow sensor (Ref. 28-46-22, P. Block 401).
(3)Disconnect the sensor harness from the fuel-level sensors (Ref. 28-46-21, P. Block 401).

(4)Outside the tank at the rear-spar between RIB 15 (STA 935) and RIB 16 (STA 996)):
  (a)Disconnect the plugs (32) and (31) from the probe harness connectors (37) and (29).
  (b)Disconnect the plug (35) from the sensor harness connector (36).
  (c)Remove the sealant from the harness connector retaining-nuts (34), (33) and (30) with a plastic spatula.
  (d)Remove and discard the lockwire from the locking tabs (28) and the harness connector retaining-nuts.
  (e)Remove the harness connector retaining-nuts (34), (33) and (30).

(5)Inside the tank at the rear-spar between RIB 15 (STA 935) and RIB 16 (STA 996):
  (a)Pull the probe harness connectors (37) and (29) through the tank-wall into the tank.
  (b)Pull the sensor harness connector (36) through the tank-wall into the tank.
  (c)At each location N, Q and R disconnect the sensor harness connectors (37) from:
    - the high-level sensor cable (between RIB 15 (STA 935), RIB 16. (STA 996) RIB 25 (STA 1550) and RIB 26 (STA 1604))
    - the low-level sensor cable (between RIB 15 and RIB 16)
    - the overflow sensor cable at RIB 28 (STA 1713)
    - the underfull sensor cable (between RIB 21 (STA 1311) and RIB 22 (STA 1372)).

  CAUTION: YOU MUST REMOVE ALL THE DISCARDED ITEMS FROM THE FUEL TANKS. THEY CAN CAUSE DAMAGE.

  (d)Cut and remove the cable ties (41) from the harness assembly and carefully remove them from the tank.
  (e)Remove the screws (39) and all the cable clips (42), (40), (38), (52) and (53) from the harness assembly.
(6)At each probe and sensor position, put adhesive tape around the ends of the disconnected harness assembly. This will help the removal of the harness assembly through the conduits.
(7)Pull the harness through the conduits at locations N, P and R.
(8)Start at RIB 28 (STA 1713) and carefully pull the complete harness assembly through the conduits in an inboard direction to RIB 15 (STA 935).

CAUTION: DO NOT DAMAGE THE HARNESS CONNECTORS DURING THE REMOVAL OF THE HARNESS ASSEMBLY FROM THE FUEL TANK.

(9)Remove the complete harness assembly through the manhole 550BB(650BB).
(10)Put the harness assembly on a protective surface.
(11)Isolate the probe harness from the sensor harness.

C. Preparation for installation
(1)Put the probe harness adjacent to the sensor harness on a protective surface.
(2)Wind adhesive tape tightly around the ends of the harness assembly at each probe and sensor position. Make sure the harness assembly does not twist or bend .
(3)Use a clean lint-free cloth with cleaning agent (Material. No.11-003) to remove all the sealant from the harness connector/rear-spar interface.

D. Installation.

CAUTION: DO NOT DAMAGE THE HARNESS CONNECTORS WHEN PUTTING THE HARNESS ASSEMBLY INTO THE FUEL TANK.

(1)Carefully put the harness assembly through the manhole 550BB(650BB) into the tank.

CAUTION: DO NOT USE A DRAW-WIRE OR EQUIVALENT TO INSTALL THE HARNESS ASSEMBLY THROUGH THE CONDUITS.
DO NOT USE FORCE TO INSTALL THE HARNESS ASSEMBLY THROUGH THE CONDUITS.

(2)At conduit (1):
(a)Carefully push the taped ends of the harness assembly into the end of the conduit adjacent to the rear-spar.
(b)Remove the end cap (54) from the opposite end of the conduit and push the harness assembly through the conduit.
(c)When the harness assembly comes out of the conduit, install the end cap (54) onto the harness assembly and push it into the conduit.
(3)Repeat the procedure at step (2) for conduits (10), (9), (8), (7), (2), (6), (3), (5), (4), (18), (11), (12), (17), (13), (16), (14) and (15).

NOTE 1: When installing the harness assembly through the conduits (10) and (9), push the harness assembly in an inboard direction.

NOTE 2: If the harness assembly does not move freely inside the conduit, remove the harness assembly and replace the adhesive tape.

(4)When the cables are in the correct position for connection, remove the adhesive tape from the ends of the harness assembly.
(5)At the rear-spar between RIB 15 (STA 935) and RIB 16 (STA 996):
(a)Put the probe harness connectors (37) and (29) through the rear-spar.
(b)Install the probe harness connector retaining-nuts (33) and (30).
(c)Put the sensor harness connector (36) through the rear-spar tank-wall.
(d)Install the sensor harness connector retaining-nut (34).
(e)Torque the harness connector retaining-nuts (34) and (30) to between

79 and 89 lbf. in. (0.9 and 1.0 m.daN).
(f)Torque the harness connector retaining-nut (33) to between 33.6 and 38.4 lbf. in. (0.38 and 0.43 m.daN).
(g)Safety the harness connector retaining-nuts (34), (33) and (30) to the locking tabs (28) with lockwire.
(h)Apply sealant (Material No. 09-002) to the harness connector retaining-nuts (34), (33) and (30). Make sure the sealant does not go into the harness connector body.
(j)Connect the plug (35) to the sensor harness connector (36).
(k)Connect the plugs (32) and (31) to the probe harness connectors (37) and (29).
(6)At each location N, Q and R, connect the harness connectors (55) to:
- the high-level sensor cable (between RIB 15 (STA 935), RIB 16 (STA 996), RIB 25 (STA 1550) and RIB 26 (STA 1604))
- the low-level sensor cable (between RIB 15 and RIB 16)
- the overflow sensor cable (at RIB 28 (STA 1713))
- the underfull sensor cable (between RIB 21 (STA 1311) and RIB 22 (STA 1372)).

(7)Connect the fuel quantity probes 1 thru 7 (Ref 28-42-33, P. Block 401).
(8)Connect the overflow sensors (Ref. 28-46-22, P. Block 401).
(9)Connect the fuel level sensors (Ref. 28-46-21, P. Block 401).
(10)Install the cable ties (41) onto the harness assembly.
(11)Install the cable clips (42), (40), (38), (52) and (53) onto the harness with the screws (39).
(12)Make sure that the work area is clean and clear of tools and other items of equipment.
(13)Install the manhole covers: 550AB(650AB), 550BB(650BB), 550CB(650CB), 550DB(650DB), 550EB(650EB), 550FB(650FB), 550GB(650GB), 550HB(650HB), 550JB(650JB), 550KB(650KB), 550LB(650LB), 550MB(650MB), 550NB(650NB), and 550PB(650PB) (Ref. 28-11-22, P. Block 401).

E. Preparation for Test
(1)Remove the safety clips and the tags and close the circuit breakers 1QT (321/P59), 3QT (321/P60), and 4QT (321/P61)
(2)Refuel the applicable outer tank (Ref. 12-11-28, P. Block 301).
(3)Make sure the harness connectors (36), (37) and (29) at the rear-spar/tank-wall interfaces do not leak.

F. Test
(1)Do a functional test of the fuel-quantity indicating system (Ref. 28-42-00, P. Block 501).

G. Close-Up
(1)In zone 581(681):
(a)Make sure that the work area is clean and clear of tools and other items of equipment.
(b)Install the access panels 581CB(681CB).
(c)Remove the access platform.
(2)Remove the warning notices.
(3)Fully retract the flaps (Ref. 27-50-00. P. Block 301).
(4)Make sure that the work area is clean and clear of tools and other

items of equipment.

HARNESS ADAPTER PLUG - REMOVAL/INSTALLATION

R **WARNING** : LANDING GEAR - MAKE SURE THAT THE GROUND SAFETIES AND CHOCKS ARE IN
R POSITION.

R FLIGHT CONTROLS - MAKE SURE THAT THE GROUND SAFETIES AND NOTICES ARE
R IN POSITION.

R MAKE SURE THAT YOU ISOLATE THE ELECTRICAL CIRCUITS UPON WHICH WORK IS
R IN PROGRESS.

1. Equipment and Materials

ITEM	DESIGNATION
A.	Access Platform(s) - For Wing Tanks 4.5 m (15 ft) - For Center Tank 2 m (6.5 ft) - For Trim Tank 6 m (19.6 ft)
B.	Blanking Plugs/Caps
C.	Circuit Breaker Safety Clips and Tags
D.	Soft-Hair Brush
E. Material No. 15-008A, B, C, D or E	Storage Preservation (Ref. 20-31-00)
Referenced Procedures	
- 24-41-00, P. Block 301	AC External Power Control
- 28-13-00, P. Block 501	External Ventilation System
- 28-42-00, P. Block 1	Fuel Quantity Indicating System
- 28-42-38, P. Block 501	Fuel Quantity Computer (15QT)
- 32-12-11, P. Block 301	Main Gear Main Door
- 55-00-00, P. Block 301	Stabilizers - General

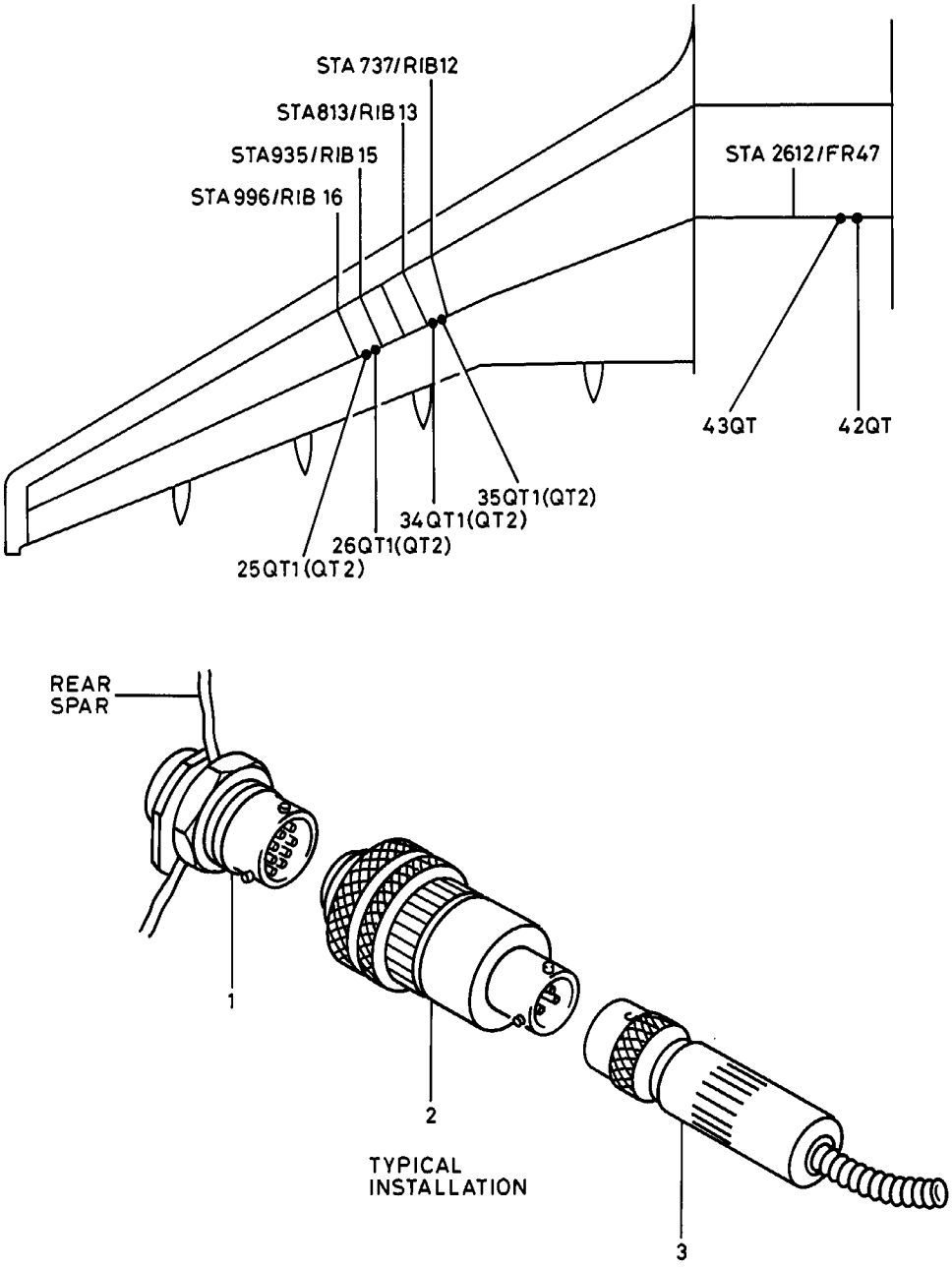
2. Procedure

(Ref. Fig. 401)
(Ref. Fig. 402)
(Ref. Fig. 403)

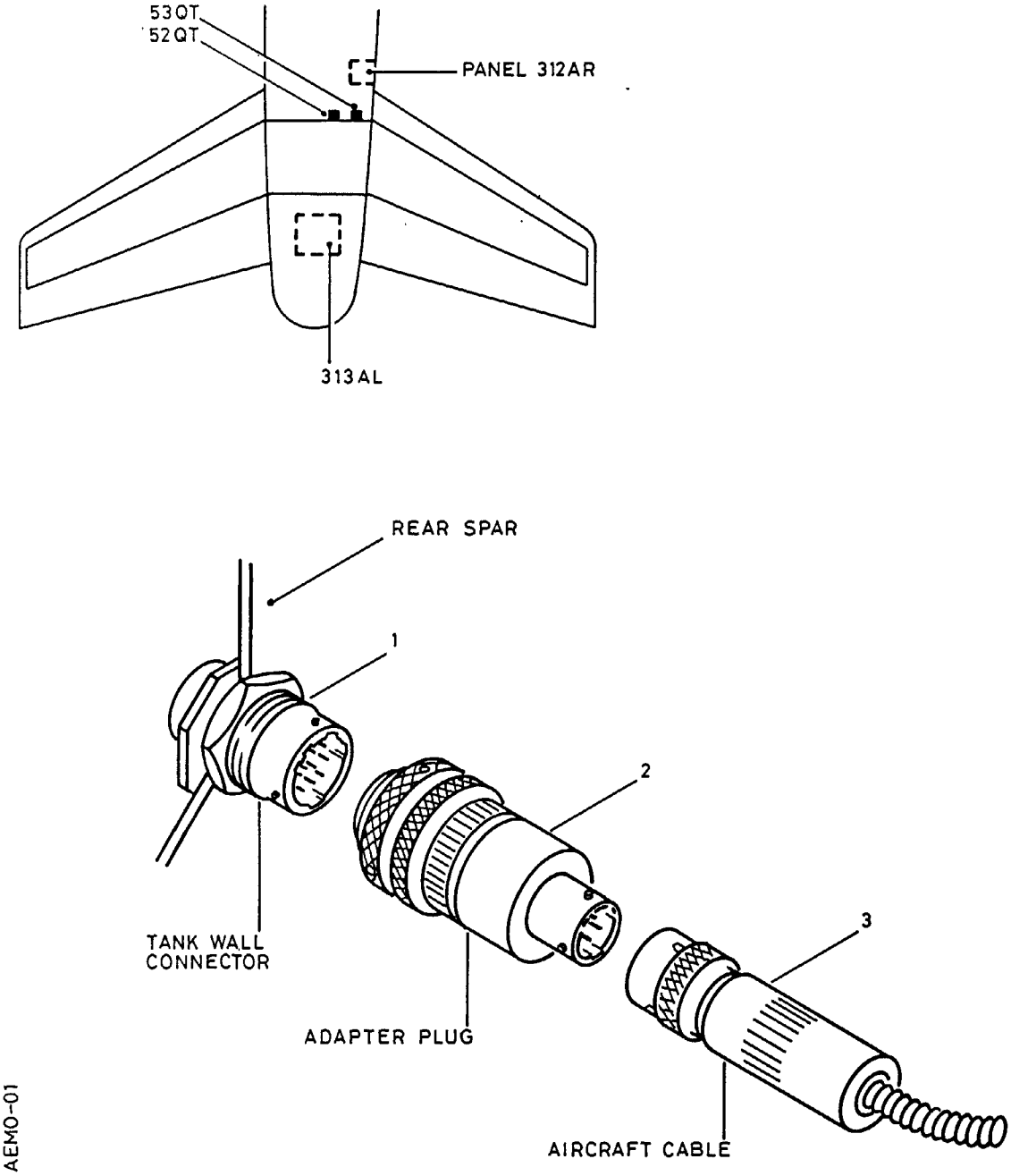
A. Job Set-Up
(1)Open, safety and tag the following circuit breakers:

PANEL	SERVICE	IDENT.	LOCATION
132VU	FUEL/FQI/SUPPLY & IND	1QT	321/P59
132VU	FUEL/FQI/CHAN SUPPLY/1	3QT	321/P60
132VU	FUEL/FQI/CHAN SUPPLY/2	4QT	321/P61

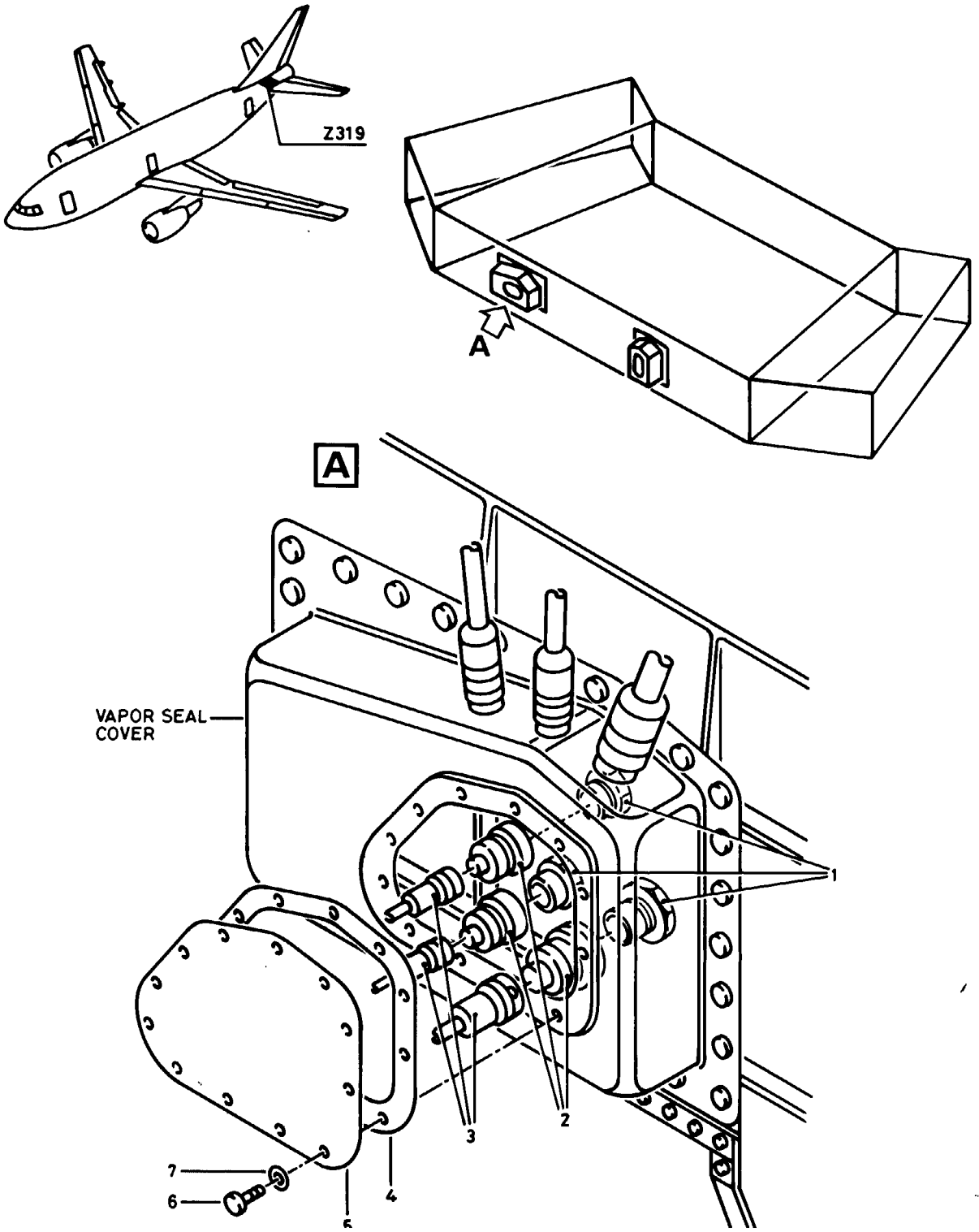
(2)Position access platform(s).
(3)Open access door:
(a)For outer tanks - 581(681)CB.
(b)For inner tanks - 581(681)BB.



Harness Adapter Plug - Removal/Installation
Figure 401



Harness Adapter Plug - Removal/Installation
Figure 402



Harness Adapter Plug - Removal/Installation
Figure 403

(c)For center tank - RH main gear main door (Ref. 32-12-11, P. Block 301).
(d)For trim tank - 312AR.

(4)Make the trimmable horizontal stabilizer (THS) and the vertical stabilizer safe (Ref. 55-00-00, P. Block 301).
(5)Gain access to the RH vapor seal cover on the front spar of the trim tank.

R NOTE : The harness adapter plugs are located on the front spar of the
R trim tank behind the RH vapor seal cover. The access panel on the
R vapor seal cover must be removed to gain access to the adapter
R plugs.

(6)Loosen the bolts (6) in the access panel (5) (in the vapor seal cover) in a symmetrical diagonal pattern.
(7)Remove the bolts (6) and the sealing washers (7).
(8)Remove the access panel (5) and the seal (4).
(9)Correspondence table

DESIGNATION	ITEM					
TANK	L OUTER	L INNER	CENTER	R INNER	R OUTER	TRIM TK
LO IMP ADAPTER	26QT1	35QT1	43QT	35QT2	26QT2	53QT
HI IMP ADAPTER	25QT1	34QT1	42QT	34QT2	25QT2	52QT

B. Removal
(1)Identify the harness adapter plug from the correspondence table.
(2)Disconnect the cable plug (3) from the harness adapter plug (2).
(3)Remove the harness adapter plug (2) from the harness receptacle (1).
(4)Put a cap on the harness receptacle (1) and the cable plug (3).

C. Installation
(1)Remove the caps from the harness receptacle (1) and the cable plug (3), and install the harness adapter plug (2) on the harness receptacle (1).
(2)Connect the cable plug (3) to the harness adapter plug (2).

CAUTION : DO NOT USE DINITROL AV 30 (MATERIAL No. 15-008) FOR THE PROTECTION OF THE ADAPTER. DINITROL AV 30 IS A PENETRANT AND CAN CAUSE DAMAGE TO THE ADAPTER.

(3)Use a soft-hair brush to apply a layer of storage preservative (Material No. 15-008A, B, C, D or E) to the adapter.

D. Test
(1)Remove the safety clips and tags and close the circuit breakers 1QT, 3QT and 4QT.
(2)Energize the aircraft electrical network (Ref. 24-41-00, P. Block 301).
(3)Do the functional test of the FUEL QTY computer (15QT) (Ref. 28-42-38, P. Block 501).
(4)Do the procedure that follows:

ACTION	RESULT
1. On panel 472VU: - place the ANN LT switch in the TEST position	On panel 472VU: - all the indicator lights come on
- place the ANN LT switch in the READ position	- all the indicator lights go off
- press (in) the SYS MONITOR pushbutton switch	- the SYS MONITOR TEST legend comes on On panel 430VU: - the FUEL QTY indicator displays the failure codes in sequence at 5 second intervals (Ref. 28-42-00, P. Block 1)
2. On panel 430VU: - make certain that the relevant tank probe failure codes are not displayed on the FUEL QTY indicator	
3. On panel 472VU: - release (out) the SYS MONITOR pushbutton switch	On panel 472VU: - the SYS MONITOR TEST legend goes off On panel 430VU: - the FUEL QTY indicator display reverts to the original reading
- place the ANN LT switch in the OFF position	

E. Close-Up

(1) De-energize the aircraft electrical network (Ref. 24-41-00, P. Block 301).

R (2) Make sure that the work area is clean and clear of all tools and other
R items of equipment.

R (3) Close the access door:

R (a) For the outer tanks - 581(681) CB.

R (b) For the inner tanks - 581(681) BB.

R (c) For the center tank - the RH main landing gear bay door (Ref.
R 32-12-11, P. Block 301).

(4) If the trim tank adapter(s) has/have been removed and installed then do steps (5) thru (11)

(5)Check the access panel seal (4) for correct condition. If necessary, discard and replace the seal.
(6)Install the access panel (5) and the seal (4) in the RH vapor seal cover. Install the bolts (6) and the sealing washers (7) and tighten the bolts (6) in a symmetrical diagonal pattern.
(7)Do the leak test of the vapor seal cover (Ref. 28-13-00, P. Block 501 paragraph 2. E.).
(8)Make sure that the working area is clean and clear of tools and miscellaneous items of equipment.
(9)Return the THS and the vertical stabilizer to the normal operating condition (Ref. 55-00-00, P. Block 301).
(10)Close the access door 312AR.
(11)Remove the access platform(s).

FUEL QUANTITY COMPUTER 15QT - REMOVAL/INSTALLATION

R **WARNING** : LANDING GEAR - MAKE SURE THAT THE GROUND SAFETIES AND CHOCKS ARE IN POSITION.

R MAKE SURE THAT YOU ISOLATE THE ELECTRICAL CIRCUITS UPON WHICH WORK IS
R IN PROGRESS.

1. Equipment and Materials

ITEM	DESIGNATION
A.	Access Platform 2 m (6.0 ft)
B.	Circuit Breaker Safety Clips and Tags
Referenced Procedures	
- 28-25-00, P. Block 301	Refuel/Defuel System
- 28-42-38, P. Block 501	Computer - Fuel Quantity

2. Procedure

(Ref. Fig. 401)

A. Job Set-Up

(1)Open, safety and tag the following circuit breakers:

PANEL	SERVICE	IDENT.	LOCATION
132VU	FUEL/FQI/SUPPLY & IND	1QT	321/P59
132VU	FUEL/FQI/CHAN SUPPLY/1	3QT	321/P60
132VU	FUEL/FQI/CHAN SUPPLY/2	4QT	321/P61

(2)Position access platform.

(3)Open access door 121 BL.

B. Removal

(1)On rack 92VU, disconnect computer input connections (1) and (2).

(2)Unscrew knurled retaining screws (4).

(3)Withdraw computer (3) from rack. Cap input and output connectors.

C. Installation

(1)Remove output connectors protective caps and check connectors for correct condition.

(2)Slide computer (3) into rack and engage output connectors at rear of rack.

(3)Tighten knurled retaining screws (4).

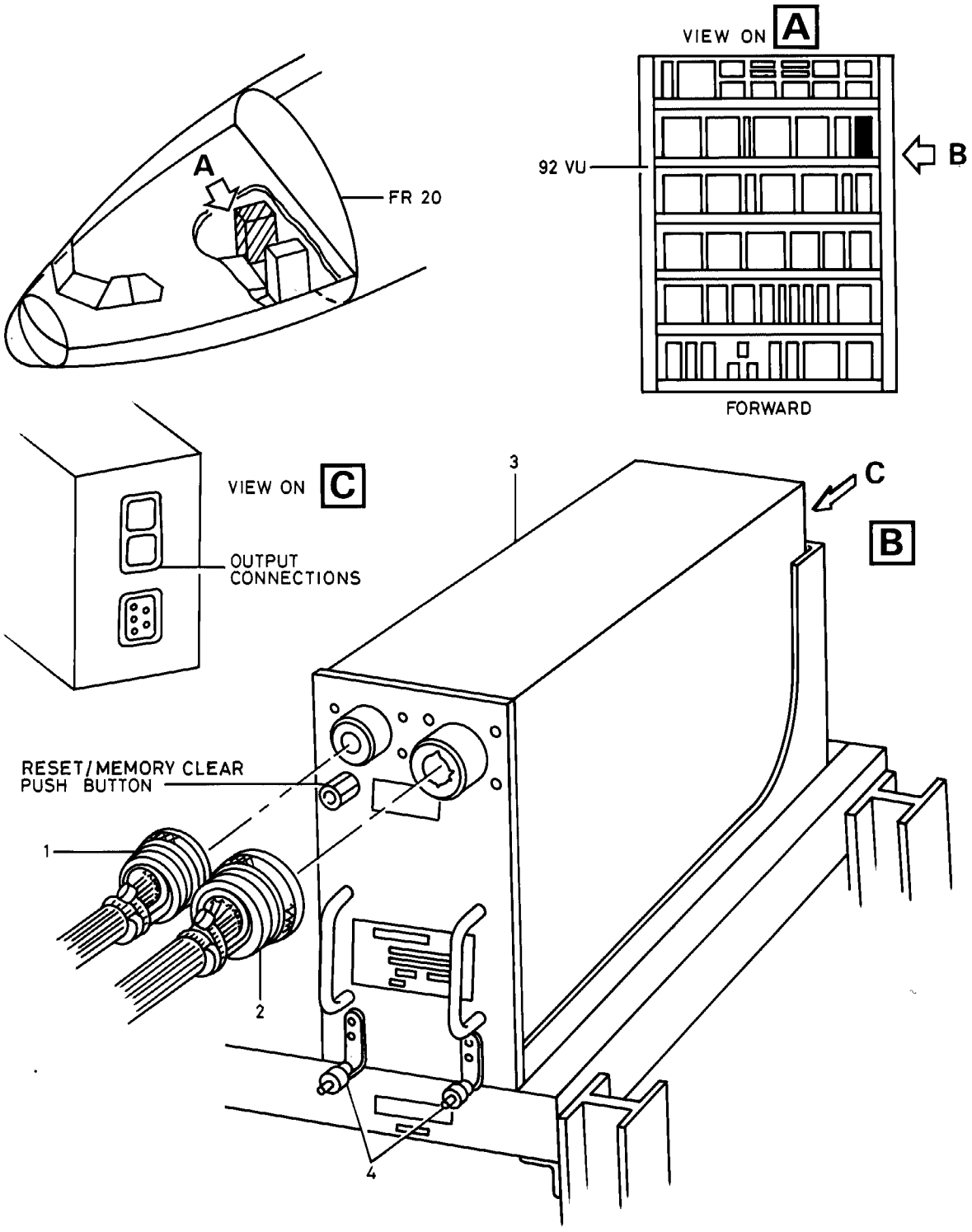
(4)Remove input connectors protective caps and check connectors for correct condition.

(5)Connect input connections (1) and (2).

(6)Remove safety clips and tags and close circuit breakers 1QT, 3QT, 4QT.

(7)If a replacement computer is installed:

R (a)Do a Fault Memory Clear procedure (Ref. 28-42-38, P. Block 501).



Computer - Installation
Figure 401

D. Test

R (1)Do an Operational Test of the computer (Ref. 28-42-38, P. Block 501).

E. Close-Up

R (1)Make sure that the working area is clean and clear of tools and all
R other items of equipment.
R (2)Close the access door (121BL).
R (3)Remove the access platform.

R **WARNING : LANDING GEAR - MAKE SURE THAT THE GROUND SAFETIES AND CHOCKS ARE IN POSITION.**

R **FLIGHT CONTROLS - MAKE SURE THAT THE GROUND SAFETIES AND NOTICES ARE**
R **IN POSITION.**

R **MAKE SURE THAT YOU ISOLATE THE ELECTRICAL CIRCUITS UPON WHICH WORK IS**
R **IN PROGRESS.**

1. Operational Test

A. Equipment and Materials

ITEM	DESIGNATION
Referenced Procedures	
- 12-31-28, P. Block 201	Cold Weather Maintenance - Fuel
- 24-41-00, P. Block 301	AC External Power Control
- 28-42-00, P. Block 101	Trouble Shooting Manual

B. Procedure

(Ref. Fig. 501)

(1)Job Set-Up

(a)Make certain that the following circuit breakers are closed:

PANEL	SERVICE	IDENT.	LOCATION
132VU	FUEL/FQI/SUPPLY & IND	1QT	321/P59
132VU	FUEL/FQI/CHAN SUPPLY 1	3QT	321/P60
132VU	FUEL/FQI/CHAN SUPPLY 2	4QT	321/P61

(b)Energize the aircraft electrical network (Ref. 24-41-00, P. Block 301).

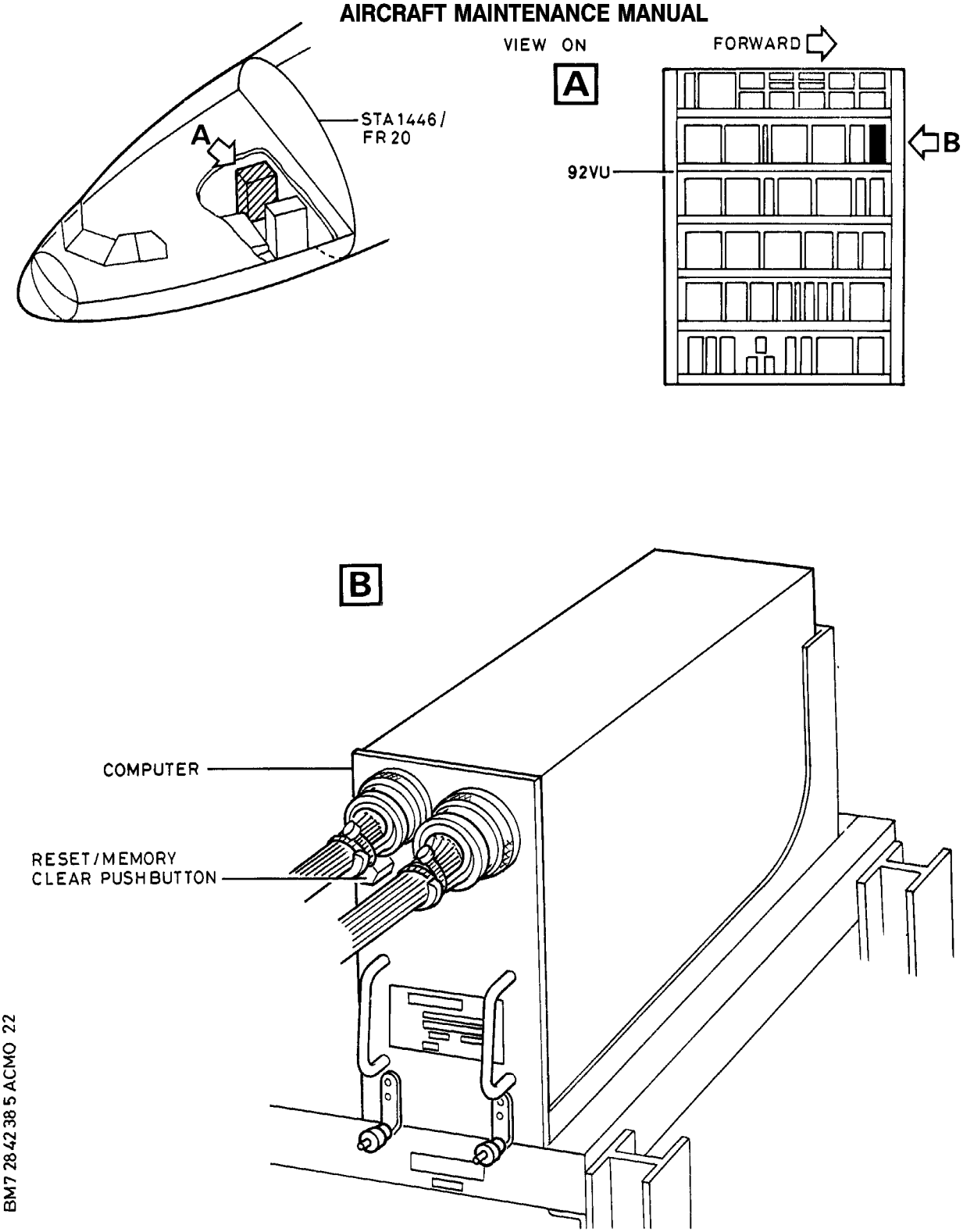
CAUTION : WHEN YOU MUST OPERATE THE REFUEL/DEFUEL PANEL 110VU, IN AMBIENT TEMPERATURES BELOW -40 DEG. C. (-40 DEG. F.), REFER TO THE PROCEDURE FOR THE PREPARATION FOR OPERATION OF THE REFUEL/DEFUEL PANEL 110VU, BELOW -40 DEG. C. (-40 DEG. F.) (REF. 12-31-28, P. BLOCK 201).

NOTE: The refuel/defuel panel is only energized to confirm aircraft is in ground condition.

(c)Open refuel panel door 144DR.

(d)If a replacement computer has been installed carry out the following procedure.

NOTE : The following procedure need not be performed providing the original computer is installed and the fuel load



Computer - Installation
Figure 501

has remained the same.

NOTE : The following procedure is to be carried out immediately after replacement computer has been installed, to clear the fault memory.

(2)Fault-Memory Clear procedure (Ref. Fig. 501).
(a)On panel 472VU, put the ANN LT switch in the TEST position and make sure that all the lights on panel 472VU come on. Put the ANN LT switch in the READ position.
(b)Open the access door 211PZ, for access to rack 92VU.
(c)On panel 472VU, press (in) the SYS MONITOR P/BSW. Make sure that the TEST legend comes on.
R (d)On rack 92VU, press (in) and hold the computer (15QT) RESET/MEMORY
R CLEAR P/BSW for a minimum of 10 seconds. Make sure that all the
R historic fault codes are deleted from the computer memory.
(e)On panel 472VU, release (out) the SYS MONITOR P/BSW. Make sure that the TEST legend goes off.
(f)Put the ANN LT switch in the OFF position.

NOTE: After a replacement computer has been installed, all five displays on the FUEL QTY indicator will show LA when the SYS MONITOR P/BSW is pressed (in) (signifying lowered accuracy) LA will be displayed until the first successful pressure refueling has occurred.

(3)Not applicable.
(4)Test

ACTION	RESULT
1. On panel 110VU: - Make sure that the PWR SUPPLY switch is in the NORM position and the guard is lowered.	
2. On panel 110VU: - Lift the guard and push (in) the HI LVL TEST P/BSW for at least 1 minute.	On panel 110VU: - All HIGH LEVEL and OVERFLOW lights come on. If a lowered accuracy does not exist: - FUEL QTY, PRESELECTED and ACTUAL indicators will display all 8's for 15 seconds. If a lowered accuracy does exist: - FUEL QTY indicator will display LA - PRESELECTED and ACTUAL indicators

	ACTION	RESULT
		will each show three 8's then; After 4 seconds all displays will change to all 8's for 15 seconds. If the system is satisfactory: - FUEL QTY, PRESELECTED and ACTUAL indicator displays will change from 8's to 7's. If a fault condition does exist: - FUEL QTY indicator displays will change from 8's to blanks (Ref. TSM 28-42-00) - PRESELECTED and ACTUAL indicator display will change from 8's to 7's. After approximately 30 seconds, all displays return to the normal fuel readings.
	- Release (out) the HI LVL TEST P/BSW and lower the guard.	- All the HIGH LEVEL and OVERFLOW lights go off.
R R R	- Lift the guard and put the TRANSF. VALVE switch in the OPEN position	- The TRANSF. VALVE OPEN indicator light comes on.
R R R	- Put the TRANSF. VALVE switch in the CLOSED position and lower the guard.	- The TRANSF. VALVE OPEN indicator light goes off.
	3. On panel 436VU: - Hold the ANN LT switch to the TEST position for at least 1 minute.	On panel 430VU: - FUEL QTY indicator LO legends come on. If a lowered accuracy does not exist: - FUEL QTY indicator will display all 8s for 15 seconds. If a lowered accuracy does exist: - FUEL QTY indicator will display LA. After 4 seconds all displays will change to all 8's for 15 seconds.

	ACTION	RESULT
		If the system is satisfactory: - FUEL QTY indicator displays will change from 8's to 7's. If a fault condition does exist: - FUEL QTY indicator displays will change from 8's to blanks (Ref. TSM 28-42-00). After displaying 7's for 30 seconds, displays return to the normal fuel readings.
	- Put the ANN LT switch in the BRT position.	- The FUEL QTY indicator LO legends go off.
	4. On panel 472VU: - Put the ANN LT switch in the TEST position.	On panel 472VU: - All the panel lights come on.
	- Put the ANN LT switch in the READ position.	- All the fuel lights go off.
R	- Push (in) the MFA reset buttons on panels 470VU, 471VU and 472VU.	
	5. On panel 472VU:	On panel 472VU:
R	- Push (in) the SYS MONITOR P/BSW.	- The SYS MONITOR TEST legend comes on.
R		On panels 430VU and 110VU: - the FUEL QTY indicators display all dashes for 15 seconds. - the PRESELECTED and ACTUAL indicator displays -888. For a no failure condition: On panels 430VU and 110VU: - the FUEL QTY indicator displays change to 888 for outer tanks and -888 for center/trim and inner tanks - the PRESELECTED and ACTUAL indicator continues to display -888. For a failure condition:

ACTION	RESULT
	On panels 430VU and 110VU: - the FUEL QTY indicator displays change to failure code(s) alternating with dashes at 5 second intervals (Ref. TSM 28-42-00) - the PRESELECTED and ACTUAL indicator continues to display -888.
- Release (out) the SYS MONITOR P/BSW.	On panel 472VU: - the SYS MONITOR TEST legend goes off - the FUEL QTY indicators on panels 110VU and 430VU revert to the original readings - the PRESELECTED and ACTUAL indicator display reverts to the original reading.
R **ON A/C 001-100,	
- place and hold FAULT SIM switch in CHAN 2 position	- CHAN 2 annunciator FAULT legend comes on
	On panel 430VU: - FUEL QTY indicator readings not changed by more than 100kg per tank
- place and hold FAULT SIM switch in CHAN 1 position	On panel 472VU: - CHAN 2 annunciator FAULT legend goes off - CHAN 1 annunciator FAULT legend comes on
	On panel 430VU: - FUEL QTY indicator readings not changed by more than 100kg per tank
- release FAULT SIM switch	On panel 472VU: - CHAN 1 annunciator FAULT legend goes off
- place ANN LT switch in OFF position	

ACTION	RESULT
R **ON A/C 101-200,	
R - Put and hold the FAULT SIM switch in the CHAN 2 position.	- The CHAN 2 annunciator FAULT legend comes on.
R	On panel 430VU: - the FUEL QTY indicator readings do not change by more than 100 lb per tank.
R - Put and hold the FAULT SIM switch in the CHAN 1 position.	On panel 472VU: - the CHAN 2 annunciator FAULT legend goes off - the CHAN 1 annunciator FAULT legend comes on.
R	On panel 430VU: - the FUEL QTY indicator readings do not change by more than 100 lb per tank.
R - Release the FAULT SIM switch to the center position.	On panel 472VU: - the CHAN 1 annunciator FAULT legend goes off.
R - Put the ANN LT switch in the OFF position.	
R **ON A/C ALL	

(5)Close-Up.
(a)Close refuel panel door 144DR.
(b)De-energize the aircraft electrical network (Ref. 24-41-00, P. Block 301).
(c)Make sure that the work area is clean and clear of tools and miscellaneous items of equipment.
(d)Close the access door 211PZ.

2. Functional Test

A. Equipment and Materials

ITEM	DESIGNATION
Referenced Procedures - 12-31-28, P. Block 201	Cold Weather Maintenance - Fuel

ITEM	DESIGNATION
- 24-41-00, P. Block 301 B. Procedure (Ref. Fig. 501) (1)Job set-up. (a)Make certain that the following circuit breakers are closed:	AC External Power control

PANEL	SERVICE	IDENT.	LOCATION
132VU	FUEL/FQI/SUPPLY & IND	1QT	321/P59
132VU	FUEL/FQI/CHAN SUPPLY 1	3QT	321/P60
132VU	FUEL/FQI/CHAN SUPPLY 2	4QT	321/P61

(b)Energize the aircraft electrical network (Ref. 24-41-00, P. Block 301).

CAUTION : WHEN YOU MUST OPERATE THE REFUEL/DEFUEL PANEL 110VU, IN AMBIENT TEMPERATURES BELOW -40 DEG. C. (-40 DEG. F.), REFER TO THE PROCEDURE FOR THE PREPARATION FOR OPERATION OF THE REFUEL/DEFUEL PANEL 110VU, BELOW -40 DEG. C. (-40 DEG. F.) (REF. 12-31-28, P. BLOCK 201).

(c)Open refuel panel door 144DR.

(2)Test

ACTION	RESULT
1. On panel 110VU: - Make sure that the PWR SUPPLY switch is in the NORM position and the guard is lowered.	
- Lift the guard and push (in) the HI LVL TEST P/BSW for at least 1 minute.	On panel 110VU: - All the HIGH LEVEL and OVERFLOW lights come on. If lowered accuracy does not exist: - FUEL QTY, PRESELECTED and ACTUAL indicators will display all 8's for 15 seconds. If lowered accuracy does exist: - FUEL QTY indicator will display LA. - PRESELECTED and ACTUAL indicators will each display three 8's then: After 4 seconds all displays will

ACTION	RESULT
	change to all 8's for 15 seconds. If system is satisfactory: - FUEL QTY, PRESELECTED and ACTUAL indicator displays will change from 8's to 7's. If fault condition does exist: - FUEL QTY indicator displays will change from 8's to blanks (Ref. TSM 28-42-00). - PRESELECTED and ACTUAL indicator displays will change from 8's to 7's. After displaying 7's for 30 seconds, all displays return to normal fuel readings.
- Release the HI LVL TEST P/BSW and lower the guard.	- All the HIGH LEVEL and OVERFLOW lights go off.
- Lift the guard and put the TRANSF. VALVE switch in the OPEN position	- The TRANSF. VALVE OPEN indicator light comes on.
- Put the TRANSF. VALVE switch in the CLOSED position and lower the guard.	- The TRANSF. VALVE OPEN indicator light goes off.
2. On panel 436VU: - Hold the ANN LT switch in the TEST position for at least 1 minute.	On panel 430VU: - The FUEL QTY indicator LO legends come on. If lowered accuracy does not exist: - FUEL QTY indicator will display all 8's for 15 seconds. If lowered accuracy does exist: - FUEL QTY indicator will display LA. After 4 seconds all displays will change to all 8's for 15 seconds. If system is satisfactory: - FUEL QTY indicator displays will

ACTION	RESULT
	change from 8's to 7's. If fault condition does exist: - FUEL QTY indicator displays will change from 8's to blanks (Ref. TSM 28-42-00). After approximately 30 seconds, displays return to normal fuel readings.
- Put the ANN LT switch in the BRT position.	- The FUEL QTY indicator LO legends go off.

C. Close-Up
(1)Close access door 144DR.
(2)De-energize the aircraft electrical network (Ref. 24-41-00, P. Block 301).
(3)Make certain that working area is clean and clear of tools and miscellaneous items of equipment.

FUEL QUANTITY PRESELECTOR (9QT), (11QT) - REMOVAL/INSTALLATION

R **WARNING** : MAKE SURE THAT THE WHEEL CHOCKS ARE CORRECTLY POSITIONED. THIS WILL PREVENT UNWANTED MOVEMENT OF THE AIRCRAFT WHICH COULD CAUSE DAMAGE.

MAKE SURE THAT THE GROUND SAFETY-LOCKS ARE CORRECTLY INSTALLED ON THE LANDING GEAR.

1. Reason for the Job
   A. Removal of the Fuel Quantity Preselector (9QT), (11QT).

R 2. Equipment and Materials

ITEM	DESIGNATION
A.	Circuit Breakers Safety Clips and Tags
B.	Blanking Caps/Plugs
Referenced Procedures - 24-41-00, P. Block 301	A/C External Power Control

3. Procedure
R (Ref. Fig. 401)
   A. Job Set-Up
      (1)Open, safety and tag these circuit breakers:

PANEL	SERVICE	IDENT.	LOCATION
132VU	FQI/SUPPLY/& IND	1QT	321/P59
132VU	FQI/CHAN SUPPLY/1	3QT	321/P60
132VU	FQI/CHAN SUPPLY/2	4QT	321/P61

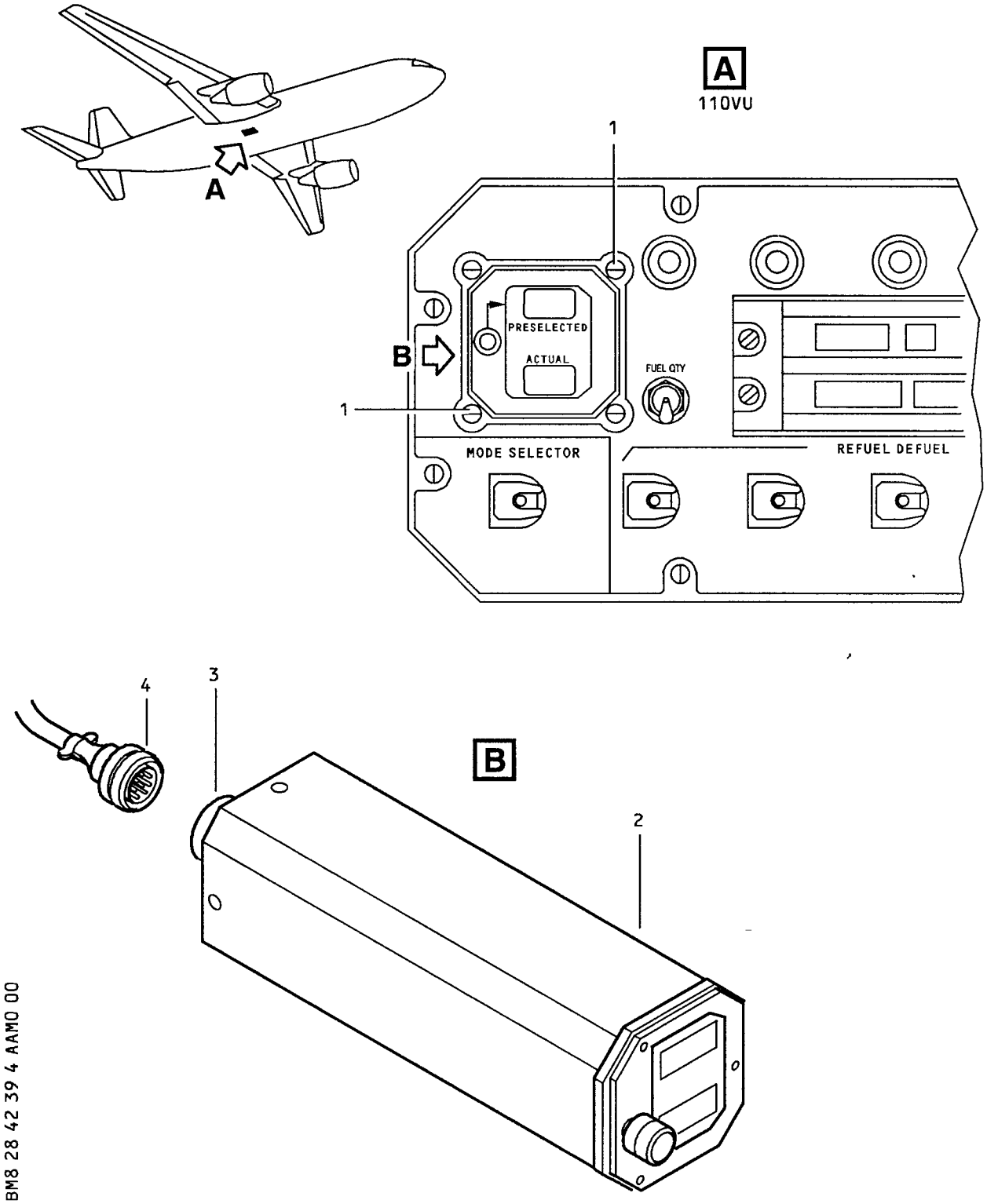
      (2)Open the refuel panel door 144DR.

   B. Removal
      (1)Loosen the two larger screws (1).

R **CAUTION** : DO NOT PULL THE PRESELECTOR TOO FAR AND DO NOT LET IT HANG ON THE ELECTRICAL CABLE. THIS WILL PREVENT DAMAGE TO THE ELECTRICAL CABLE.

      (2)Pull out the preselector (2) from the refuel/maintenance panel and disconnect the electrical connector (4).
      (3)Remove the preselector (2).
      (4)Install the blanking caps/plugs on the electrical connectors (3) and (4).

   C. Installation
      (1)Remove the protective caps/plugs from the electrical connectors (3) and (4). Make sure the electrical connectors are in good condition.



Fuel Quantity Preselector - 110VU
Figure 401

CAUTION : DO NOT LET THE PRESELECTOR HANG ON THE ELECTRICAL CABLE. THIS WILL PREVENT DAMAGE TO THE ELECTRICAL CABLE.

R (2)Connect the electrical connector (4) and install the preselector (2)
R into the refuel/maintenance panel.
(3)Tighten down the preselector (2) with the screws (1).

R D. Preparation for Test
R (1)Make sure that these circuit breakers are closed:

PANEL	SERVICE	IDENT.	LOCATION
132VU	FQI/SUPPLY/& IND	1QT	321/P59
132VU	FQI/CHAN SUPPLY/1	3QT	321/P60
132VU	FQI/CHAN SUPPLY/2	4QT	321/P61

R
(2)Energize the aircraft electrical network (Ref. 24-41-00, P. Block 301).

E. Test

ACTION	RESULT
1. On panel 110VU:	
R - make sure that the PWR SUPPLY switch R is in NORM position and guarded.	
- raise guard and press the TEST/HI LVL TEST push button switch for at least 1 minute.	On panel 110VU: - all the HIGH LEVEL and OVERFLOW lights come on - after 5 seconds, PRESELECTED and ACTUAL indicators will display all 8's - after 16 seconds, PRESELECTED and ACTUAL indicators will change from all 8's to all 7's After approximately 30 seconds all displays return to normal fuel readings.
- release the TEST/HI LVL TEST R PUSH button switch and lower guard	- all the HIGH LEVEL and OVERFLOW lights go off

F. Close-up
(1)Close the refuel panel door 144DR.
(2)De-energize the aircraft electrical network (Ref. 24-41-00, P. Block

301).

(3) Make sure that the working area is clean and clear of tools and other items of equipment.

R FUEL QUANTITY INDICATOR (6QT), (7QT) - REMOVAL/INSTALLATION

R

WARNING : MAKE CERTAIN THAT LANDING GEAR SAFETIES INCLUDING WHEEL CHOCKS ARE IN POSITION.

1. Reason for the Job

A. Removal of Fuel Quantity Indicator (6QT), (7QT).

2. Equipment and Materials

ITEM	DESIGNATION
A.	Circuit Breaker Safety Clips
B.	Blanking Caps/Plugs
Referenced Procedure - 28-42-00, P. Block 501	Quantity Indicating

3. Procedure
(Ref. Fig. 401)

A. Job Set-Up
(1)Open, safety and tag the following circuit breakers :

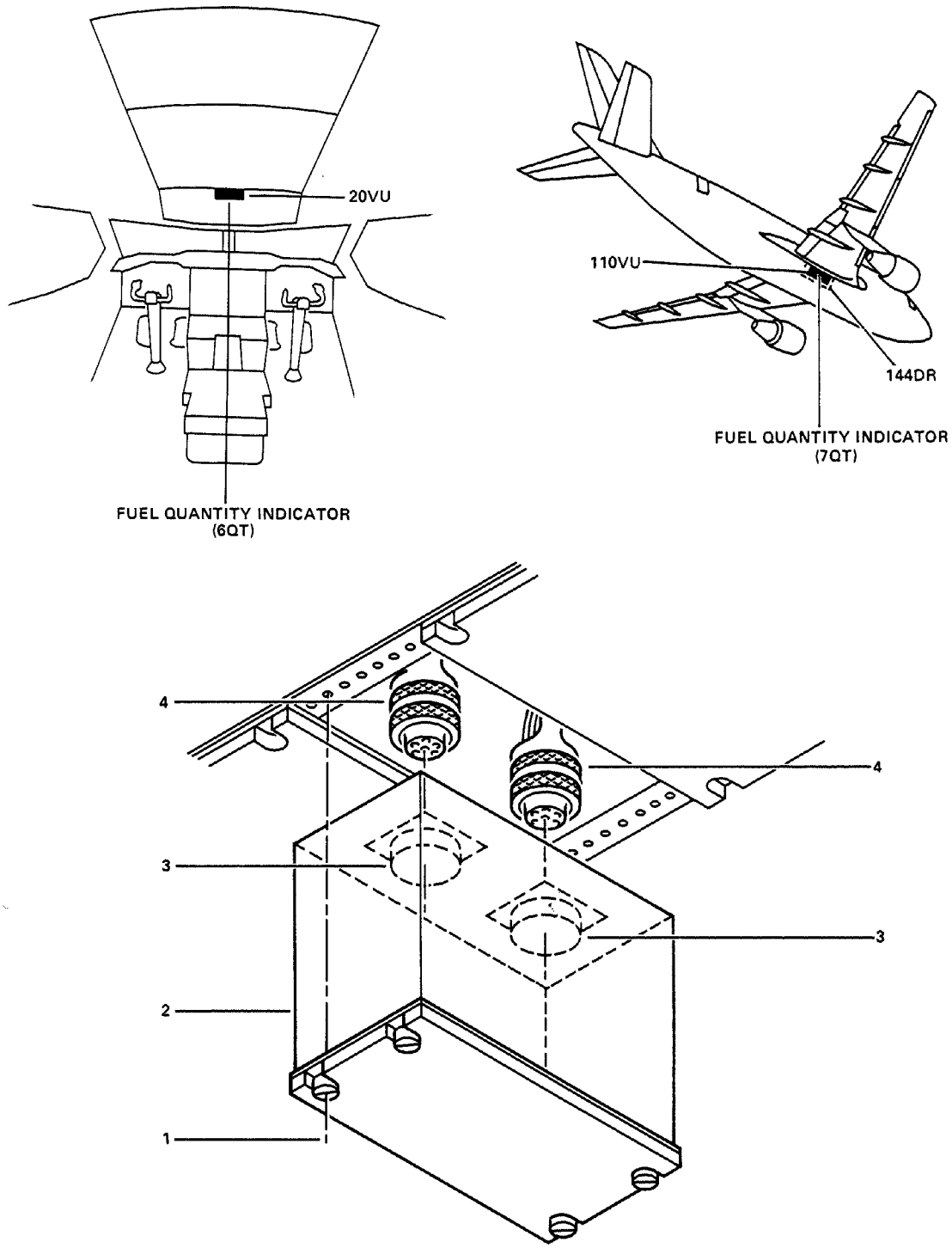
PANEL	SERVICE	IDENT.	LOCATION
132VU	FQI/SUPPLY/& IND	1QT	321/P59
132VU	FQI/CHAN SUPPLY/1	3QT	321/P60
132VU	FQI/CHAN SUPPLY/2	4QT	321/P61

(2)Open access door 144DR.

B. Removal
(1)Unlock the four Dzus fasteners (1) attaching indicator (2).
(2)Pull out indicator (2) from panel 20VU (110VU) and disconnect electrical connectors (4).
(3)Remove indicator (2).
(4)Install protective caps/plugs on electrical connectors (3) and (4).

C. Installation
(1)Remove protective caps/plugs form electrical connectors. Check electrical connectors for good condition.
(2)Connect electrical connectors (4) and push indicator (2) home into panel 20VU (110VU).
(3)Lock the four Dzus fasteners (1).

D. Test
(1)Remove safety clips and tags and close circuit breakers 1QT, 3QT and 4QT.
(2)Perform operational test (Ref. 28-42-00, P. Block 501).



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Fuel Quantity Indicator
Figure 401

E. Close-Up
(1)Make certain that working area is clean and clear of tools and miscellaneous items of equipment.
(2)Close access door 144DR.

R FUEL QUANTITY ATTITUDE SENSOR 5QT - REMOVAL/INSTALLATION
R

WARNING : MAKE CERTAIN THAT LANDING GEAR SAFETIES INCLUDING WHEEL CHOCKS ARE IN POSITION.

1. Reason for the Job

A. Removal of fuel quantity attitude sensor 5QT.

2. Equipment and Materials

ITEM	DESIGNATION
Referenced Procedure - 28-42-00, P. Block 501	Quantity Indicating

3. Procedure
(Ref. Fig. 401)

A. Job Set-Up
(1)Open, safety and tag the following circuit breakers :

PANEL	SERVICE	IDENT.	LOCATION
132VU	FQI/SUPPLY/& IND	1QT	321/P59
132VU	FQI/CHAN SUPPLY/1	3QT	321/P60
132VU	FQI/CHAN SUPPLY/2	4QT	321/P61

(2)Open avionics compartment access door 121BL.

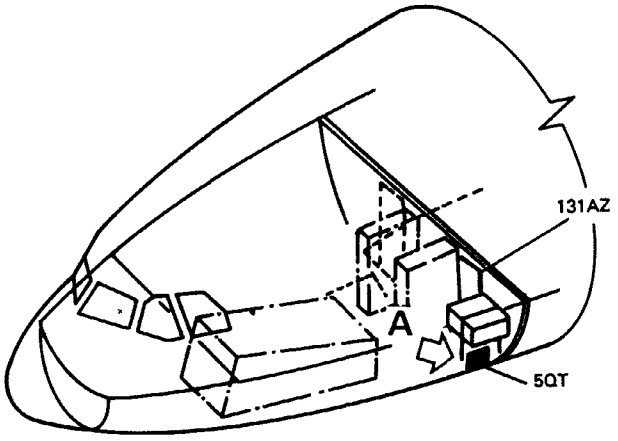
B. Removal
(1)Remove the two screws (1) securing attitude sensor to mount.
(2)Disconnect electrical supply cable from receptacle (3).

C. Preparation of Replacement Component
(1)Check that sensor has no trace of impact.
(2)Check for correct condition of receptacle pins.

D. Installation
(1)Install attitude sensor (2).
(2)Secure sensor with the two screws (1).
(3)Connect electrical supply cable to receptacle (3).

E. Test
(1)Remove safety clips and tags and close circuit breakers 1QT, 2QT and 3QT.
(2)Perform diagnostic test (Ref. 28-42-00, P. Block 501).

F. Close-Up
(1)Make certain that working area is clean and clear of tools and miscellaneous items of equipment.
(2)Close access door 121BL.



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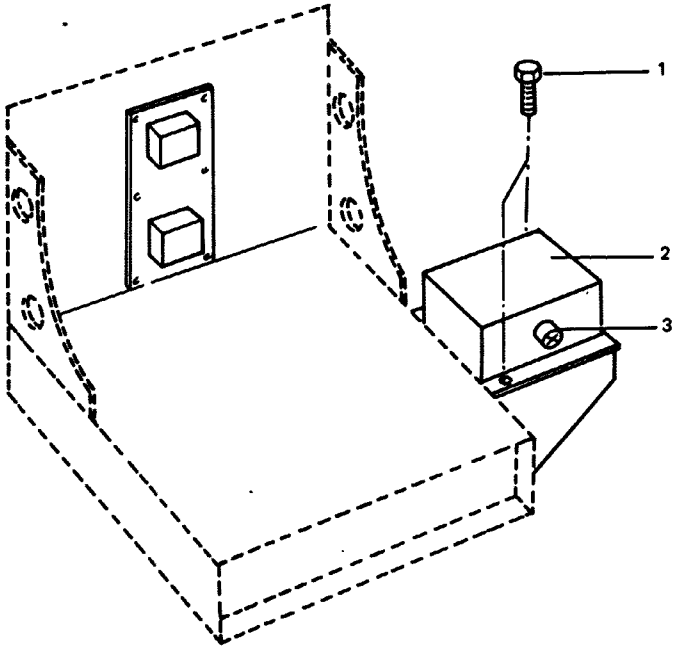

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Attitude Sensor
Figure 401

CADENSICON SENSOR (10QT) - REMOVAL/INSTALLATION

R **WARNING** : LANDING GEAR - MAKE SURE THAT THE GROUND SAFETIES AND CHOCKS ARE IN POSITION.

FLIGHT CONTROLS - MAKE SURE THAT THE GROUND SAFETIES AND NOTICES ARE IN POSITION.

OBSERVE THE SAFETY PRECAUTIONS IN 28-00-00, P. BLOCK 301.

MAKE SURE THAT THE FIRE FIGHTING EQUIPMENT IS AVAILABLE AND ADEQUATE.

R MAKE SURE THAT YOU ISOLATE THE ELECTRICAL CIRCUITS UPON WHICH WORK IS
R IN PROGRESS.

R 1. Equipment and Materials

ITEM	DESIGNATION
A.	Access Platform 4 m (13 ft)
B.	O-rings
C.	Torque wrench, 30 lbf.ft (0.34 m.daN)
D.	Circuit Breaker Safety Clips and Tags
E.	Protective Caps
Referenced Procedures	
- 12-11-28, P. Block 301	Replenishing of Fuel Tanks
- 24-41-00, P. Block 301	AC External Power Control
- 28-00-00, P. Block 301	Fuel - General
- 28-25-00, P. Block 301	Refuel/Defuel System
- TSM 28-42-00, P. Block 1	FQI Fault Codes

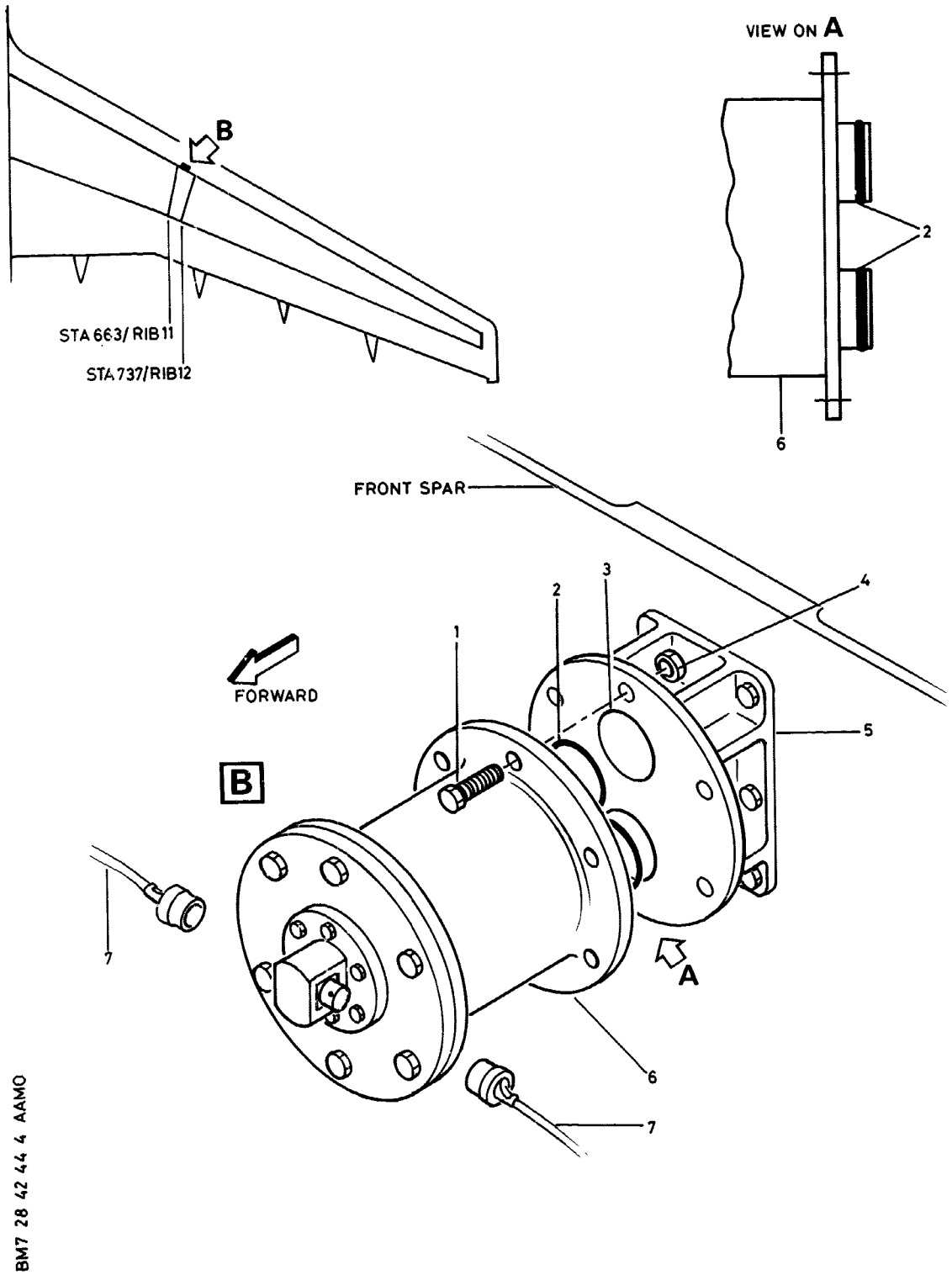
R 2. Procedure
(Ref. Fig. 401)

A. Job Set-Up
(1)Open, safety and tag the following circuit breakers:

PANEL	SERVICE	IDENT.	LOCATION
132VU	FUEL/FUELLING/FQI/SUPPLY & IND	1QT	321/P59
132VU	FUEL/FUELLING/FQI/CHAN SUPPLY 1	3QT	321/P60
132VU	FUEL/FUELLING/FQI/CHAN SUPPLY 2	4QT	321/P61

(2)Position access platform.
(3)Open access doors 623EB and 121BL.

B. Removal
(1)Disconnect the electrical plugs (7) from the sensor (6).
(2)Cap the electrical sockets.



Cadensicon Sensor - Installation
Figure 401

R (3)Remove the nuts (4) and the bolts (1).
R (4)Withdraw the sensor (6) from the mounting adapter (5).

R NOTE: The self-sealing valves (3) in the mounting adapter (5) enable
R the sensor to be removed without the loss of fuel.

R (5)Discard the O-rings (2) from the sensor (6). Retain the bolts (1) and
R the nuts (4) with the sensor.

C. Preparation of Replacement Component
R (1)Install the O-rings (2) on the sensor (6).

D. Installation
R (1)Install the sensor (6) on the mounting adapter (5) and secure with the
R bolts (1) and the nuts (4). TORQUE the nuts to 30 lbf.in (0.339 m.daN).

NOTE: One attachment bolt hole is offset to prevent incorrect
installation.

R (2)Remove protective caps from the electrical sockets and connect the
R plugs (7) to the sensor (6).

E. Preparation for Test
R (1)Remove the safety clips and tags and close the circuit breakers
1QT, 3QT and 4QT.
R (2)Energize the aircraft electrical network (Ref. 24-41-00, P. Block 301).
R (3)Make sure that the RH inner tank contains not more than 9500 Kg
R (20900 LB) of fuel. If necessary, refuel, defuel or transfer fuel
R (Ref. 12-11-28 or 28-25-00, P. Block 301).

F. Test

ACTION	RESULT
R 1. Refuel the RH inner tank (Ref. R 12-11-28, P. Block 301) or R transfer fuel to this tank R (Ref. 28-25-00, P. Block 301) R for not less than 2 minutes.	
R 2. While fuel is flowing, R inspect the sensor for leaks	
R 3. Stop the refuel/transfer R (Ref. 12-11-28 or 28-25-00, R P. Block 301) and make sure that R the MODE SELECTOR switch on the R refuel/defuel panel 110VU, is in R the OFF and guarded position.	
R 4. On panel 472VU: R - Put the ANN LT switch in TEST	- All the panel lights come on.

ACTION	RESULT
position. - Put the ANN LT switch in READ position.	- The panel lights show the monitored system faults.
R - Push (in) the FUEL SYS MONITOR P/BSW.	- The TEST legend comes on. On panel 430VU: - The FUEL QTY indicator displays the failure codes (Ref. TSM 28-42, P. Block 1).

R 5. On panel 92VU:
R - Push (in) and hold the computer (15QT) RESET/MEMORY CLEAR P/BSW for at least 5 seconds.
R - Release (out) the RESET/MEMORY CLEAR P/BSW. — The computer (15QT) fault memory is cleared.

6. On panel 430VU:
- Make sure that the cadensicon failure codes are not displayed on the FUEL QTY indicator (Ref. 28-42-00, P. Block 1).

7. On panel 472VU:
- Release (out) the SYS MONITOR P/BSW. — The TEST legend goes off.
- Put the ANN LT switch in the OFF position. — All the panel lights go off.

G. Close-Up
(1) De-energize the aircraft electrical network (Ref. 24-41-00, P. Block 301).
(2) Make sure that the work area is clean and clear of tools and other items of equipment.
(3) Close the access doors 623EB and 121BL.
(4) Remove the access platform.

CADENSICON SENSOR MOUNTING ADAPTER - REMOVAL/INSTALLATION

R **WARNING** : LANDING GEAR - MAKE SURE THAT THE GROUND SAFETIES AND CHOCKS ARE IN POSITION.

R FLIGHT CONTROLS - MAKE SURE THAT THE GROUND SAFETIES AND NOTICES ARE
R IN POSITION.

R OBEY THE FUEL SAFETY PRECAUTIONS IN 28-00-00, P. BLOCK 301.

R MAKE SURE THAT THE FIRE FIGHTING EQUIPMENT IS AVAILABLE AND ADEQUATE.

R MAKE SURE THAT YOU ISOLATE THE ELECTRICAL CIRCUITS UPON WHICH WORK IS
R IN PROGRESS.

1. Equipment and Materials

ITEM	DESIGNATION
A.	Access Platform 2 m (6 ft)
B.	Circuit Breaker Safety Clips and Tags
C.	Spark Proof Lamp
D.	O-rings
E.	Pencil Brush
F. Material No. 01-001	Fuels (Ref. 20-31-00)
G. Material No. 09-017	Sealants (Ref. 20-31-00)
R H. Material No. 16-006	Structure Paints (Ref. 20-31-00)
R J. Material No. 16-016	Structure Paints (Ref. 20-31-00)
R Referenced Procedures	
- 12-11-28, P. Block 1	Replenishing of Fuel Tanks
- 24-41-00, P. Block 301	AC External Power Control
- 28-00-00, P. Block 301	Safety Precautions
- 28-10-00, P. Block 301	Storage
- 28-11-22, P. Block 401	Manhole Covers (Wings)
- 28-42-44, P. Block 401	Cadensicon Sensor

2. Procedure

(Ref. Fig. 401)

A. Job Set-Up

(1)Remove cadensicon sensor (Ref. 28-42-44, P. Block 401).

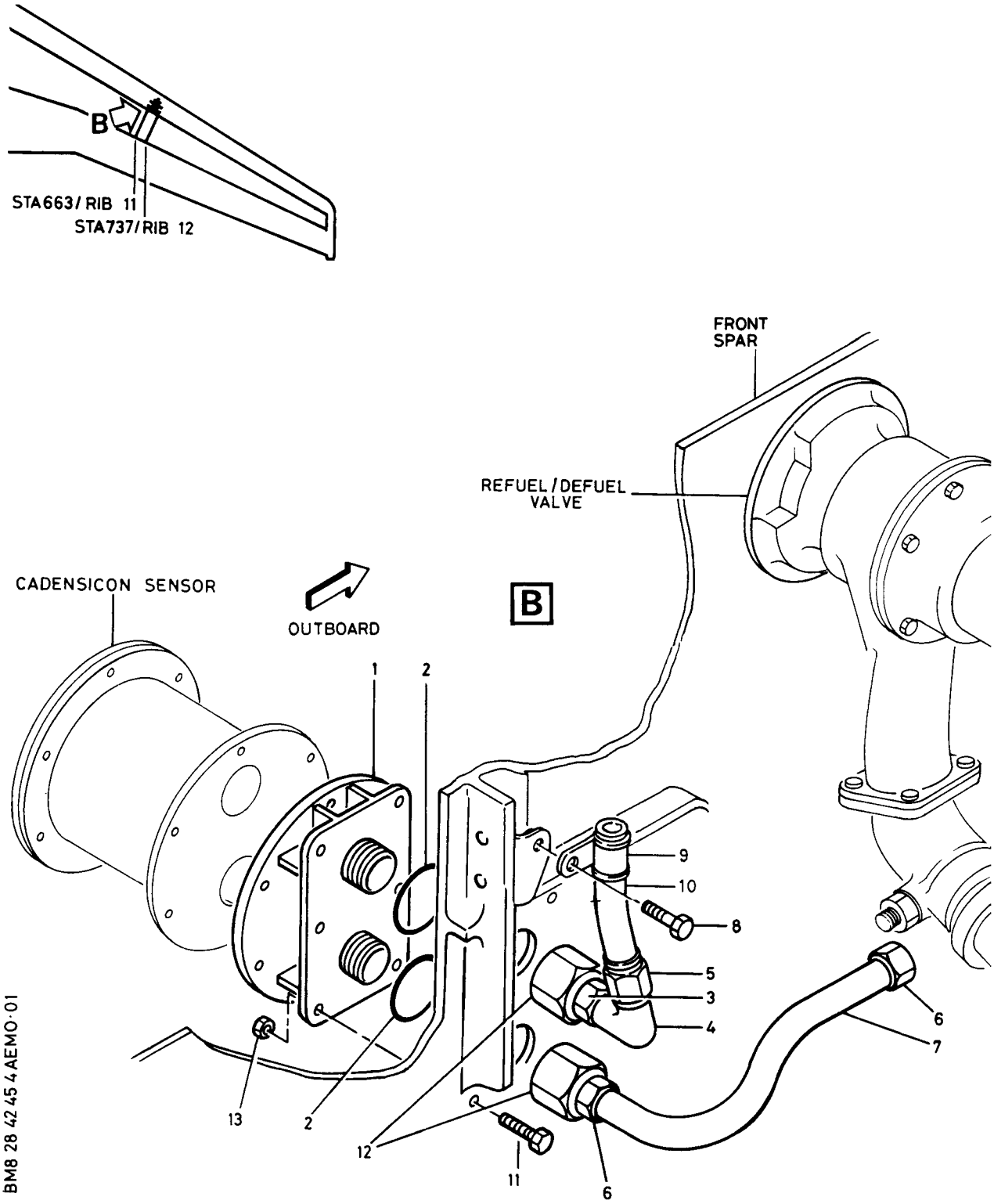
(2)Remove manhole cover between STA 663/RIB 11 and STA 737/RIB 12 (Ref. 28-11-22, P. Block 401).

(3)Energize the aircraft electrical network (Ref. 24-41-00, P. Block 301).

(4)On panel 430VU:

- make certain that the crossfeed valve is closed (X FEED pushbutton switch released, flowbar is crossline).
- make certain that R inner and outer ISOL VALVES pushbutton switches are released (out) (OFF legends are on).

(5)Open, safety and tag the following circuit breakers:



Mounting Adaptor - Installation
Figure 401

R

PANEL	SERVICE	IDENT.	LOCATION
132VU	FUEL/R INNER TK/PUMP 1/CTL	60QA	322/N62
132VU	FUEL/R INNER TK/PUMP 2/CTL	70QA	323/M63
132VU	FUEL/R INNER TK/ISOL VALVE	4QB	324/L56
132VU	FUEL/R OUTER TK/ISOL VALVE	2QB	324/L58
132VU	FUEL/X FEED VALVE/MOTOR 1	2QE	324/L60
132VU	FUEL/X FEED VALVE/MOTOR 2	1QE	324/L61
132VU	FUEL/FUELLING/CTL & REFUEL VALVE	1QU	321/P56
132VU	FUEL/FUELLING/XFR VALVE	2QU	321/P55

B. Removal

WARNING: BEFORE ENTERING TANK OBSERVE SAFETY PRECAUTIONS GIVEN IN 28-00-00 AND 28-10-00, P. BLOCK 301.

(1)Enter RH inner tank.
(2)Unscrew coupling nuts (6) and remove pipe assembly (7).
(3)Remove bolt (8), unscrew nut (3) then remove pipe assembly (10) together with elbow (4) and clip (9).
(4)Unscrew and remove adapters (12) from mounting adapter (1).
(5)Remove bolts (11) nuts (13) and collect mounting adapter (1). Discard O-rings (2).

C. Installation

(1)Lubricate O-rings (2) with Material No.01-001 and install on mounting adapter (1).
(2)Secure mounting adapter (1) to front spar with bolts (11) and nuts (13). Overcoat bolt heads with Material No.09-017.
R (3)Install adapters (12) and TORQUE to between 240 and 260 lbf.in
R (2.712 and 2.938 m.daN). Paint the letter 'T' on adjacent structure
R using black paint Material No.16-016.
(4)Install pipe assembly (10) together with nut (5), elbow (4) and clip (9). Tighten nut (3) and secure clip (9) with bolt (8). Paint bolt head, tail and self locking nut with Material No.16-006. Tighten nut (5).
(5)Install pipe assembly (7) and tighten nuts (6).
(6)Install cadensicon (Ref. 28-42-44, P. Block 401).
(7)Install manhole covers (Ref. 28-11-22, P. Block 401).
(8)Remove safety clips and tags, and close circuit breakers 1QU, 2QU.

D. Test

(1)Refuel RH inner tank (Ref. 12-11-28, P. Block 301) or transfer fuel to this tank. While fuel is flowing, inspect mounting adapter (1) and cadensicon sensor; there must be no leakage.
(2)Cease refueling when tank is full and inspect mounting adapter (1); there must be no leakage.
(3)Complete remaining tests on cadensicon sensor (Ref. 28-42-44, P. Block 401).

E. Close-Up

(1) De-energize the aircraft electrical network and disconnect electrical ground power unit.

(2) Make certain that work area is clean and clear of tools and miscellaneous items of equipment.

(3) Remove safety clips and tags and close circuit breakers 60QA, 70QA, 4QB, 2QB, 2QE, 1QE.

(4) Remove all ground handling and maintenance equipment, standard and special tools, all access equipment and miscellaneous items.

FUEL QUANTITY PROBES (TRIM TANK) - REMOVAL/INSTALLATION

WARNING : LANDING GEAR - MAKE SURE THAT THE GROUND SAFETIES AND CHOCKS ARE IN POSITION.

FLIGHT CONTROLS - MAKE SURE THAT THE GROUND SAFETIES AND NOTICES ARE IN POSITION.

OBEY THE SAFETY PRECAUTIONS IN 28-00-00, P. BLOCK 301 AND 28-10-00, P. BLOCK 301.

MAKE SURE THAT THE FIRE FIGHTING EQUIPMENT IS AVAILABLE AND ADEQUATE.

MAKE SURE THAT YOU ISOLATE THE ELECTRICAL CIRCUITS UPON WHICH WORK IS IN PROGRESS.

DO NOT OPERATE THE MICROPHONE BUTTONS ON HF TRANSMISSION DURING REFUELING/DEFUELING OR GROUND MAINTENANCE-FUEL TRANSFER OPERATIONS.

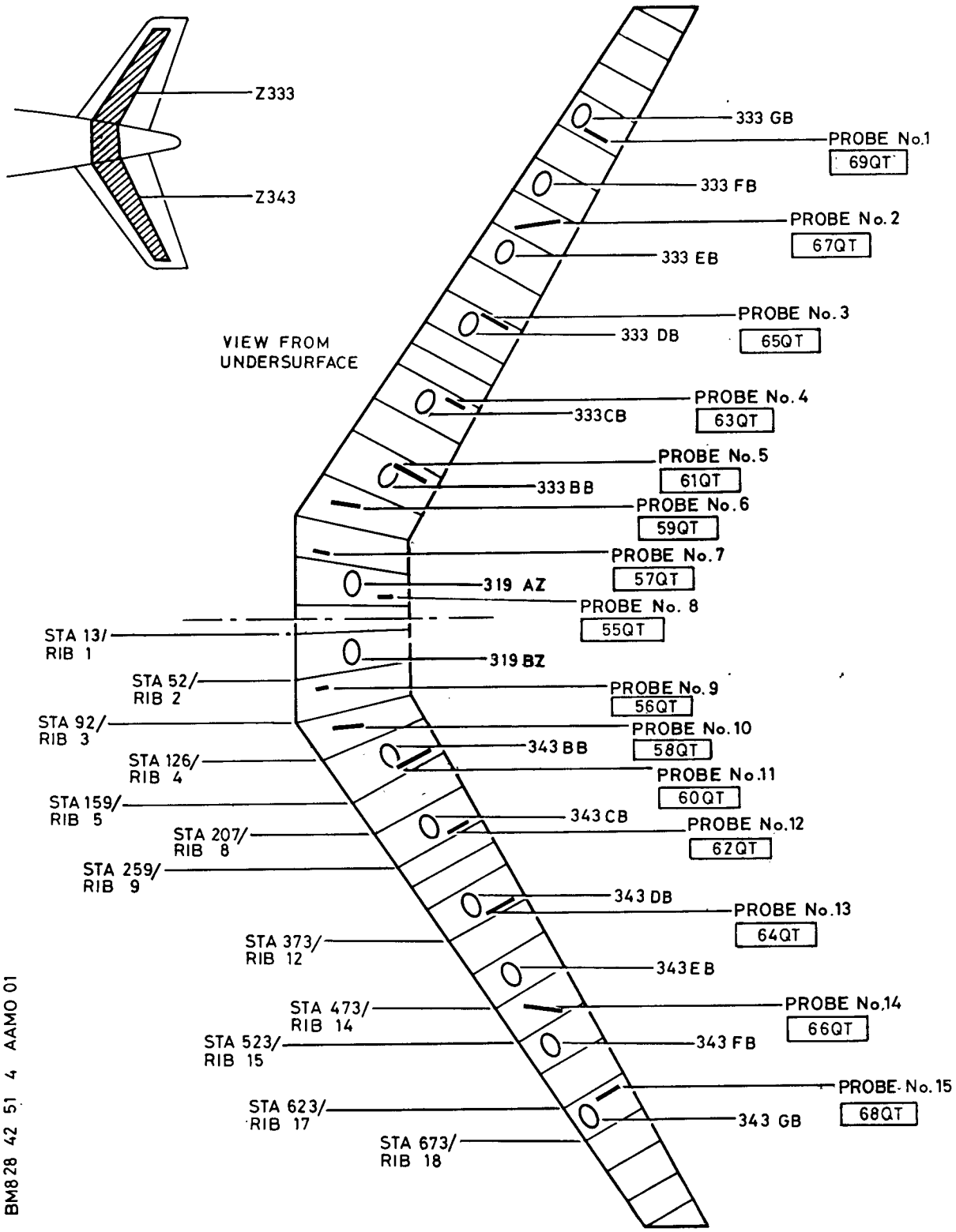
1. Equipment and Materials

ITEM	DESIGNATION
A.	Access Platform 8m (26 ft)
B.	Circuit Breaker Safety Clips and Tags
C.	Electrical Caps
Referenced Procedures	
- 28-00-00, P. Block 301	Fuel - General
- 28-10-00, P. Block 301	Fuel Storage
- 28-11-33, P. Block 401	Trim Tank Manhole Cover
- 28-25-00, P. Block 301	Refuel/Defuel System
- 28-42-00, P. Block 501	Quantity Indicating
- 55-00-00, P. Block 301	Stabilizers - General

2. Procedure

A. Job Set-Up
(Ref. Fig. 401)
(1)Transfer fuel from trim tank (Ref. 28-25-00, P. Block 301).
(2)Make horizontal and vertical stabilizers safe (Ref. 55-00-00, P. Block 301).
(3)Open, safety and tag the following circuit breakers:

R	PANEL	SERVICE	IDENT.	LOCATION
R	132VU	FUEL/TRIM TANK/FWD XFR MAIN VALVE	1QL	325/K53
R	132VU	FUEL/FQI SUPPLY & IND	1QT	321/P59
R	132VU	FUEL/FQI/CHAN SUPPLY 1	3QT	321/P60
R	132VU	FUEL/FQI/CHAN SUPPLY 2	4QT	321/P61



Trim Tank Probes - Location
Figure 401

R

(4)Position access platform.
(5)Remove appropriate manhole cover (Ref. 28-11-33, P. Block 401):

PROBE NO.	MANHOLE COVER
1	333GB
2	333EB
3	333DB
4	333CB
5 and 6	333BB
7 and 8	319AZ
9	319BZ
10 and 11	343BB
12	343CB
13	343DB
14	343EB
15	343GB

B. Removal

**ON A/C ALL

(Ref. Fig. 402)

**ON A/C ALL

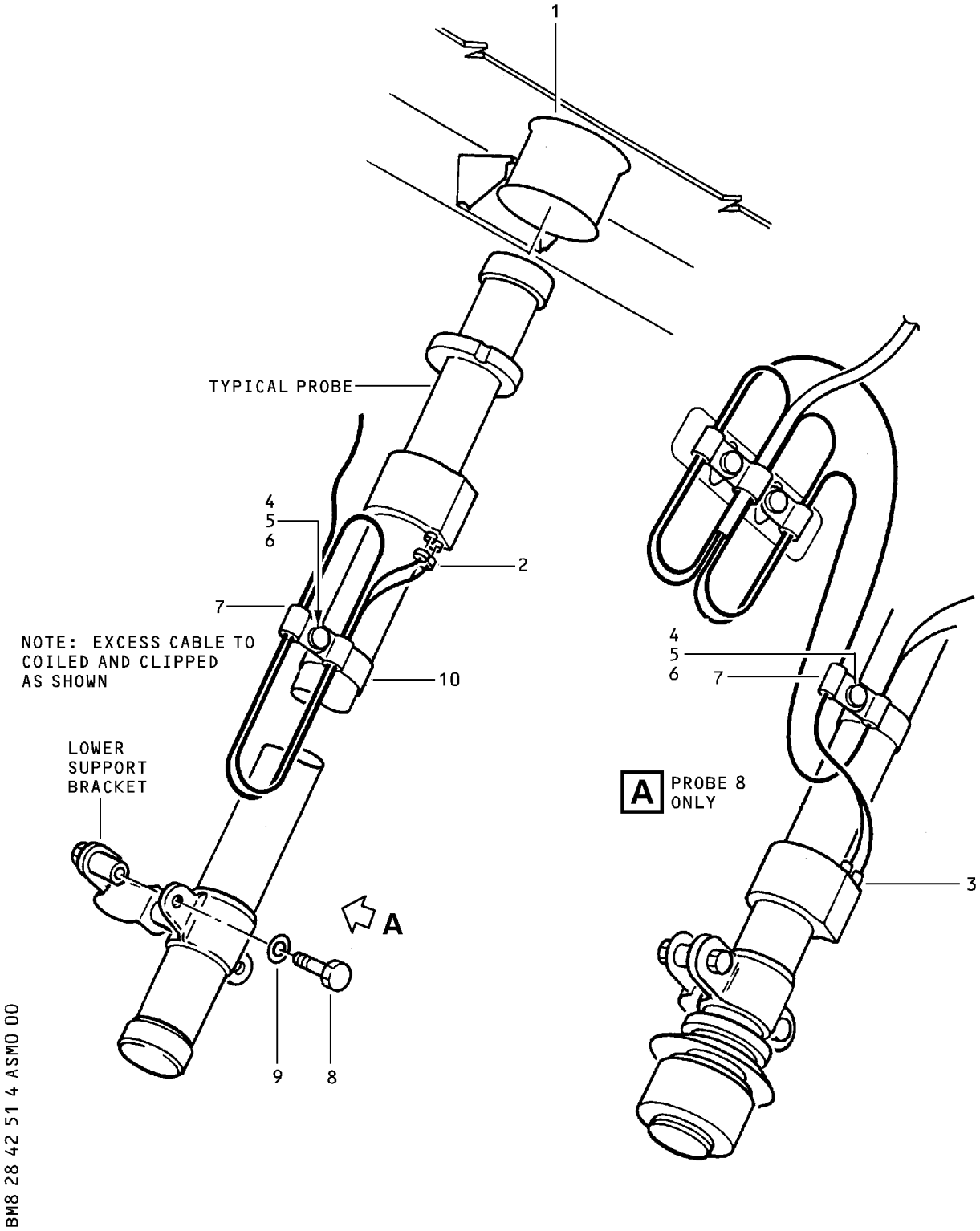
(1)Disconnect electrical connectors (2) from probe. Cap open line ends.
(2)Probe 8 only: disconnect electrical connectors (3) from probe. Cap open line ends.
(3)Remove nut (4), washer (5), bolt (6) and P-clips (7). Temporarily refit bolt, washer and nut to P-clips (7).
(4)Support probe, remove bolts (8) and washers (9) then withdraw probe from support collar (1).
(5)If a replacement probe is to be installed remove P-clip (10) from probe.

C. Preparation of Replacement Component
(1)Install P-clip (10) on probe.

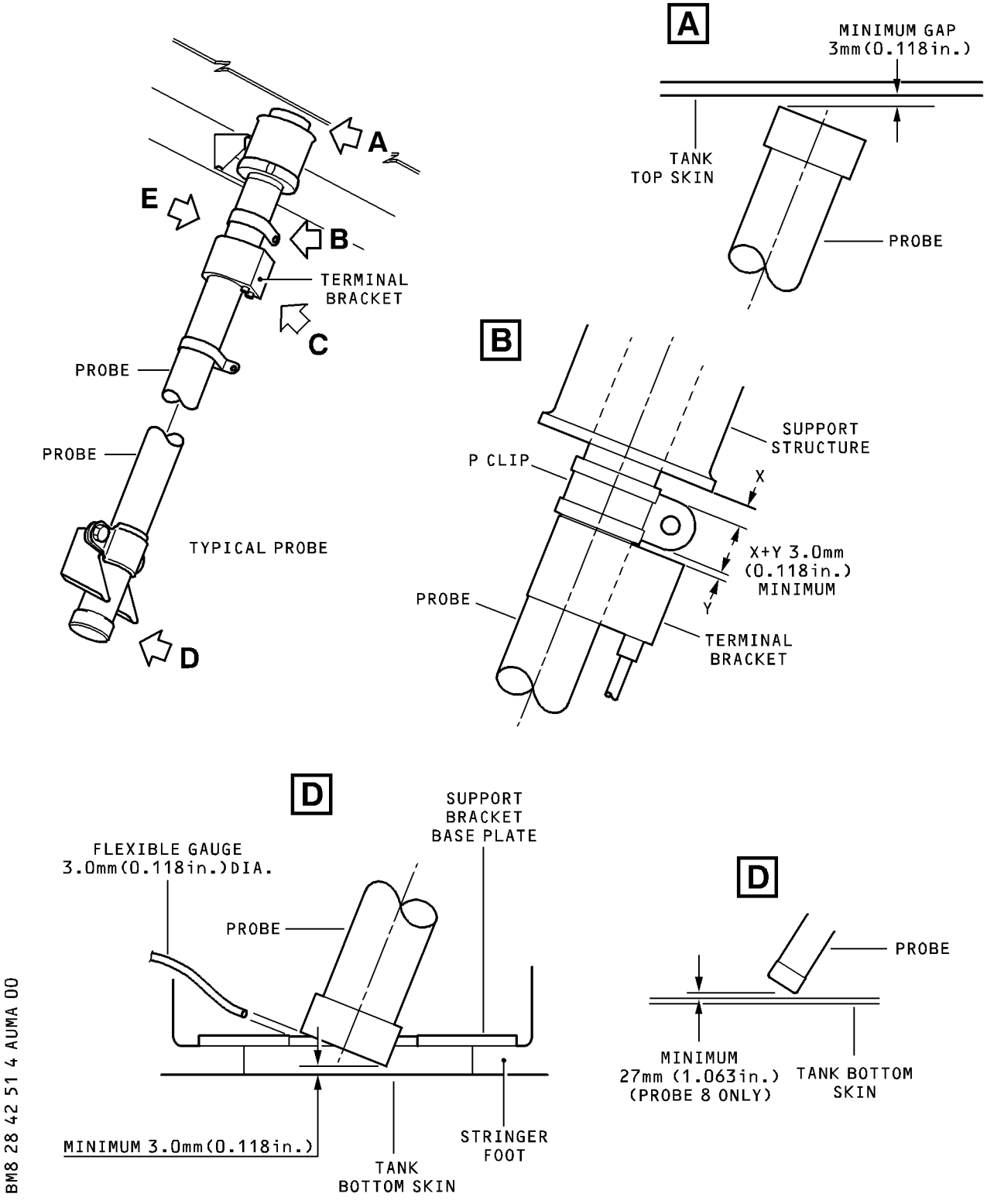
**ON A/C ALL

D. Installation

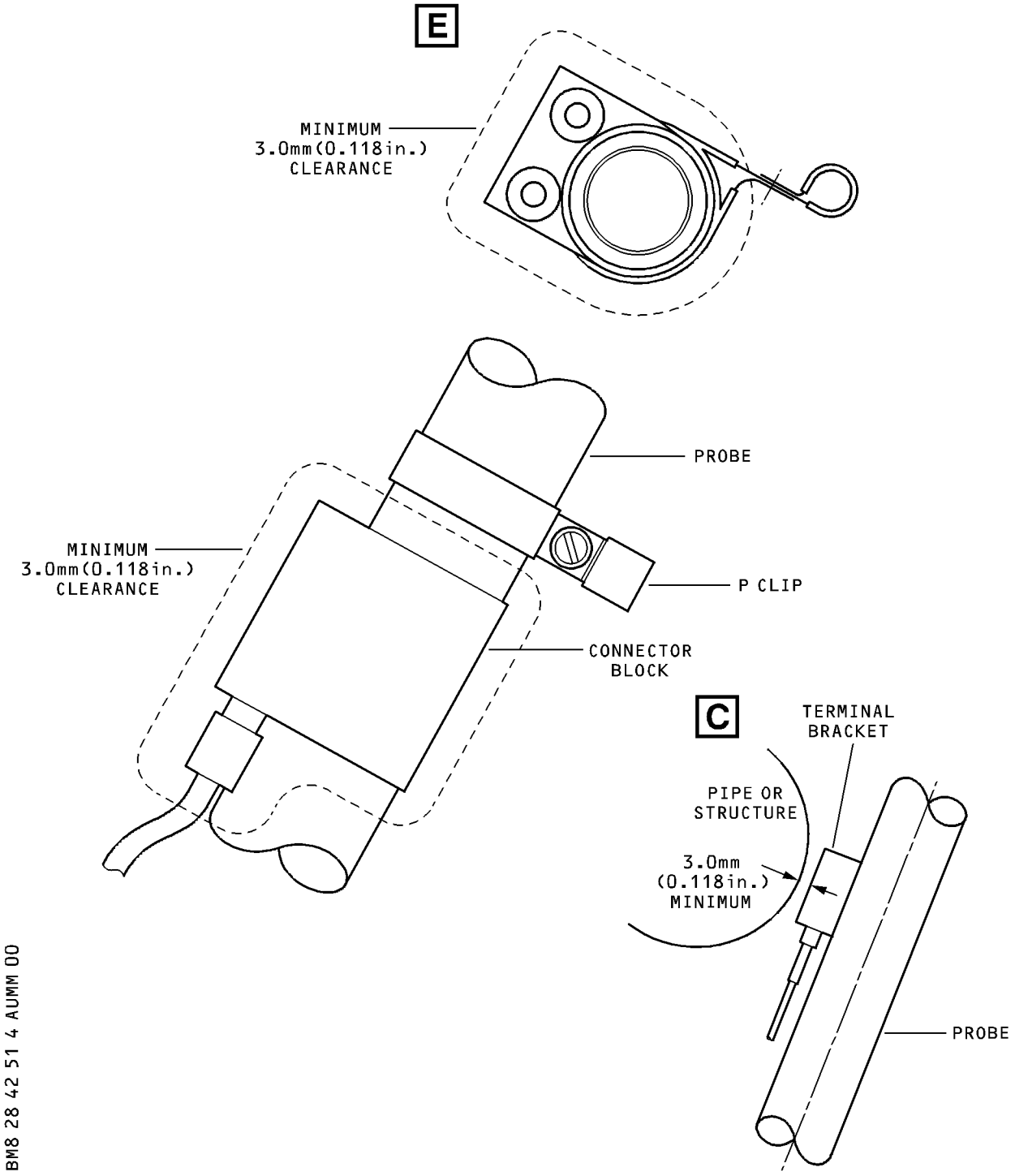
(1)Clean the component interfaces, the electrical wiring and the electrical connectors, and check for correct condition.



Trim Tank Probes - Installation
Figure 402



Probes - Installation Clearances
Sheet 1/2
Figure 403



Probes - Installation Clearances
Sheet 2/2
Figure 403

(2)Remove the protective caps from the electrical connectors.
(3)Insert the probe in the support collar (1), then secure the probe to the lower support bracket with the washers (9) and the bolts (8).
(4)Probes 1 thru 7 and 9 thru 15
(a)Make sure that the clearance between the probes and the adjacent aircraft structure is a minimum of 3 mm (0.118 in) (Ref. Fig. 403). Use a flexible gauge 3 mm (0.118 in) diameter, to make sure the clearance is correct between the probe and the items that follow:
- the bottom skin of the tank
- the top skin of the tank
- the support bracket base plate.
(5)Probe 8
(a)Make sure that the clearance between probe 8 and the adjacent aircraft structure is a minimum of 3 mm (0.118 in) (Ref. Fig. 403). Use a flexible gauge 3 mm (0.118 in) diameter, to make sure the clearance is correct between the probe and the items that follow:
- the top skin of the tank
- the support bracket base plate.
(b)Make sure that the clearance between the probe 8 and the bottom skin is a minimum of 27 mm (1.063 in) (Ref. Fig. 403).
(6)Attach the P-clip (7) to the probe P-clip (10) with the bolt (6), the washer (5) and the nut (4). Make sure that the excess cable is correctly coiled.
(7)Connect the electrical connectors (2) and/or (3) to the applicable probe.

**ON A/C ALL

E. Test
(1)Do the insulation resistance and capacitance tests on the individual probes (Ref. 28-42-00, P. Block 501).

F. Close-Up
(1)Make sure that the work area is clean and clear of tools and all other items of equipment.
(2)Install the removed manhole cover(s) (Ref. 28-11-33, P. Block 401).
(3)Remove the access platform.
(4)Put the stabilizers back to their normal operating condition (Ref. 55-00-00, P. Block 301).
(5)On panel 132VU, remove the safety clips and tags and close the FUEL circuit breakers 1QL on line 325 and 1QT, 3QT, 4QT on line 321.

FUEL QUANTITY HARNESS 52QT (53QT), TRIM TANK - REMOVAL/INTALLATION

WARNING : PUT THE SAFETY DEVICES AND THE WARNING NOTICES IN POSITION BEFORE YOU START A TASK ON OR NEAR:
- THE FLIGHT CONTROLS
- THE FLIGHT CONTROL SURFACES
- THE LANDING GEAR AND THE RELATED DOORS
- COMPONENTS THAT MOVE.

WARNING : OBEY THE SAFETY PRECAUTIONS IN 28-00-00, P. BLOCK 301 AND 28-10-00, P. BLOCK 301.

WARNING : MAKE SURE YOU HAVE THE CORRECT FIRE FIGHTING EQUIPMENT AVAILABLE.

WARNING : MAKE SURE THAT ALL THE CIRCUITS IN MAINTENANCE ARE ISOLATED BEFORE YOU SUPPLY ELECTRICAL POWER TO THE AIRCRAFT.

WARNING : USE SOLVENTS/CLEANING AGENTS SEALANTS AND OTHER SPECIAL MATERIALS ONLY WITH A GOOD SUPPLY OF AIR.
DO NOT GET THEM IN YOUR MOUTH.
PUT ON PROTECTIVE CLOTHING.
DO NOT SMOKE.
DO NOT BREATHE THE GAS.
THESE MATERIALS ARE POISONOUS AND FLAMMABLE AND SKIN IRRITANTS.
GET MEDICAL HELP IS YOUR SKIN OR EYES BECOME IRRITATED.

WARNING : DO NOT OPERATE THE MICROPHONE BUTTONS ON HF TRANSMISSION DURING REFUELING/DEFUELING OR GROUND MAINTENANCE - FUEL TRANSFER OPERATIONS.

1. Equipment and Materials

	ITEM	DESIGNATION
	A.	Access Platform 8 m (26 ft)
	B.	Circuit Safety Clip and Tags breaker
	C.	Electrical Caps
	D.	Warning Notices - Open Fuel Tanks
	E.	Clean Lint - Free Cloth
	F.	Isopropyl Alcohol
	G.	Silicone Grease (Materil No 05-001)
	H.	Adhedesive tape
	J.	Clean Plastic Bag
R	K.	Cable ties
	Referenced Procedures	
	- 28-00-00, P.Block 301	Fuel - General
	- 28-10-00, P.Block 301	Fuel Storage
	- 28-11-33, P.Block 401	Trim Tank Manhole Cover
	- 28-25-00, P.Block 301	Refuel/Defuel System
	- 28-42-00, P.Block 501	Quantity Indicating
	- 28-42-51, P.Block 401	Fuel Quantity Probes

ITEM	DESIGNATION
- 28-46-00, P.Block 501	Level Sensing
- 55-00-00, P.Block 301	Stabilizers - General

2. Procedure

A. Job Set-Up (Ref. Fig. 401).

(1) Remove fuel and drain Trim Tank (Ref. 28-25-00, P.Block 301).

(2) Make horizontal and vertical stabilizers safe (Ref. 55-00-00, P. Block 301).

(3) Open, safety and tag the following circuit breakers:

	PANEL	SERVICE	IDENT	LOCATION
	132VU	FUEL/TRIM TANK/FWD XFR MAIN VALVE	1QL	325/K53
R	132VU	FUEL/FQI SUPPLY & IND	1QT	321/P59
R	132VU	FUEL/FQI/CHAN SUPPLY 1	3QT	321/P60
R	132VU	FUEL/FQI/CHAN SUPPLY 2	4QT	321/P61

(4) Position access platform.

(5) Remove appropriate manhole covers (Ref. 28-11-33, P. Block 401).

(6) Disconnect electrical harnesses from probes (Ref. 28-42-51, P. Block 401). Cap probe connectors.

(7) Disconnect connectors 52QT-B and 53QT-B from tank wall connectors 52QT-A (45) and 53QT-A (46)

B. Removal (Ref. Fig. 402)

NOTE : Removal of the LH harness is given, the RH is similar.

(1) Remove the screw (1), the washer (2) and the cable clamp (3) from the harness (4).

NOTE : Do not remove the clamps from the conduit (5). The conduit must not be removed.

(2) Remove the cable ties as necessary and discard. Make sure all cut cable ties are removed from the tank.

(3) Attach a string of approximately 12.0 m (39.37 ft) in length to the cable harness (4).

(4) Remove the screw (7), the washer (8) and the cable clamp (9) from the harness (10).

NOTE : Do not remove the clamps from the conduit (6). The conduit must not be removed

(5) Remove the cable ties as necessary and discard. Make sure all cut cable ties are removed from the tank.

(6) Attach a string of approximately 10.0 m (32.80 ft) in length to the cable harness (10).

(7) Remove the screw (11), the washer (12) and the cable clamp (13) from the harness (14).

NOTE : Do not remove the clamps from the conduit (15). The conduit must not be removed.

(8) Remove the cable ties as necessary and discard. Make sure all cut cable ties are removed from the tank.

(9) Attach a string of approximately 8.0 m (26.25 ft) in length to the cable harness (14).
(10) Remove the screw (16), the washer (17) and the cable clamp (18) from the harness (19).
NOTE : Do not remove the clamps from the conduit (20). The conduit must not be removed.
(11) Remove the cable ties as necessary and discard. Make sure all cut cable ties are removed from the tank.
(12) Attach a string of approximately 6.0 m (19.68 ft) in length to the cable harness (19).
(13) Remove the screw (21), the washer (22) and the cable clamp (23) from the harness (24).
NOTE : Do not remove the clamps from the conduit (25). The conduit must not be removed.
(14) Remove the cable ties as necessary and discard. Make sure all cut cable ties are removed from the tank.
(15) Attach a string of approximately 4.0 m (13.12 ft) in length to the cable harness (24).
(16) Remove the screws (26), the washers (27) and the cable clamps (28) from the harness (29).
NOTE : Do not remove the clamps from the conduit (30). The conduit must not be removed.
(17) Remove the cable ties as necessary and discard. Make sure all cut cable ties are removed from the tank.
(18) Attach a string of approximately 4.0 m (13.12 ft) in length to the cable harness (29).
(19) Remove the screws (31), the washers (32) and the cable clamps (33) from the harness (34).
NOTE : Do not remove the clamps from the conduits (35), (36). The conduits must not be removed.
(20) Remove the cable ties as necessary and discard. Make sure all cut cable ties are removed from the tank.
(21) Attach a string of approximately 3.0 m (9.84 ft) in length to the cable harness (34).
(22) Remove the screws (37), the washers (38) and the cable clamps (39) from the harnesses (40), (41).
NOTE : Do not remove the clamps from the conduits (42), (43), (44). The conduits must not be removed.
(23) Remove the cable ties as necessary and discard. Make sure all cut cable ties are removed from the tank.
(24) Attach a string of approximately 2.0 m (6.56 ft) in length to the cable harness (41)
(25) Disconnect tank wall connectors 52QT-A (53) and 53QT-A (54). (Ref. Fig. 403)
(a) Disconnect the connectors 52QT-B and 53QT-B from the tank wall connectors 52QT-A and 53QT-A.
(b) Remove the wire locked nuts (57) and (56) from the tank wall connectors 52QT-A (53) and 53QT-A (54).
(c) Pull from the tank wall connectors 52QT-A (53) and 53QT-A (54).
(d) Remove and discard de "O"-rings (58) and (55).
(26) Put adhesive tape around the ends of the disconnected harness

assembly. This will help the removal of the harness assembly thru the conduits.

(27) From the cable harness end (45), (46) carefully pull the harnesses (4), (5), (10), (14), (19), (24), (29), (34), (41), thru the conduits conduits (6), (15), (20), (25), (30), (35), (36), (42), (43), (44), and out of the tank at the manhole 319BZ. Make sure you do not damage the connectors/plugs during the removal of the harness assembly.
NOTE : Make sure that the free ends of the strings are not pulled into the counduits.

(28) Remove the strings from the harness assembly, making sure that the correct connector/plug locations are clearly marked on the strings.

(29) Put the harness assembly on a protective surface.

(30) Use a lint free cloth, moistened with Isopropyl Alcohol to carefully clean the harness assemblies.

(31) Install protective caps on the open electrical connections of the harness assemblies.

(32) Carefully put the harness assemblies into a clear plastic bag and store them on a protective surface.

C. Preparation for Installation

(1) Use a clean lint-free cloth, moistened with Isopropyl Alcohol to remove all sealant from the flange (adapter plate) thru hole adjacent surfaces. This surfaces will provide and O-ring seal againts the fuel.

(2) Carefully remove the harness from its plastic storage bag put it in position on a protective surface, ready for installation.
NOTE: If re-installing a previously installed harness use a clean lint-free cloth with Isopropyl Alcohol to remove all sealant from the harness connector paying particular attention to the connector O-ring interface.

(3) Remove the the harness connector protective caps.

(4) Wind adhesive tape tightly around the connectors/plugs and the harness at all the connector and plug locations. Make sure the harness doest not twist or bend.

D. Installation (Ref. Fig. 402)

(1) Carefully put the harness asembly thru the manhole 319BZ.

(2) Attach the strings to the harness, making sure that the correct strings are attached to the correct connector/plug locations.

(3) By pulling on the free ends of the strings carefully pull the harnesses (41), (34), (29), (24), (19), (14), (10), (5), (4) thru the conduits until they are at their correct locations.

(4) Remove the strings and the adhesive tape from the connectors/plugs and the harness.

(5) Install the cable clamps (39) to the harnesses (40), (41) with the screws (37) and the washers (38).

(6) Install the cable ties as necessary.

(7) Install the cable clamps (33) to the harness (34) with the screws (31) and the washers (32).

(8) Install the cable ties as necessary.

(9) Install the cable clamps (28) to the harness (29) with the screws (26) and the washers (27).

(10) Install the cable ties as necessary.

(11) install the cable clamp (23) to the harness (24) with the screw (21) and the washer (22).
(12) Install the cable ties as necessary.
(13) Install the cable clamp (18) to the harness (19) with the screw (16) and the washer (17).
(14) Install the cable ties as necessary.
(15) Install the cable clamp (13) to the harness (14) with the screw (11) and the washer (12).
(16) Install the cable ties as necessary.
(17) Install the cable clamp (9) to the harness (10) with the screw (7) and the washer (8).
(18) Install the cable ties as necessary.
(19) Install the cable clamp (3) to the harness (4) with the screw (1) and the washer (2).
(20) Install the cable ties as necessary.
(21) Remove the probe connector caps.
(22) Connect electrical harnesses to probes (Ref. 28-42-51, P. Block 401).
CAUTION: MAKE SURE THAT THE HARNESS CONNECTOR (45 and 46); AND THE HARNESS PLUGS ARE CLEAN; THOROUGHLY DRY AND FREE FROM GREASE/OIL.
FAILURE TO OBEY MAY RESULT IN MOISTURE INGRESS AND CAUSE THE FUEL STATUS TO BE INCORRECT.
(23) Use a clean lint free cloth moistened with isopropyl alcohol to carefully clean the harness plugs. Make sure that they are throroughly dry and free from unwanted grease and oil. If necessary, use clean, dry compressed air to lightly blow dry the areas of small access.
(24) Connect wall tank connectors 52QT-A (53) and 53QT-A (54). (Ref. Fig. 403)
a. Install new "O"-rings (58) and (55) in the tank wall connectors 52QT-A (53) and 53QT-A (54).
b. Introduce the tank wal connectors 52QT-A (53) and 53QT-A (54) in the wall hole and install nuts (57) and (56).
c. Wire lock the nuts (57) and (56).
d. Connect the connectors 52QT-B and 53QT-B to the tank wall connectors 52QT-A (53) and 53QT-A (54).

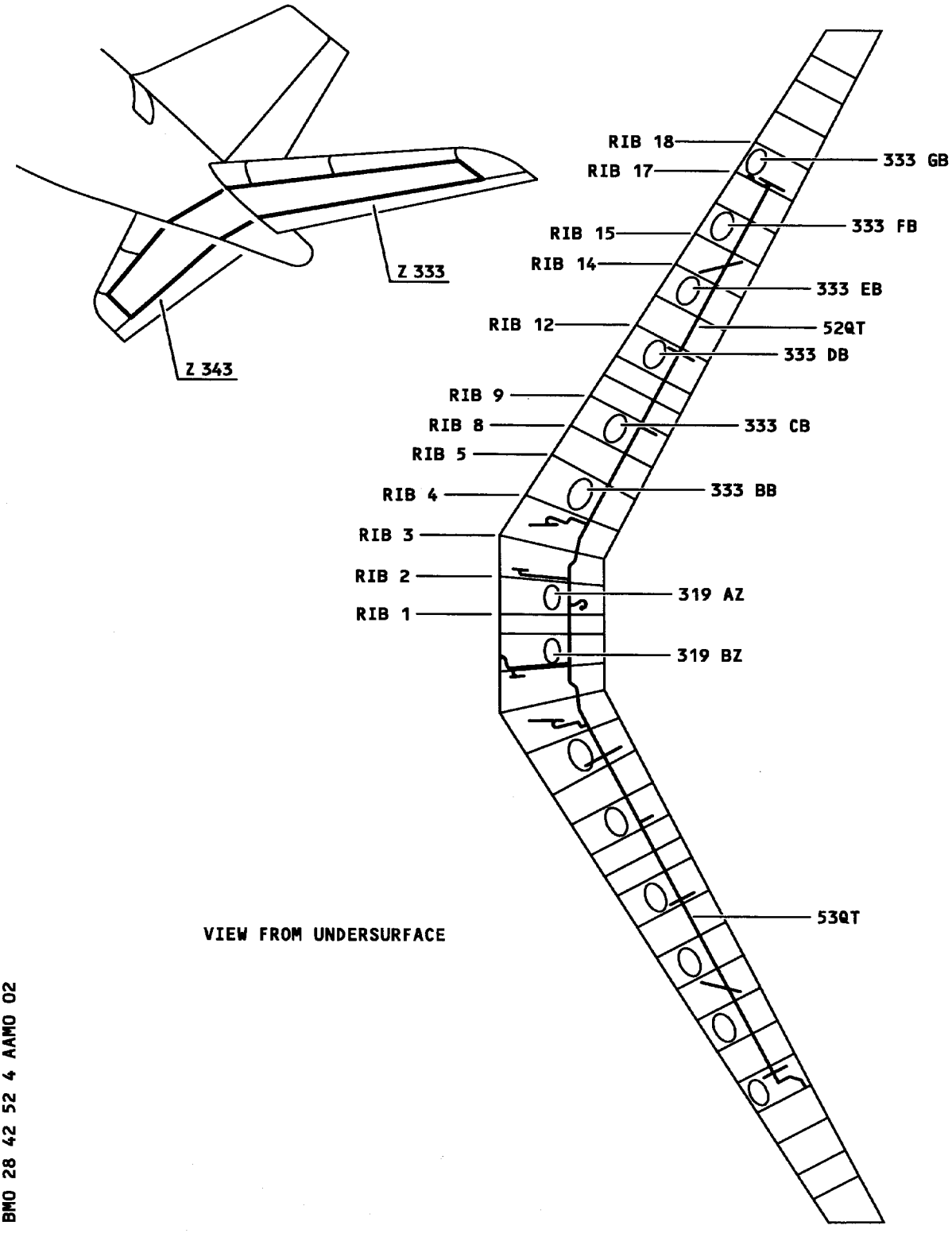
(25) Install the manhole covers (Ref. 28-11-33, P. Block 401).

E. Preparation for Test
(1) Refuel the tanks (Ref. 28-25-00, P. Block 301).
(2) Remove the safety clips and the tags and close the circuit breakers
R 1QL (325/K53), 1QT (321/P59), 3QT (321/P60, and 4QT (321/P61)

F. Test
(1) Do a functional test of the fuel quantity indicating system (Ref. 28-42-00, P. Block 501).

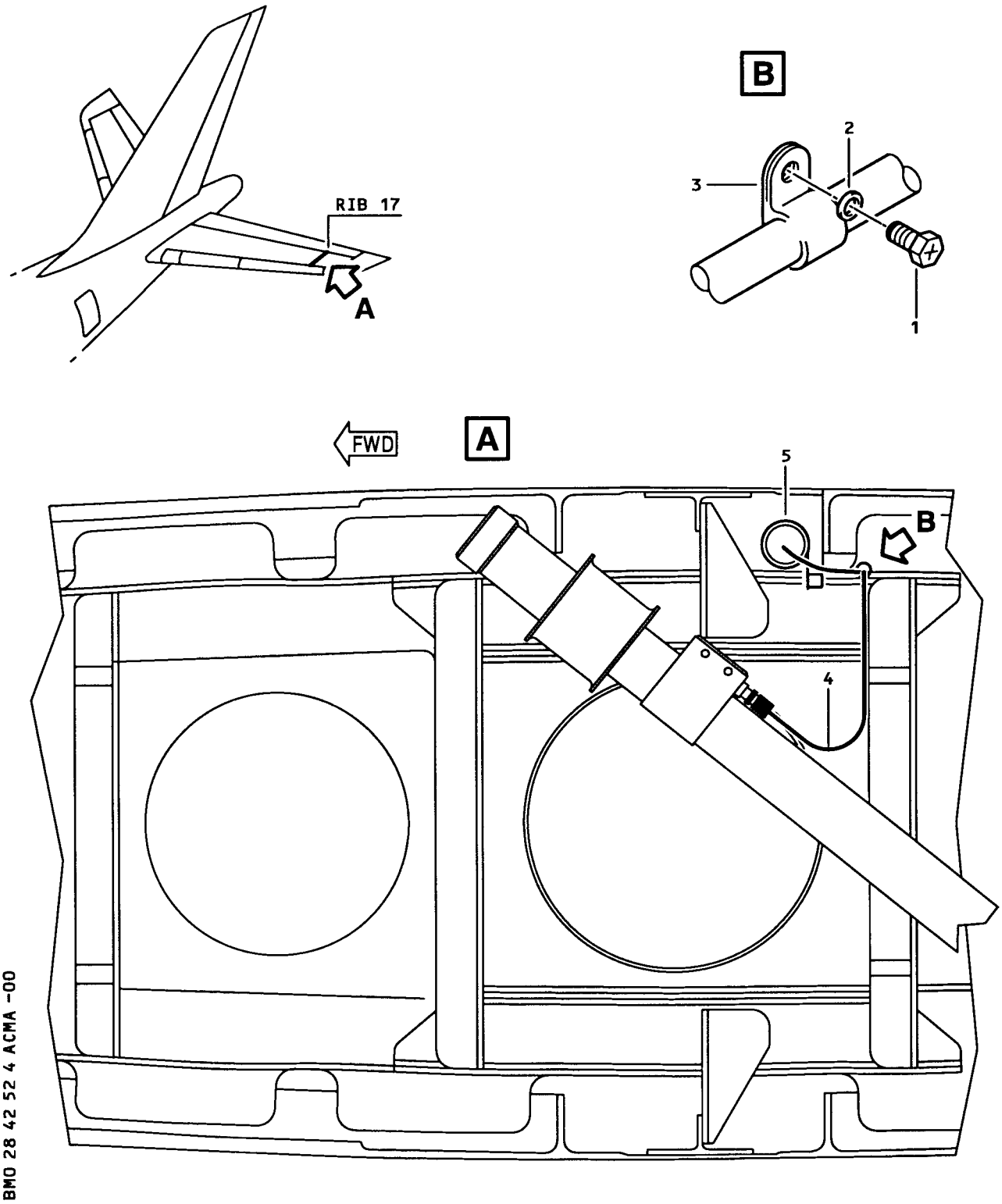
G. Close Up
(1) Remove the access platform.
(2) Remove the warning notices.

(3) Make sure that the work area is clean and clear of tools and other items.

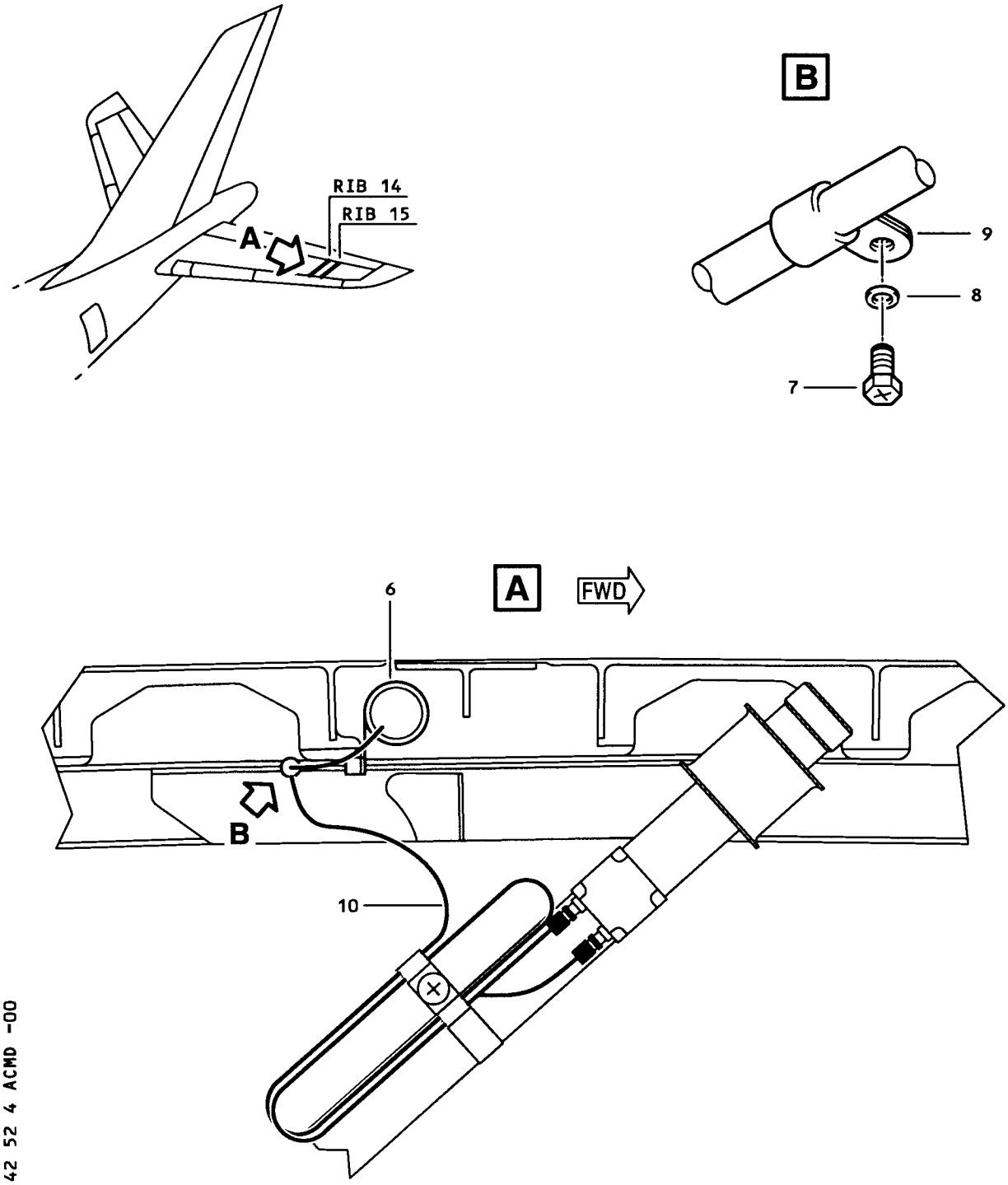


BMO 28 42 52 4 AAMO 02

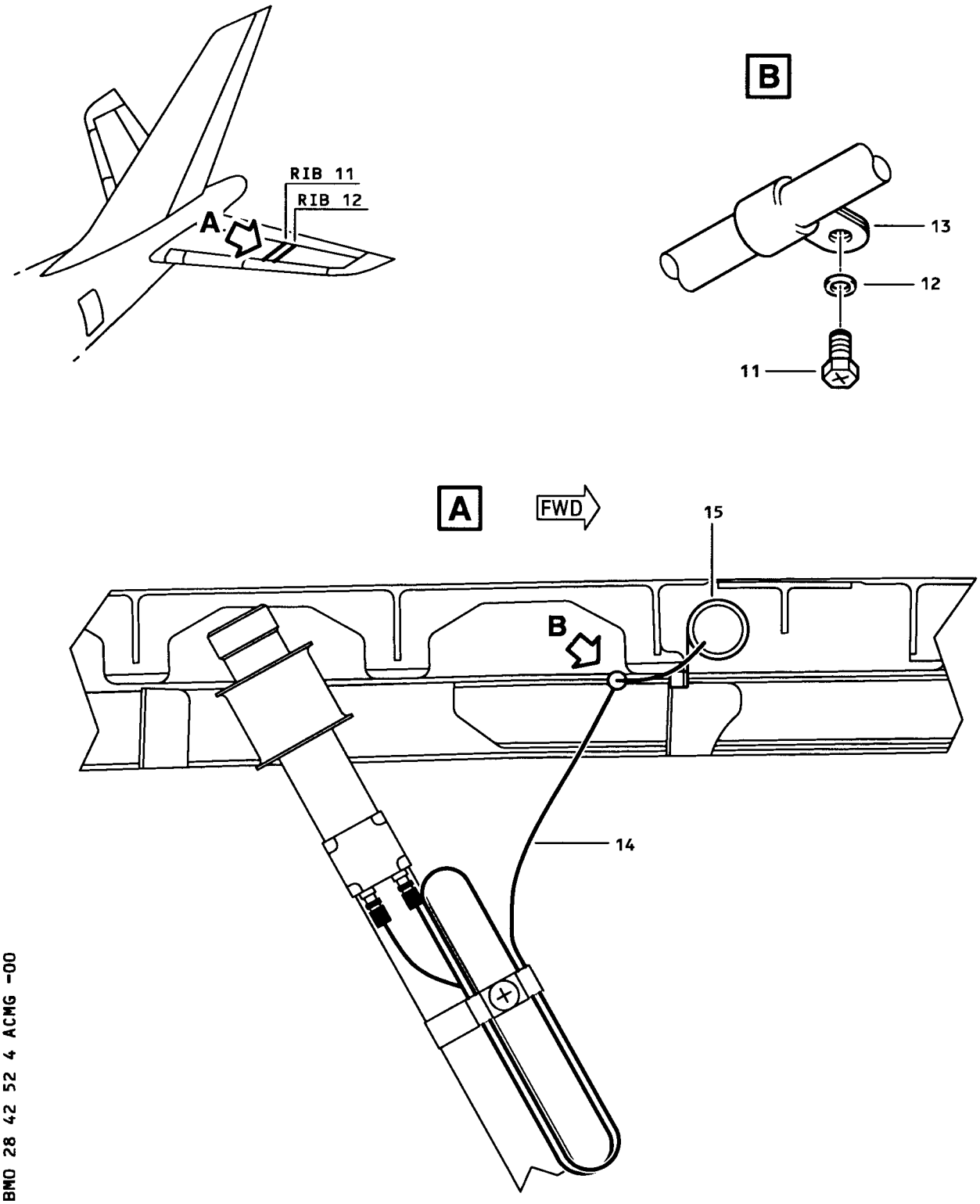
Fuel Quantity Harness - Location
Figure 401



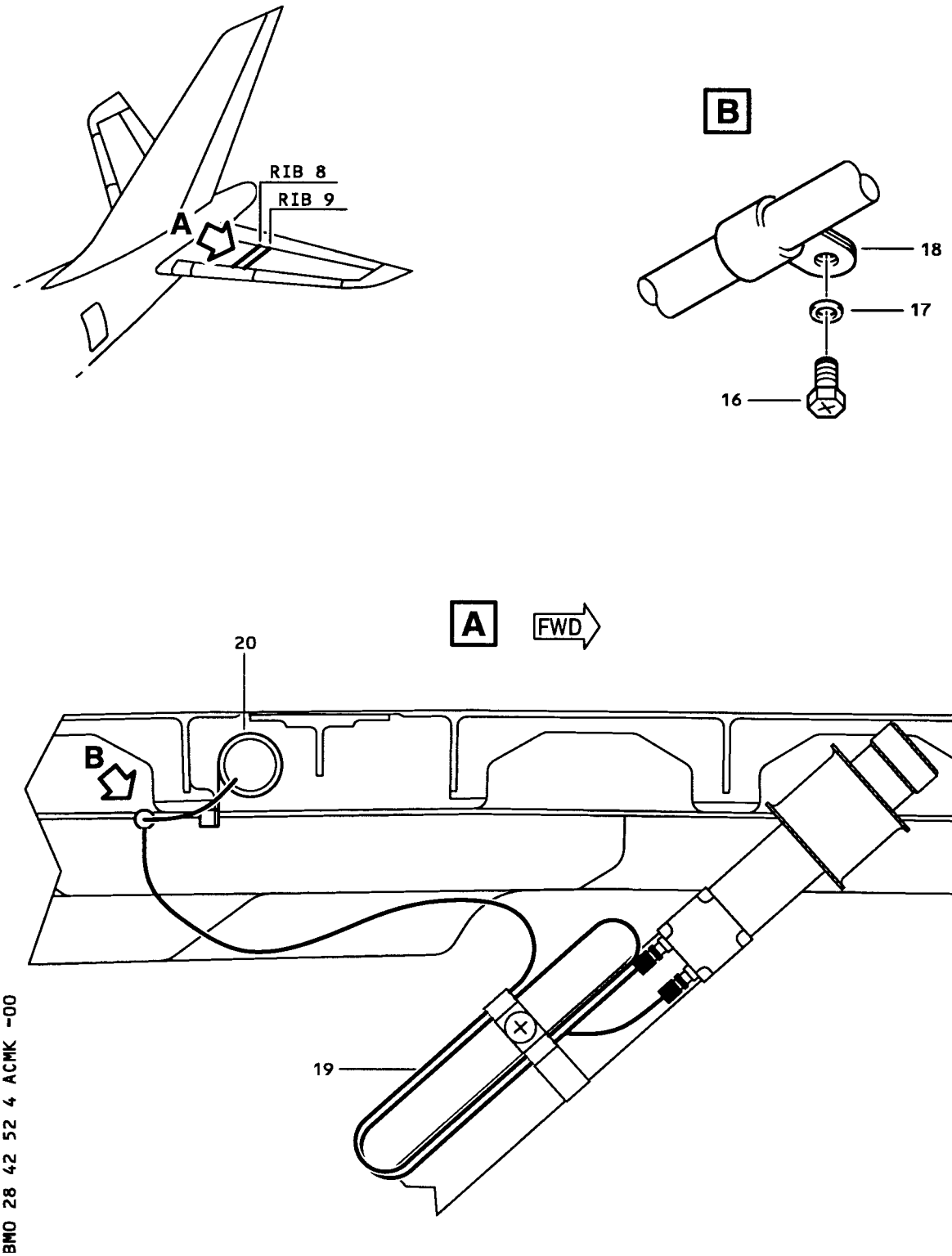
Cable Clamps at Rib 17 - R/I
Figure 402



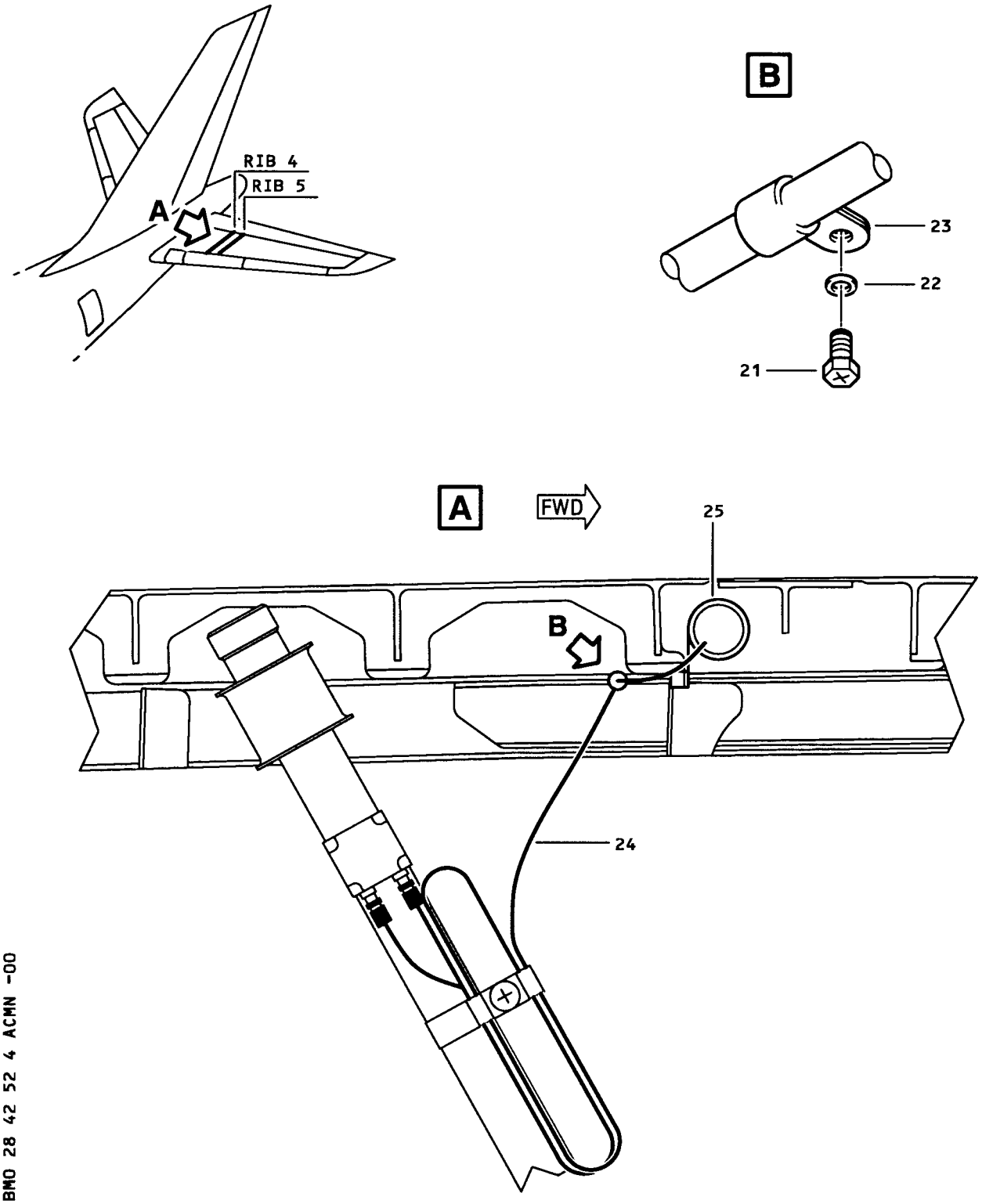
Cable Clamps Between Rib 14 and Rib 15 - R/I
Figure 402



Cable Clamps between Rib 11 and Rib 12 - R/I
Figure 402



Cable Clamps between Rib 8 and Rib 9 - R/I
Figure 402



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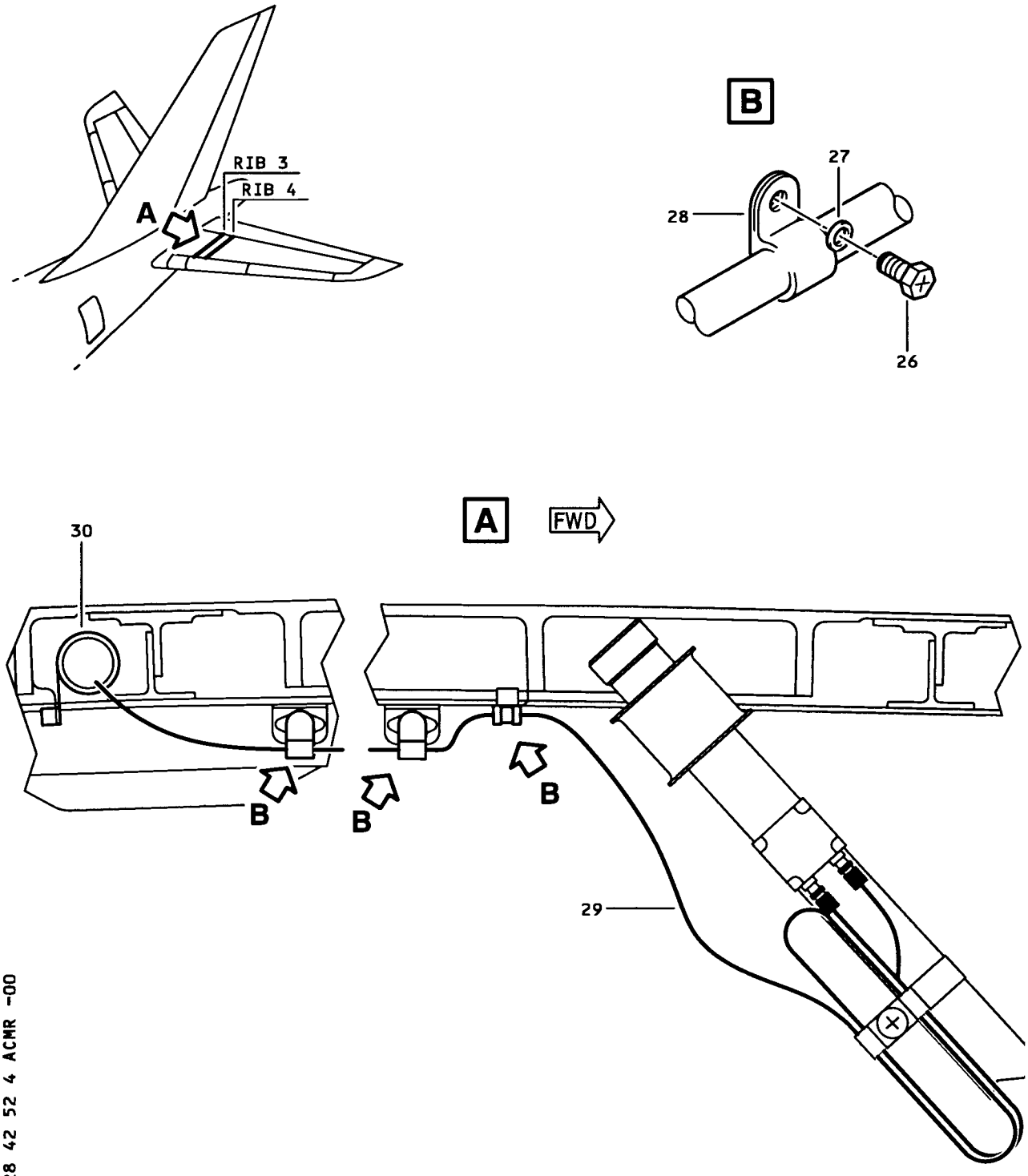
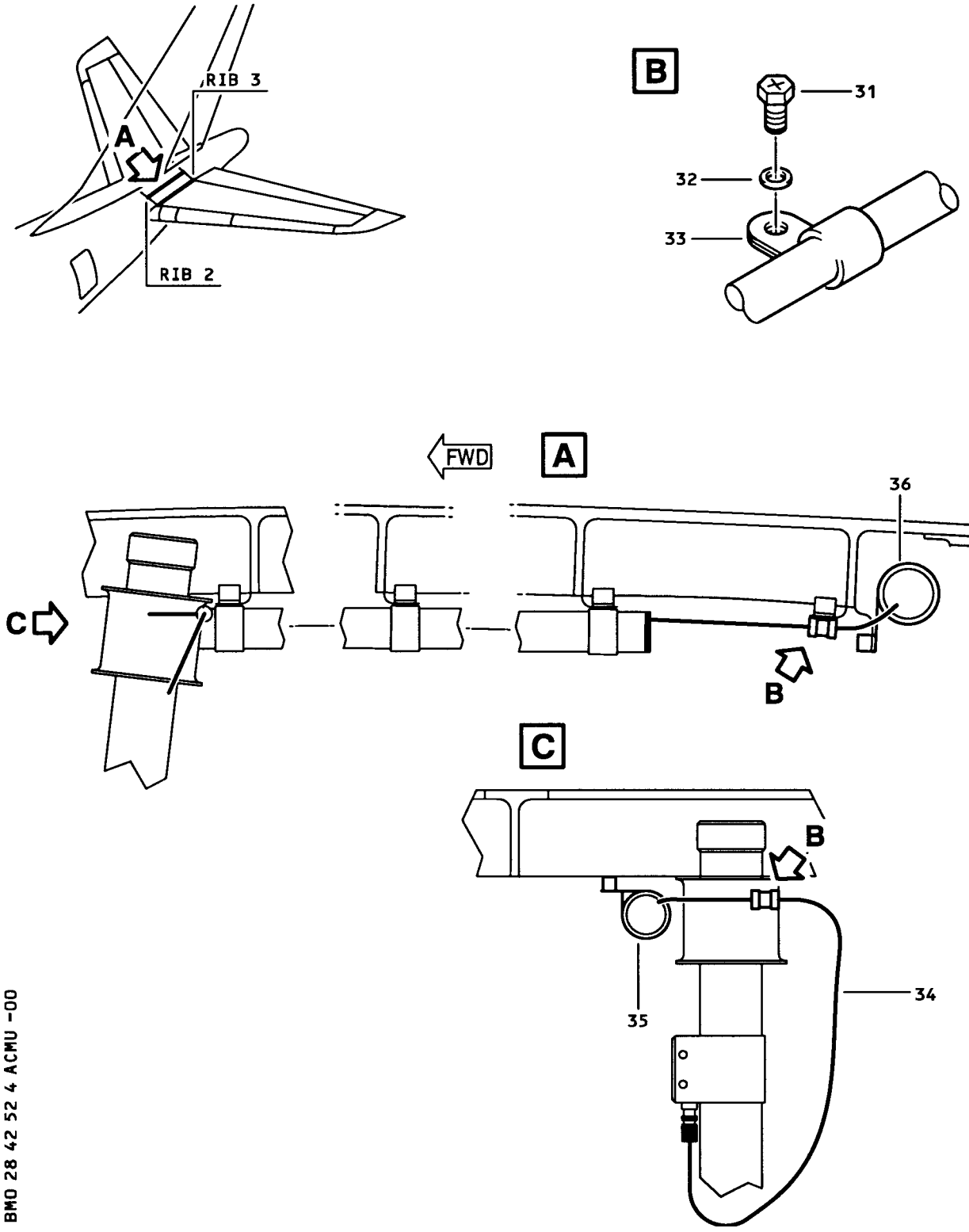
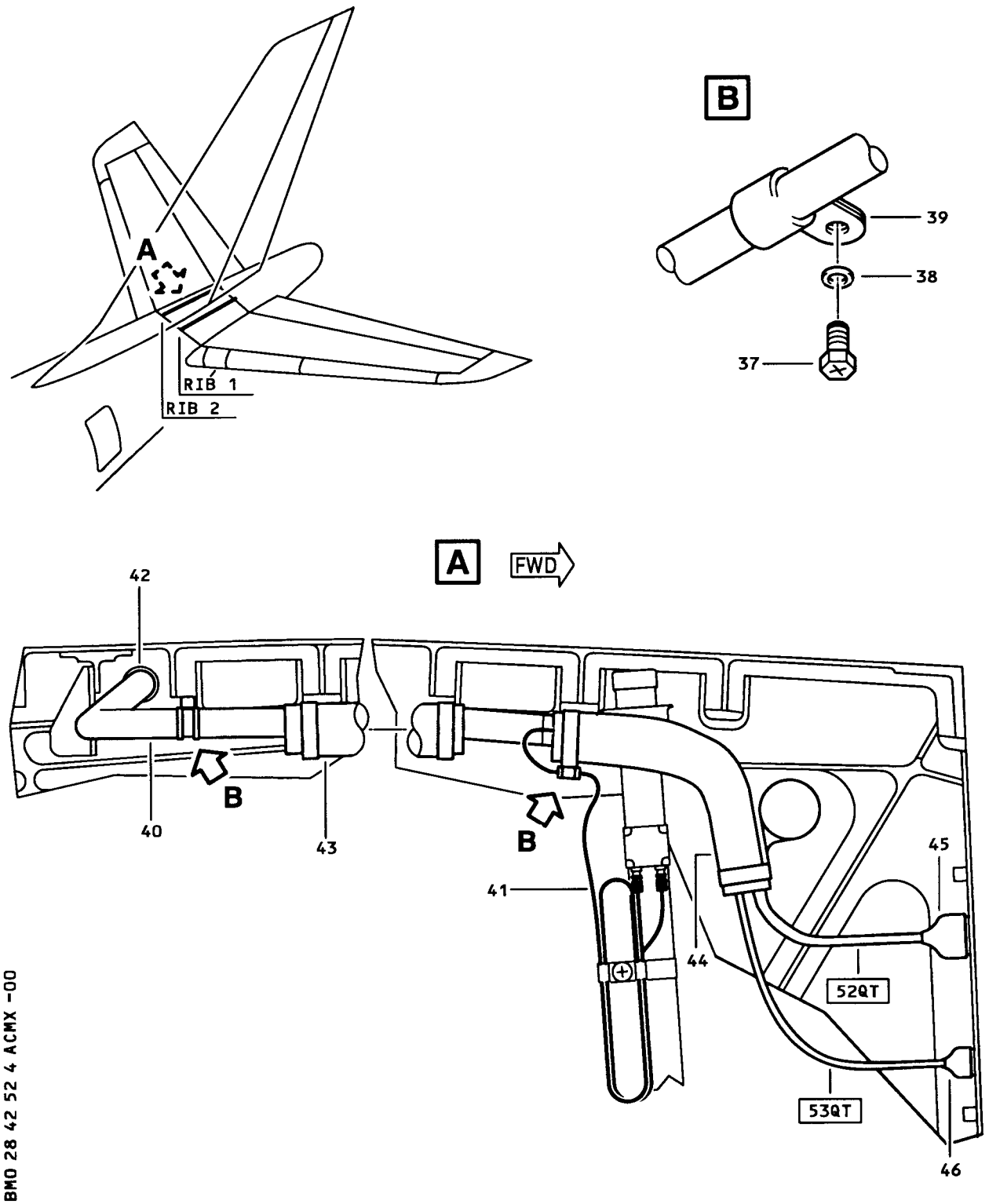
Cable Clamps between Rib 4 and Rib 5 - R/I
Figure 402



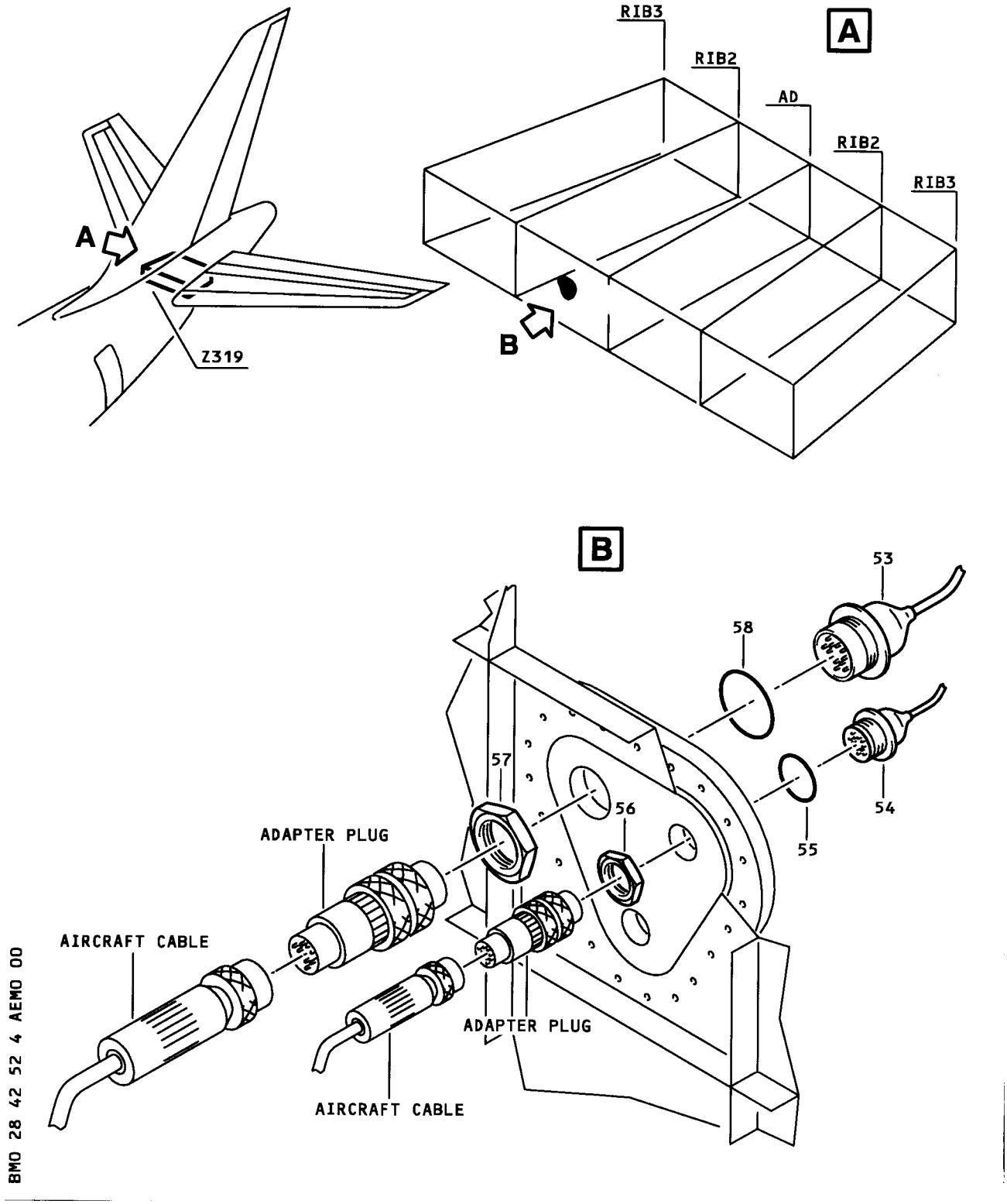
Cable Clamps between Rib 3 and Rib 4 - R/I
Figure 402



Cable Clamps between Rib 2 and Rib 3 - R/I
Figure 402



Cable Clamps between Rib 1 and Rib 2 RH Center Box - R/I
Figure 402



Connectors 53QT-A and 53QT-B Center Box - R/I
Figure 403

FUEL LEVEL SENSING HARNESS 6015VC, TRIM TANK - REMOVAL/INTALLATION

WARNING : PUT THE SAFETY DEVICES AND THE WARNING NOTICES IN POSITION BEFORE YOU SART A TASK ON OR NEAR:
- THE FLIGHT CONTROLS
- THE FLIGHT CONTROL SURFACES
- THE LANDING GEAR AND THE RELATED DOORS
- COMPONENTS THAT MOVE.

WARNING : OBEY THE SAFETY PRECAUTIONS IN 28-00-00, P. BLOCK 301 AND 28-10-00, P. BLOCK 301.

WARNING : MAKE SURE YOU HAVE THE CORRECT FIRE FIGHTING EQUIPMENT AVAILABLE.

WARNING : MAKE SURE THAT ALL THE CIRCUITS IN MAINTENANCE ARE ISOLATED BEFORE YOU SUPPLY ELECTRICAL POWER TO THE AIRCRAFT.

WARNING : USE SOLVENTS/CLEANING AGENTS SEALANTS AND OTHER SPECIAL MATERIALS ONLY WITH A GOOD SUPPLY OF AIR.
OBEY THE MANUFACTURERS INSTRUCTIONS.
DO NOT GET THEM IN YOUR MOUTH.
PUT ON PROTECTIVE CLOTHING.
DO NOT SMOKE.
DO NOT BREATHE THE GAS.
THESE MATERIALS ARE POISONOUS AND FLAMMABLE AND SKIN IRRITANTS.
GET MEDICAL HELP IS YOUR SKIN OR EYES BECOME IRRITATED.

WARNING : DO NOT OPERATE THE MICROPHONE BUTTONS ON HF TRANSMISSION DURING REFUELING/DEFUELING OR GROUND MAINTENANCE - FUEL TRANSFER OPERATIONS.

1. Equipment and Materials

ITEM	DESIGNATION
A	Access Platform 8 m (26 ft)
B	Circuit Breaker Safety Clip and Tags
C	Electrical Caps
Referenced Procedures	
- 28-00-00, P.Block 301	Fuel - General
- 28-10-00, P.Block 301	Fuel Storage
- 28-11-33, P.Block 401	Trim Tank Manhole Cover
- 28-25-00, P.Block 301	Refuel/Defuel System
- 28-42-00, P.Block 501	Quantity Indicating
- 28-46-00, P.Block 501	Level Sensing
- 28-46-30, P.Block 401	Fuel Level Sensors
- 55-00-00, P.Block 301	Stabilizers - General

2. Procedure
A. Job Set-Up (Ref. Fig. 401)

(1) Remove fuel and drain Trim Tank (Ref. 28-25-00, P.Block 301)
CAUTION : HORIZONTAL STABILIZER DEFLECTION SPEED MUST NOT EXCEED 0.5 DEGREES PER SECOND.
(2) Turn Trimmable Horizontal Stabilizer (THS) pitch trim manual control wheel to NOSE DOWN.
(3) Make THS safe (Ref. 55-00-00, P. Block 301).
(4) Open, safety and tag the following circuit breakers:

PANEL	SERVICE	IDENT	LOCATION
22VU	FUEL/TK LO LVL/L OUTR and R INR and CTR R	1QJ	208/B26
22VU	FUEL/TK LO LVL/L OUTR and L INR and CTR L	2QJ	208/B27
128VU	FUEL/FUELING/OVERFLOW	5QJ	L36
132VU	FUEL/FUELING/CTL AND REFUEL VALVE	1QU	321/P56
132VU	FUEL/FUELING/HI LVL	6QJ	321/P57

(5) Put access platform in position and remove applicable manhole covers (Ref. 28-11-33, P. Block 401).
(6) Install manhole seal protection ring.
(7) Display warning notices prohibiting operation of THS.
(8) Disconnect electrical harnesses from sensors (REf. 28-46-30, P. Block 401). Cap sensor plugs.

B. Removal(Ref. Fig. 402)

NOTE : Removal of the LH harness is given, the RH is similar.
(1) Remove the connector (1) from the harness (5).
(2) Remove the screws (2), the washers (3) and the cable clamps (4) from the harness (5).
NOTE : Do not remove the clamps from the conduit (6). The conduit must not be removed.
(3) Remove the cable ties as necessary and discard. Make sure all cut cable ties are removed from the tank.
(4) Attach a string of approximately 12.0 m (39.37 ft) in length to the cable harness (5).
(5) Remove the connectors (7), (8), from the harnesses (12), (13).
(6) Remove the screws (9), the washers (10) and the cable clamps (11) from the harness (12), (13).
NOTE : Do not remove the clamps from the conduits (14), (15). The conduits must not be removed
(7) Remove the cable ties as necessary and discard. Make sure all cut cable ties are removed from the tank.
(8) Attach a string of approximately 3.0 m (9.84 ft) in length to the cable harness (12).
(9) Attach a string of approximately 3.0 m (9.84 ft) in length to the cable harness (13).
(10) Remove the screw (16), the washer (17) and the cable clamp (18) from the harness (19).
NOTE : Do not remove the clamps from the conduit (20), (21),

(22). The conduits must not be removed.
(11) Remove the cable ties as necessary and discard. Make sure all cut cable ties are removed from the tank.
(12) Disconnect the wall connector 6015VC-A (23) (Ref. Fig. 403).
(a) Disconnect the connector 6015VC-B from the tank wall connector 6015VC-A.
(b) Remove the wire locked nut (24) from the tank wall connector 6015VC-A (23).
(c) Pull from the wall connector 6015VC-A (23)
(d) Remove and discard the O-ring (25).
(13) From the cable harness end (23) carefully pull the harnesses (5), (12), (13) thru the conduits (6), (14), (15), (20), (21), (22) and out of the tank at the manhole 319BZ.
NOTE : Make sure that the free ends of the strings are not pulled into the conduits.
(14) Remove the strings from the harness assembly, making sure that the correct connector locations are clearly marked on the strings.
(15) Put the harness assembly on a protective surface.

C. Preparation for Installation
(1) Wind adhesive tape tightly around the harness at all the connector locations. Make sure the harness does not twist or bend.

D. Installation
(1) Carefully put the harness assembly thru the manhole 319BZ.
(2) Attach the strings to the harness, making sure that the correct strings are attached to the correct connector locations.
(3) By pulling on the free ends of the strings carefully pull the harnesses (13), (12), (5) thru the conduits until they are at their correct locations.
(4) Remove the strings and the adhesive tape from the harness.
(5) Connect the connector (8) to the harness (13).
(6) Connect the connector (7) to the harness (12).
(7) Install the cable clamps (11) to the harness (13), (12) with the screws (9) and the washers (10).
(8) Install the cable ties as necessary.
(9) Connect the connector (1) to the harness (5).
(10) Install the cable clamps (4) to the harness (5) with the screws (2) and the washers (3).
(11) Install the cable ties as necessary.
(12) Install the cable clamps (18) to the harness (19) with the screws (16) and the washers (17).
(13) Install the cable ties as necessary.
(14) Remove electrical caps from sensor plugs.
(15) Connect electrical harnesses to sensors (Ref. 28-46-30, P. Block 401).
(16) Remove the electrical cap from the tank wall connector 6015VC-A (23).
(17) Install the tank wall connector 6015VC-A (23).
(a) Install a new O-ring (25) in the tank wall connector 6015VC-A (23),
(b) Put in position the tank wall connector 6015VC-A (23) and install the nut (24).
(c) Wire lock the nut (24).

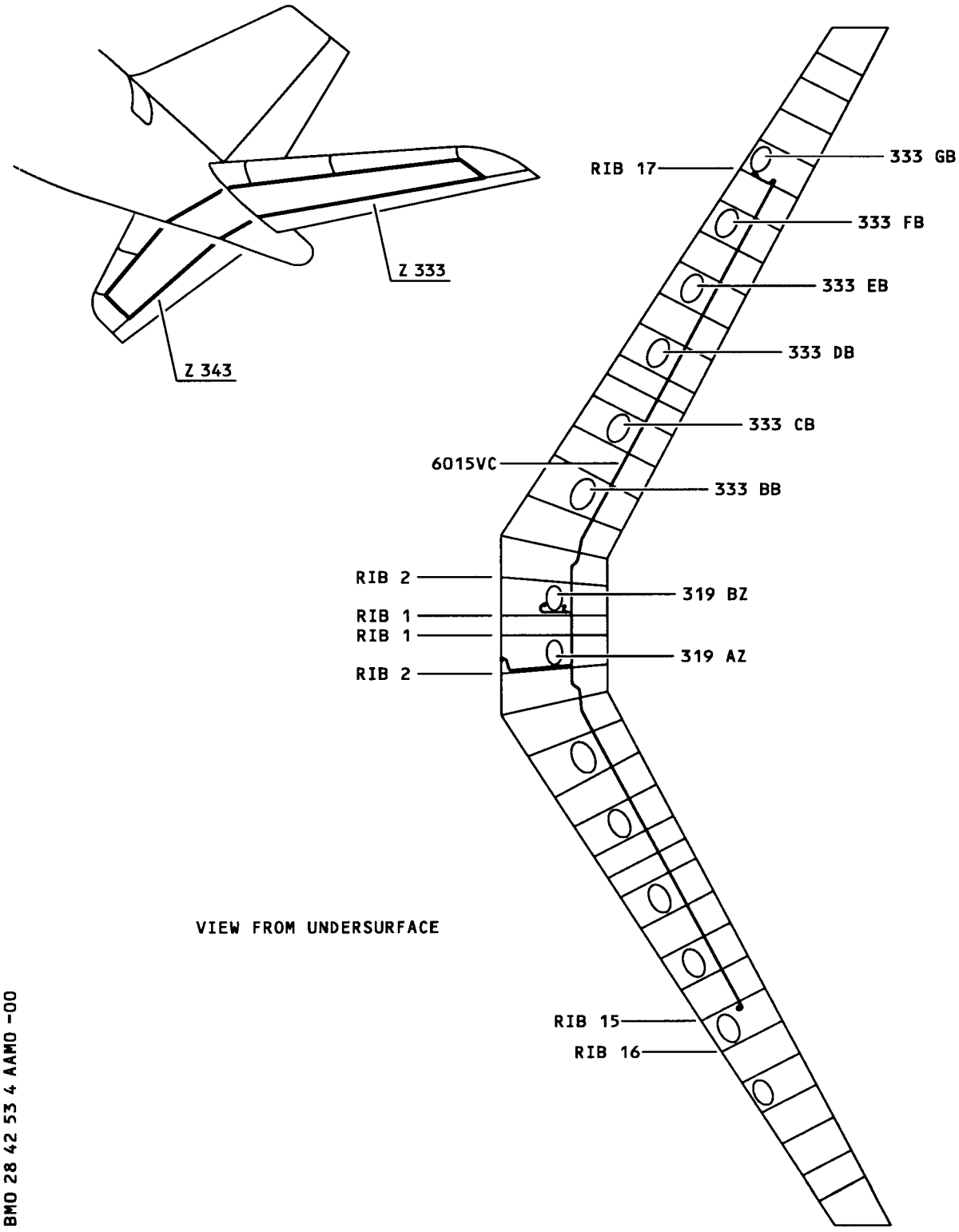
(d) Connect connector 6015VC-B to the tank wall connector 6015VC-A

R (18) Remove manhole seal protection ring and install manhole cover (Ref.
R 28-11-33, P.Block 401).
R (19) Install the cable ties as necessary.

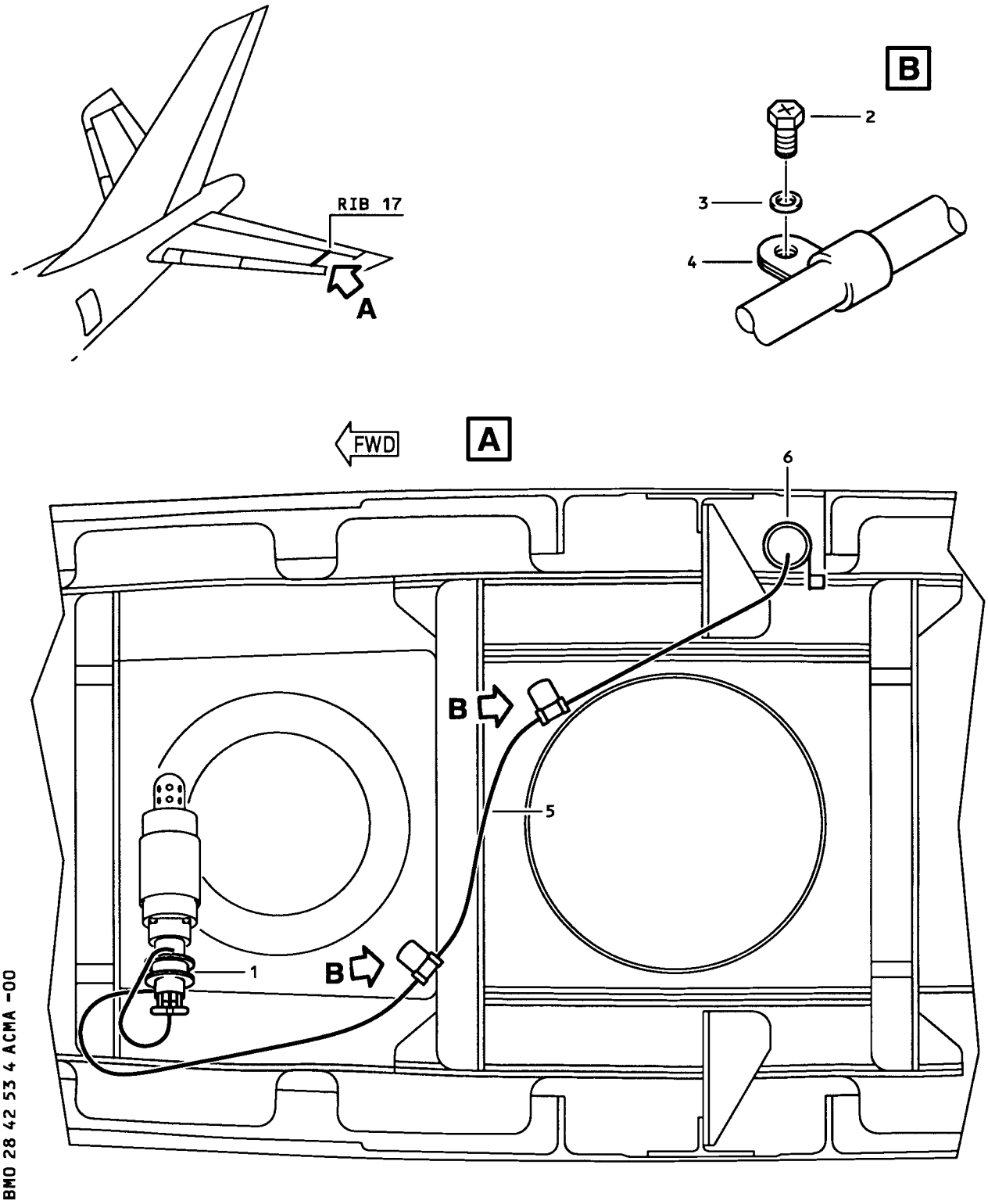
E. Preparation for Test
(1) Refuel the tanks (Ref. 28-25-00, P. Block 301).

F. Test
(1) Do an operational test of the fuel level sensing system (Ref. 28-46-00, P. block 501).

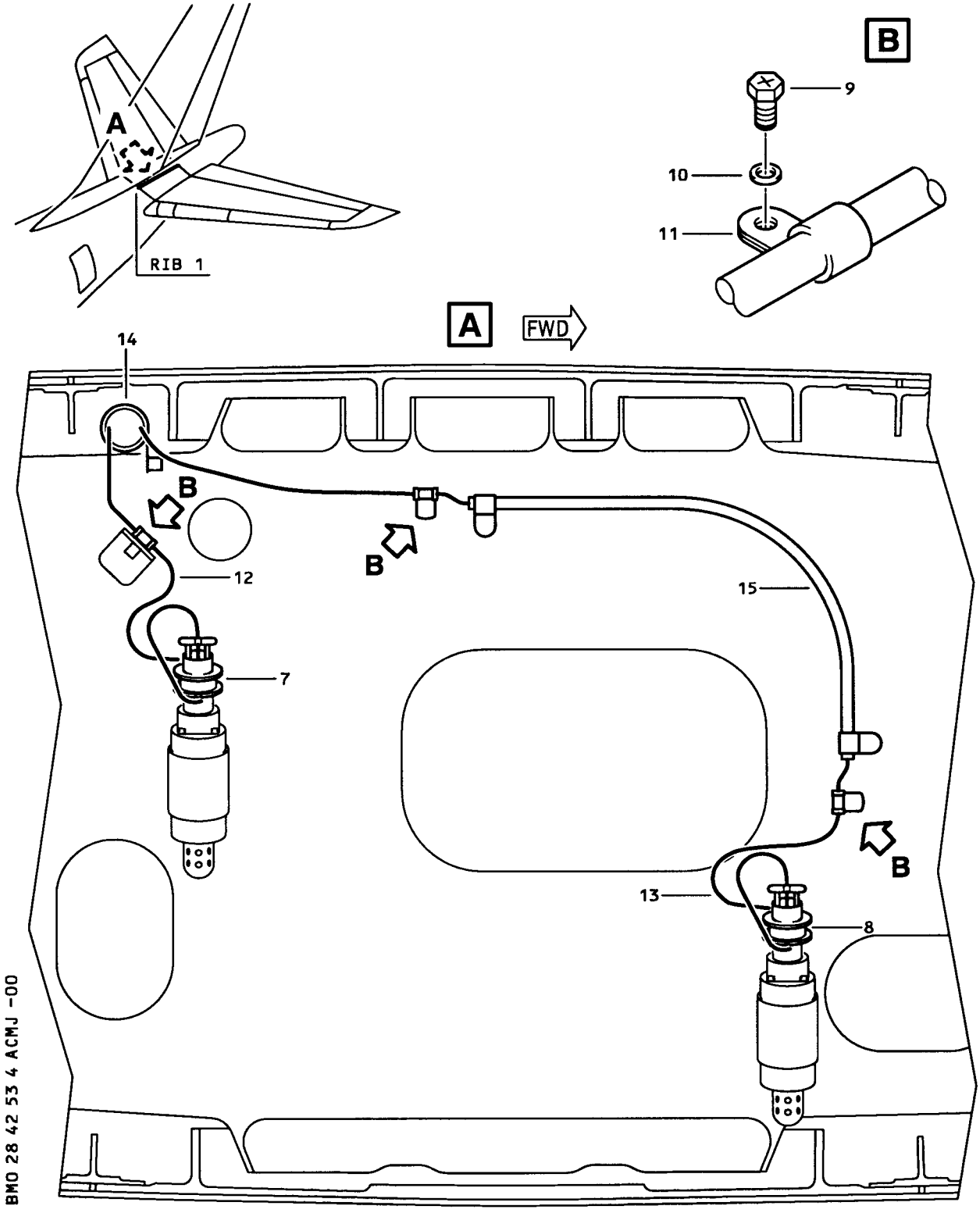
G. Close Up
(1) Make certain that the working area is clean and clear of tools and miscellaneous items of equipment.
(2) Remove safety clips and tags and close circuit breakers 1QJ, 2QJ, 5QJ, 6QJ and 1QU.
(3) Return stabilizer to operating condition (Ref. 55-00-00, P. Block 301).
(4) Remove access platform.
(5) Remove warning notices.



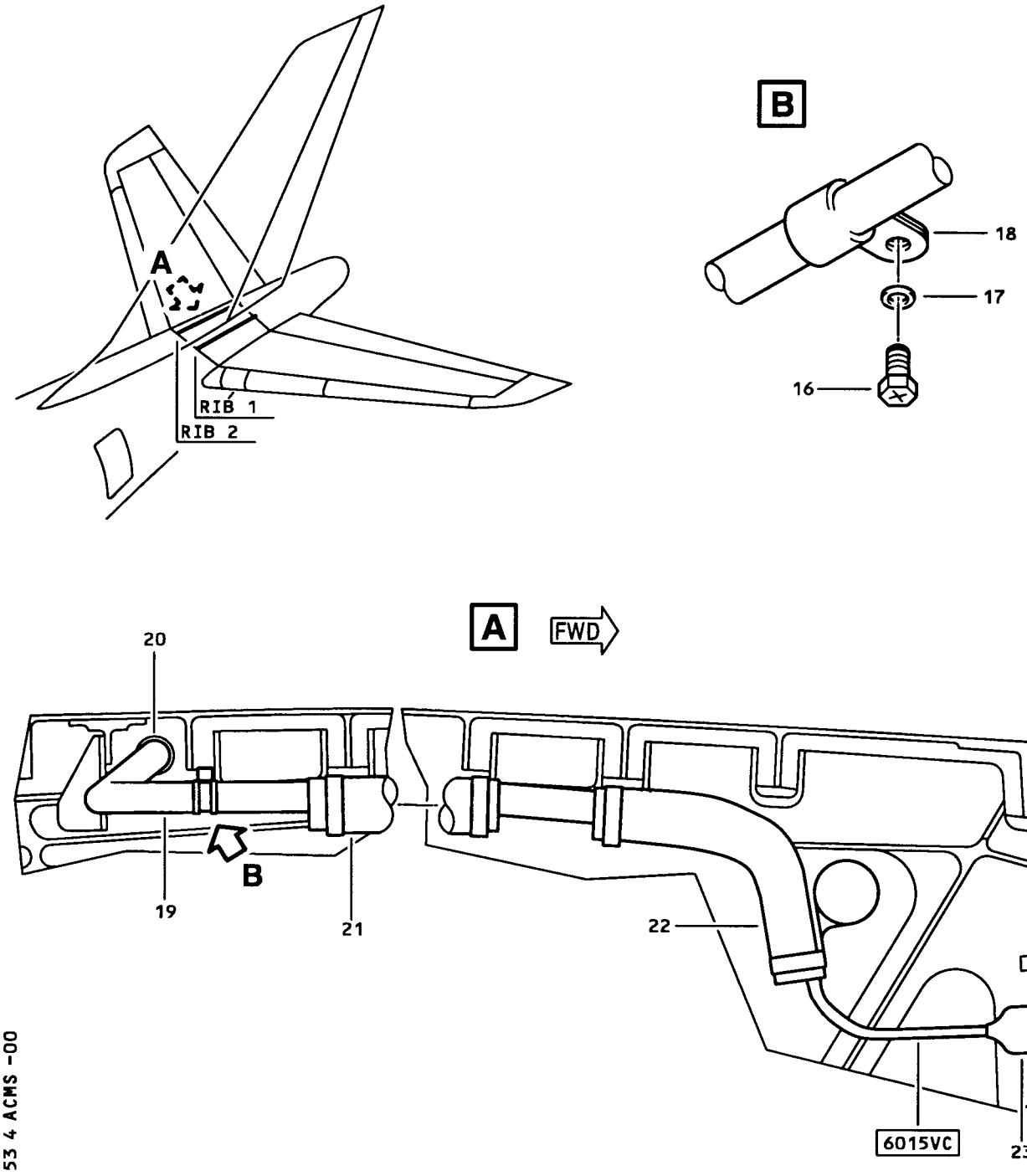
Fuel Level Sensing Harness - Location
Figure 401



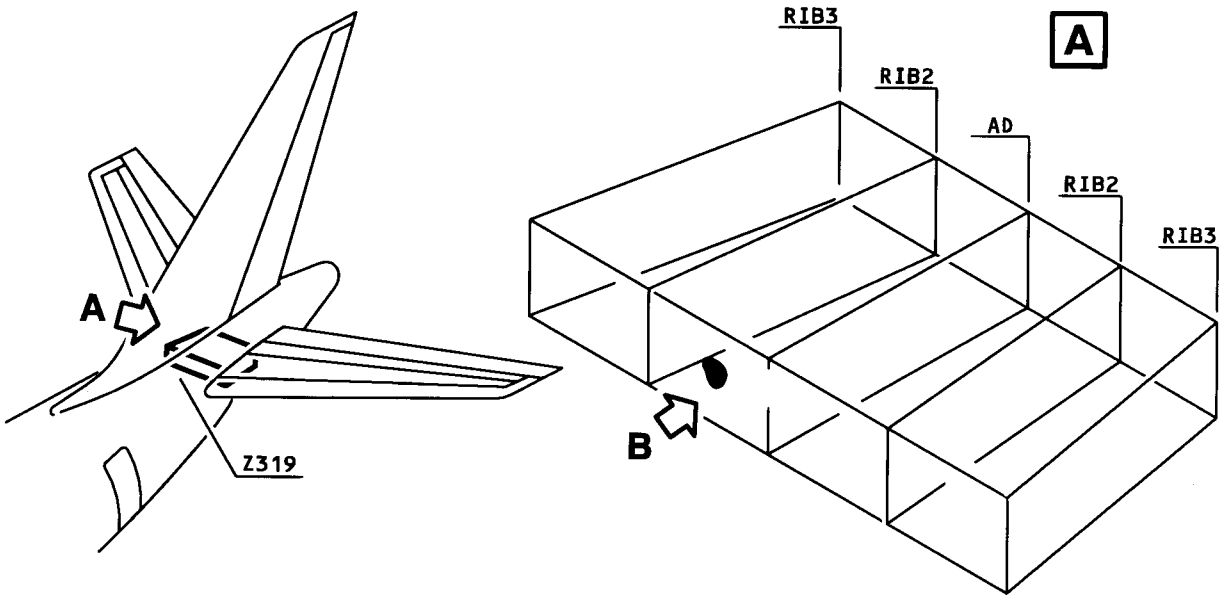
Removal of Cable Clamps at Rib 17
Figure 402

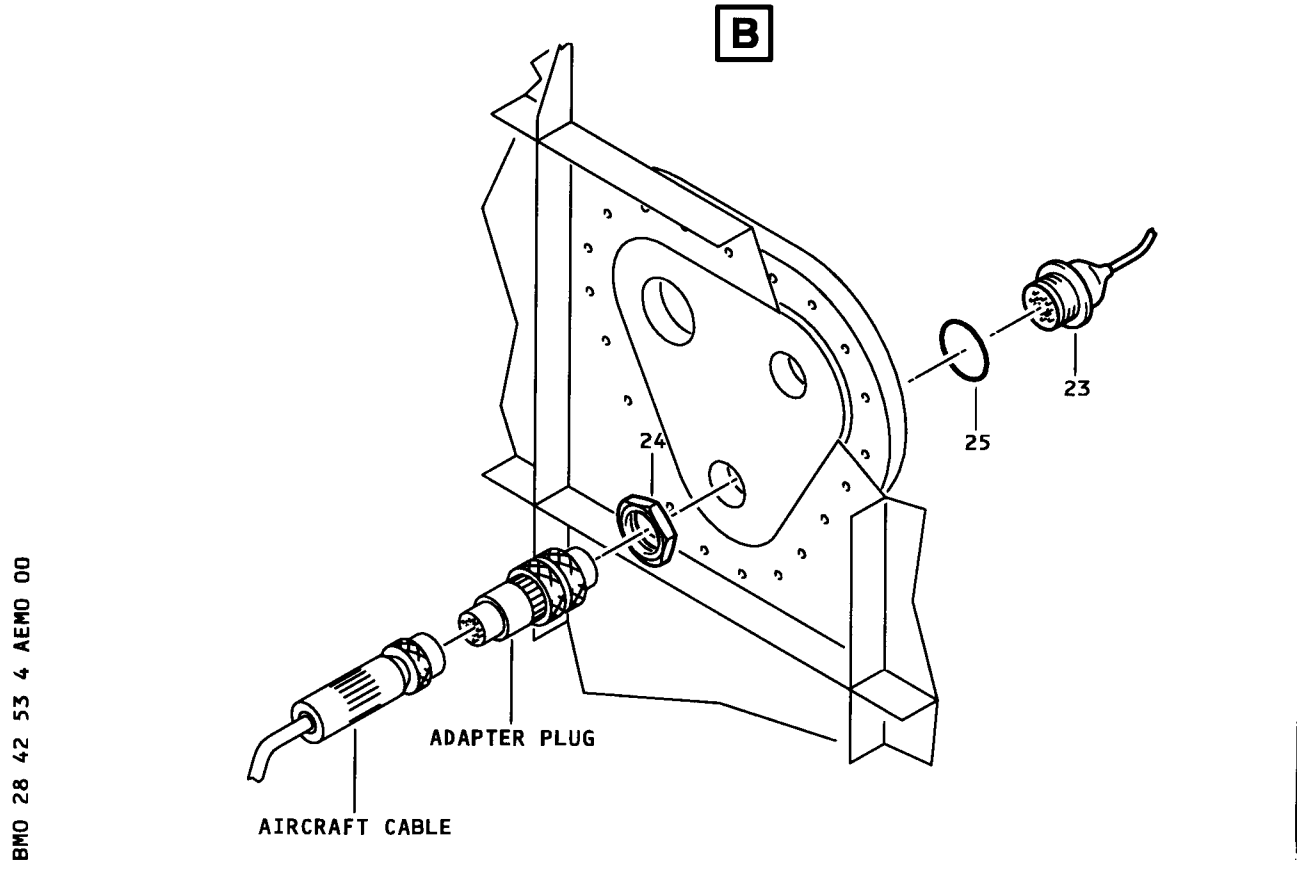


Removal of Cable Clamps at Rib 1
Figure 402



Removal of Cable Clamps between Rib 1 and Rib 2 RH Center Box
Figure 402





Connector 6015VC-A and 6015VC-B Center Box - R/I
Figure 403

PROBE - FUEL QUANTITY,
ADDITIONAL CENTER TANK - REMOVAL/INSTALLATION

R WARNING : THIS PROCEDURE USES A FUEL SYSTEM ITEM THAT IS IN A CATEGORY KNOWN
R AS A CRITICAL DESIGN CONFIGURATION CONTROL LIMITATION (CDCCL).
R CDCCL IDENTIFIES AN ITEM THAT CAN BE THE SOURCE OF A POSSIBLE FUEL
R TANK IGNITION. YOU MUST KEEP ALL CDCCL ITEMS IN THE APPROVED
R CONFIGURATION. DAMAGE, WEAR OR CHANGES TO A CDCCL ITEM CAN CAUSE
R A POSSIBLE FUEL TANK EXPLOSION.

R WARNING : MAKE SURE THAT THE FIRE FIGHTING EQUIPMENT IS AVAILABLE AND ADEQUATE.

R WARNING : MAKE SURE THAT YOU ISOLATE THE ELECTRICAL CIRCUITS UPON WHICH WORK
R IS IN PROGRESS.

R WARNING : OBEY THE FUEL SAFETY PROCEDURES. THIS CAN PREVENT INJURY AND DAMAGE.

R WARNING : DO NOT GET AIRCRAFT FUEL:
R - IN YOUR MOUTH
R - IN YOUR EYES
R - ON YOUR SKIN FOR A LONG TIME.

R WARNING : DO NOT GET YOUR CLOTHES SOAKED WITH FUEL.
R AIRCRAFT FUEL IS POISONOUS AND CAN GO THROUGH YOUR SKIN INTO YOUR
R BODY. IF YOU ARE CONTAMINATED, WASH WITH CLEAN WATER AND IF NECESSARY,
R GET MEDICAL HELP.

NOTE : The installation of the two fuel quantity indicator (FQI) probes 280253 and 280255 is the same. The removal and installation of one only is described.

**ON A/C 101-200,

Post SB 28-2105 For A/C 101-200,

PROBE - FUEL QUANTITY,
ADDITIONAL CENTER TANK - REMOVAL/INSTALLATION

R WARNING : THIS PROCEDURE USES A FUEL SYSTEM ITEM THAT IS IN A CATEGORY KNOWN
R AS A CRITICAL DESIGN CONFIGURATION CONTROL LIMITATION (CDCCL).
R CDCCL IDENTIFIES AN ITEM THAT CAN BE THE SOURCE OF A POSSIBLE FUEL
R TANK IGNITION. YOU MUST KEEP ALL CDCCL ITEMS IN THE APPROVED
R CONFIGURATION. DAMAGE, WEAR OR CHANGES TO A CDCCL ITEM CAN CAUSE
R A POSSIBLE FUEL TANK EXPLOSION.

R WARNING : MAKE SURE THAT THE FIRE FIGHTING EQUIPMENT IS AVAILABLE AND ADEQUATE.

R WARNING : MAKE SURE THAT YOU ISOLATE THE ELECTRICAL CIRCUITS UPON WHICH WORK
R IS IN PROGRESS.

WARNING : OBEY THE FUEL SAFETY PROCEDURES. THIS CAN PREVENT INJURY AND DAMAGE.

WARNING : DO NOT GET AIRCRAFT FUEL:
- IN YOUR MOUTH
- IN YOUR EYES
- ON YOUR SKIN FOR A LONG TIME.

WARNING : DO NOT GET YOUR CLOTHES SOAKED WITH FUEL.
AIRCRAFT FUEL IS POISONOUS AND CAN GO THROUGH YOUR SKIN INTO YOUR BODY. IF YOU ARE CONTAMINATED, WASH WITH CLEAN WATER AND IF NECESSARY, GET MEDICAL HELP.

R NOTE : In the single additional-center-tank (ACT) installation.
The installation of the fuel quantity indicator (FQI) probes 280253 and 280255 is the same.

R NOTE : In the double ACT installation:
The installation of the FQI probes 280253 and 280255 in the fwd ACT and the FQI probes 280254 and 280256 in the aft ACT is the same.

R NOTE : The removal and the installation of one of the FQI probes only is given.

**ON A/C 101-200,

1. Equipment and Materials

ITEM	DESIGNATION
A.	Access Platform, 4.6 to 5.2 m (15 to 17 ft.)
B.	Torque Wrench 0.4 m.daN (35.4 lbf.in.)
C.	Fluorescent Lamp - Explosion Proof
D.	Circuit Breaker Safety Clips and Tags
E.	O-Rings
F.	Blanking Caps
G.	Warning Notices
H. Material No. 04-012	Common Greases (Ref. 20-31-00)

Referenced Procedures

- 12-11-28, P. Block 301	Fuel Tank Replenishing
- 20-28-11, P. Block 1	Electrical Bonding
- 25-21-00, P. Block 401	Passenger Compartment Seats
- 28-00-00, P. Block 301	Fuel - General
- 28-25-00, P. Block 301	Refuel/Defuel System
- 28-42-61, P. Block 501	Probe - Fuel Quantity, Additional Center Tank

2. Procedure

A. Job Set-Up

R (1)Obey the fuel safety procedures (Ref. 28-00-00, P. Block 301).
R (2)Make sure that the aircraft is statically grounded.
R (3)Make the ACT empty (Ref. 28-25-00, P. Block 301).
R (4)Put the access platform in position.
R (5)Open, safety and tag the circuit breakers:

PANEL	SERVICE	IDENT.	LOCATION
22VU	FUEL TK LO LVL AND CAL-L OUTER, R INR AND CTR R	1QJ	208/B26
22VU	FUEL TK LO LVL AND CAL-R OUTER, L INR AND CTR L	2QJ	208/B27
101VU	FUEL CARGO TK L PUMP SUPPLY	1QH	GEN1/B02
132VU	FUEL ACT VENT AND PRESS VALVE	3QH	325/K57
132VU	FUEL ACT XFR VALVE MOTOR 1	4QH	325/K58
132VU	FUEL ACT PUMP CTL XFR VALVE MOTOR 2	5QH	325/K59
132VU	FUEL FQI SUPPLY AND IND	1QT	321/P59
132VU	FUEL FQI CHAN SUPPLY 1	3QT	321/P60
132VU	FUEL FQI CHAN SUPPLY 2	4QT	321/P61
132VU	FUEL FUELLING OVERFLOW AND CAL	5QJ	321/P58
132VU	FUEL FUELLING HI LVL	6QJ	321/P57

R (6)Put the warning notices in position on:
- refuel/defuel panel 110VU,
- fuelling panel 430VU,

to tell persons not to operate the MODE SELECTOR switch.

B. Removal
(Ref. Fig. 401)
(Ref. Fig. 402)

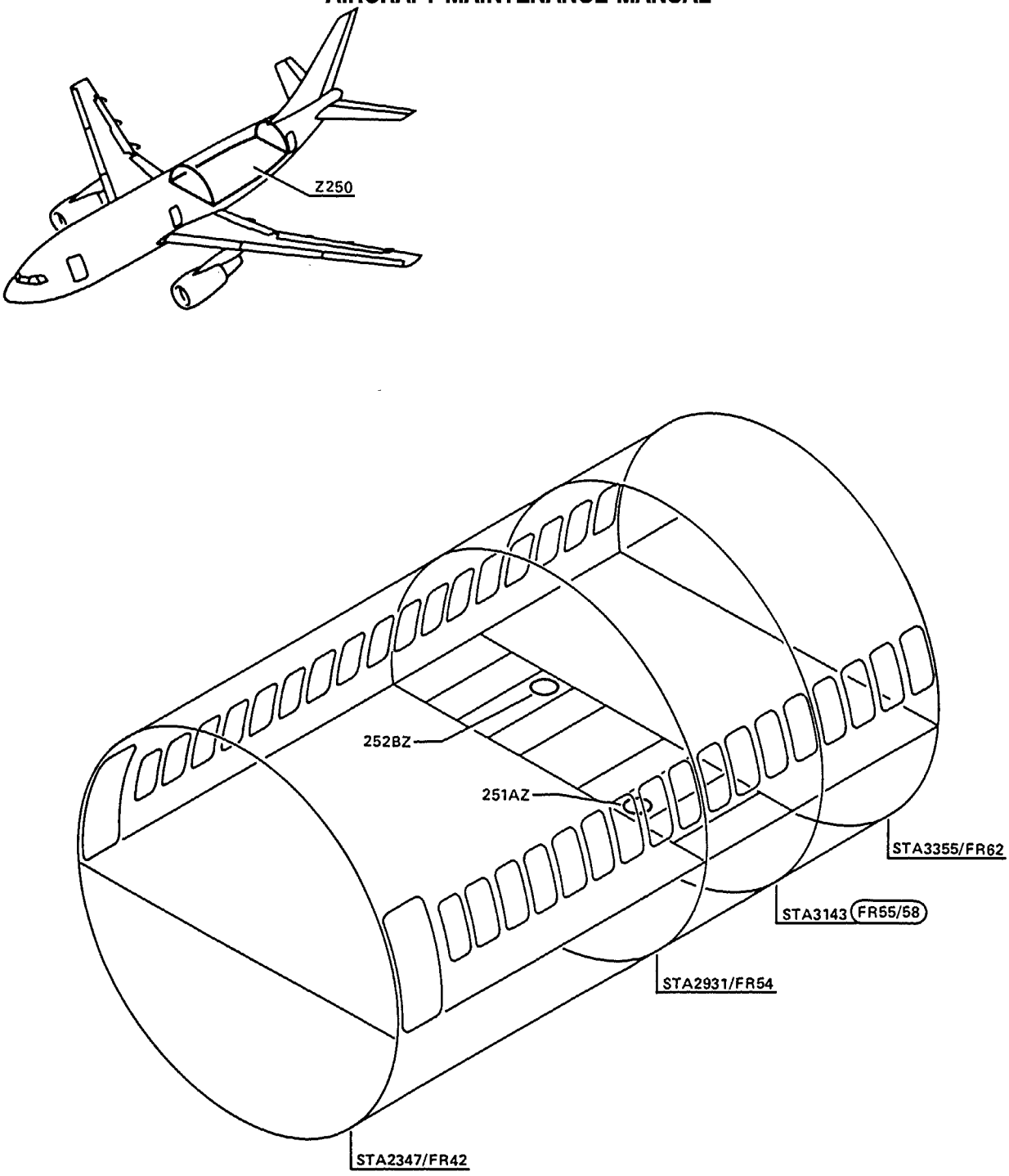
**ON A/C 101-200,

Post SB 28-2105 For A/C 101-200,

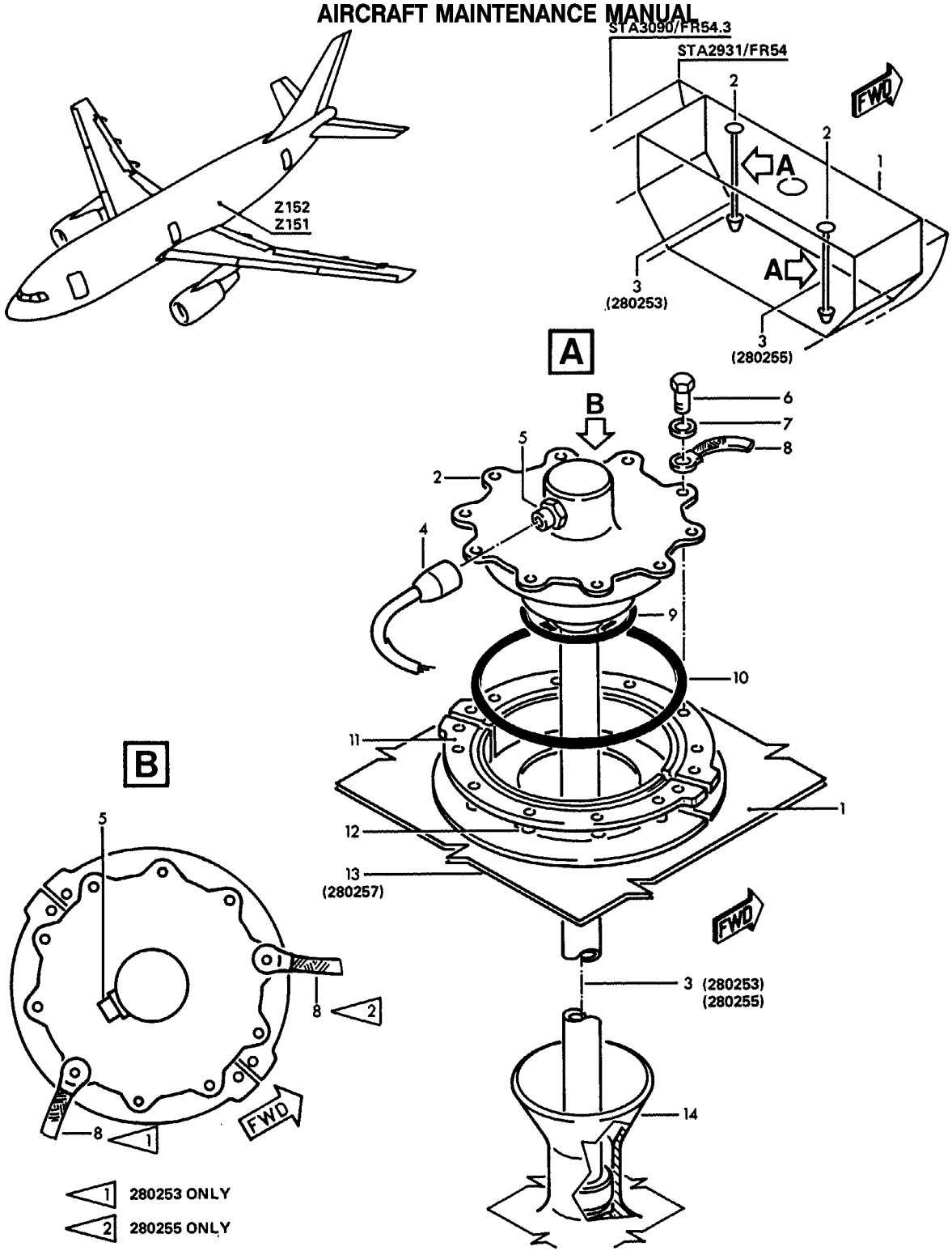
(Ref. Fig. 403)

**ON A/C 101-200,

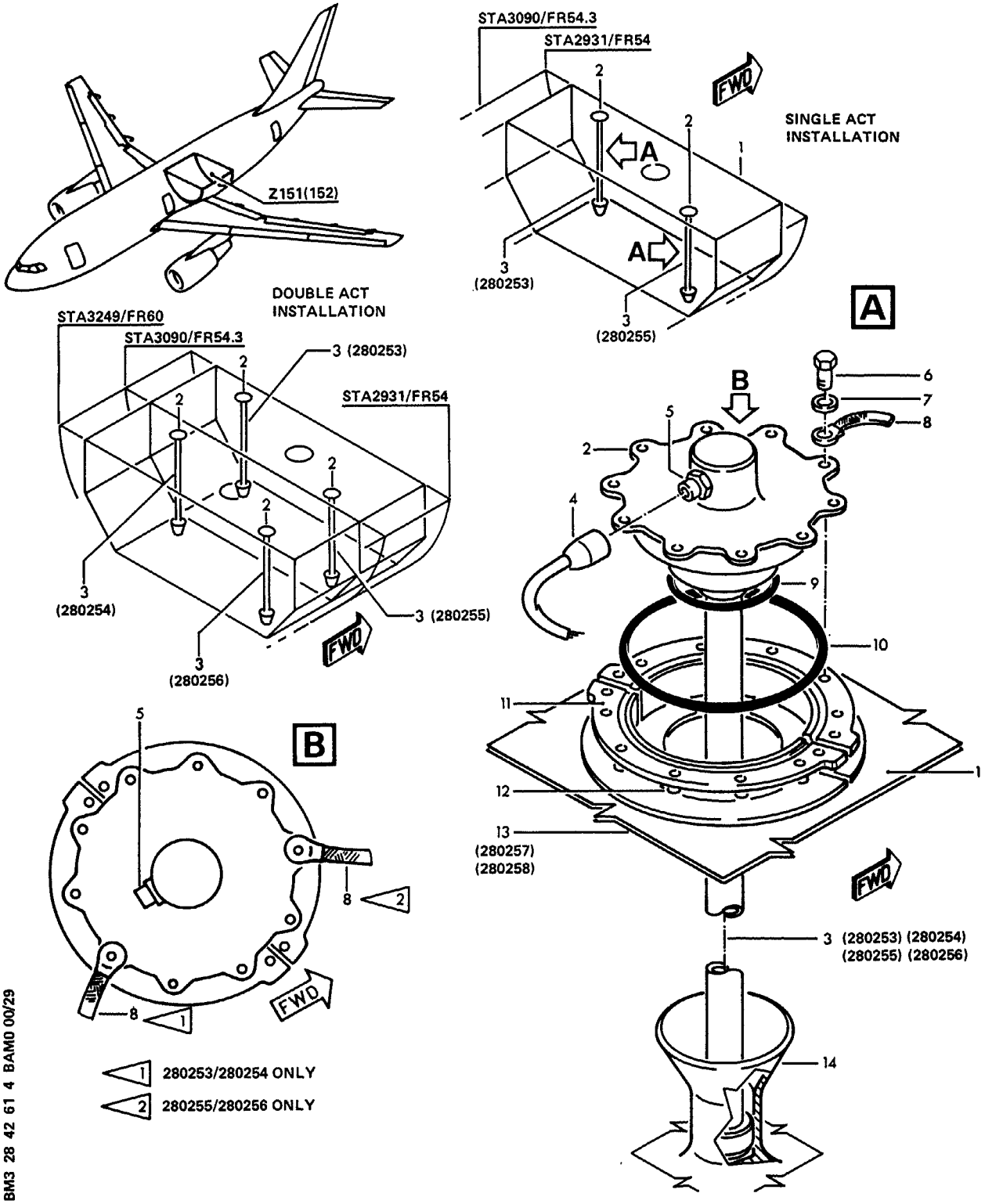
(1)Remove the relevant cabin furnishings to get access to the applicable maintenance covers 151AZ and 152BZ of the AFT cargo compartment ceiling.
(a)Remove the relevant passenger-compartment seats (Ref. 25-21-00, P. Block 401) to get access to the floor panels 251NG and 252PG of the AFT passenger compartment.
(b)Remove the access cover 251AZ from the floor panel 251NG and the access cover 252BZ from the floor panel 252PG (Ref. Fig. 401).
(2)Remove the maintenance covers 151AZ and 152BZ from the relevant ceiling



Location of Access Covers in Floor Panels
Figure 401



Fuel Quantity Indicator (FQI) Probe
Figure 402



BM3 28 42 61 4 BAM0 00/29

Fuel Quantity Indicator (FQI) Probe
Figure 403

panels of the AFT cargo compartment to get access to the applicable FQI probe (1).
(3)Disconnect the electrical connector (4) from the plug (5) of the FQI probe (3).
(4)Put a blanking cap on the electrical connector (4).
(5)Put a blanking cap on the plug (5).
(6)Remove the screws (6) and the washers (7) from the FQI flange (2).
NOTE : Remove the screws (6) in a sequence of opposites.
NOTE : Identify the screw (6) and the washer (7) removed from the bonding point of the FQI flange (2).
(7)Remove the bonding strap (8) from the FQI flange (2).
NOTE : Do not disconnect the bonding strap (8) from the structure of the ACT (1) unless a repair or a new installation is necessary.
(8)Remove the FQI probe (3) from the ACT (1) through the opening in the ceiling panel.
(9)Remove and discard the O-ring (9) from the FQI probe (3).
(10)Remove and discard the O-ring (10) from the interface of the ACT flange (11).
(11)Put a temporary cover over the opening in the ACT (1).

**ON A/C 101-200,

Post SB 28-2105 For A/C 101-200,

(1)Remove the relevant cabin furnishings to get access to the applicable maintenance covers 151AZ, 151BZ, 152BZ and 152CZ of the AFT cargo compartment ceiling.
(a)Remove the relevant passenger-compartment seats (Ref. 25-21-00, P. Block 401) to get access to the floor panels 251NG, 251PG, 252PG and 252RG of the AFT passenger compartment.
(b)Remove the access cover 251AZ from the floor panel 251NG, the access cover 251CZ from the floor panel 251PG, the access cover 252BZ from the floor panel 252PG and the access cover 252DZ from the floor panel 252RG (Ref. Fig.).
(2)Remove the maintenance covers 151AZ, 151BZ, 152BZ and 152CZ from the relevant ceiling panels of the AFT cargo compartment to get access to the applicable FQI probe (1).
(3)Disconnect the electrical connector (4) from the plug (5) of the FQI probe (3).
(4)Put a blanking cap on the electrical connector (4).
(5)Put a blanking cap on the plug (5).
(6)Remove the screws (6) and the washers (7) from the FQI flange (2).
NOTE : Remove the screws (6) in a sequence of opposites.
NOTE : Identify the screw (6) and the washer (7) removed from the bonding point of the FQI flange (2).
(7)Remove the bonding strap (8) from the FQI flange (2).
NOTE : Do not disconnect the bonding strap (8) from the structure of the ACT (1) unless a repair or a new installation is necessary.
(8)Remove the FQI probe (3) from the ACT (1) through the opening in the

ceiling panel.
(9)Remove and discard the O-ring (9) from the FQI probe (3).
(10)Remove and discard the O-ring (10) from the interface of the ACT flange (11).
(11)Put a temporary cover over the opening in the ACT (1).

**ON A/C 101-200,

C. Preparation for Installation (Ref. Fig. 402)

**ON A/C 101-200,

Post SB 28-2105 For A/C 101-200,

C. Preparation for Installation (Ref. Fig. 403)

**ON A/C 101-200,

(1)Examine the replacement FQI probe (3).
(a)Remove the preservation from the FQI probe (3), if necessary.
(b)Make sure that:
1 The high and the low level sensors are correctly attached to the FQI probe (3).
2 The FQI probe (3) has no damage.
3 The FQI flange (2) has no damage.
4 The bonding point on the FQI flange (2) is clean.
(c)Remove the blanking cap from the plug (5) of the FQI probe (3).
(d)Make sure that the plug (5) has no damage.
(2)Remove the temporary cover from the opening in the ACT (1).

R WARNING : THIS INSTRUCTION IS APPLICABLE TO A CRITICAL DESIGN CONFIGURATION
R CONTROL LIMITATION (CDCCL). CAREFULLY OBEY ALL GIVEN INSTRUCTIONS
R WHEN YOU DO THIS STEP. IF YOU DO NOT OBEY THESE INSTRUCTIONS, A
R DANGEROUS CONDITION CAN OCCUR THAT CAN CAUSE A POSSIBLE FUEL
R TANK EXPLOSION.

(3)Examine the installation position of the FQI probe (3) on the ACT (1).
(a)Make sure that:
1 The flange of the bladder tank (13) is clean and has no damage.
2 The ACT flange (11) is clean and has no damage.
3 The anchor nuts (12) on the ACT flange (11) have no damage and are correctly installed.
4 The bonding strap (8) is clean, has no damage and is correctly attached to the structure of the ACT (1) (Ref. 20-28-11, P. Block 1).
(4)Remove the blanking cap from the electrical connector (4).
(5)Make sure that the electrical connector (4) has no damage.
(6)Examine the inside of the bladder tank (13), as far as possible.
(a)Use an explosion proof fluorescent lamp to light the inside of the bladder tank (13).

(b)Make sure that:
1 The inside of the bladder tank (13) is clean and clear of tools and other items.
2 The collar (14) is clean and correctly bonded to the bottom internal lining of the bladder tank (13).

(7)Apply vaseline (Material No. 04-012) to the new O-rings (9),(10).
(8)Put the O-ring (9) in the groove on the body of the FQI probe (3).
(9)Put the O-ring (10) in the groove in the interface of the ACT flange (11).

D. Installation (Ref. Fig. 402)

NOTE : The dimension of the screw hole centers on the FQI flange (2) is different for the left-hand FQI probe 280253 (3) and the FQI right-hand probe 280255 (3).

NOTE : The installation position of the bonding strap (8) is different for the left-hand FQI probe 280253 (3) and the right-hand FQI 280255 (3).

(1)Put the FQI probe (3) into the ACT (1).

NOTE : Make sure that the FQI probe (3) is installed in the collar (14) on the bottom surface of the bladder tank (13).

(2)Align the bonding point of the FQI flange (2) with the bonding point of the ACT flange (11).

NOTE : The plug (5) is in the opposite direction to flight.

(3)Put the bonding strap (8) in position at the FQI flange (2).

(4)Install the screws (6) and the washers (7).

NOTE : Make sure that the O-rings (9),(10) are correctly installed.

R WARNING : THIS INSTRUCTION IS APPLICABLE TO A CRITICAL DESIGN CONFIGURATION
R CONTROL LIMITATION (CDCCL). CAREFULLY OBEY ALL GIVEN INSTRUCTIONS
R WHEN YOU DO THIS STEP. IF YOU DO NOT OBEY THESE INSTRUCTIONS, A
R DANGEROUS CONDITION CAN OCCUR THAT CAN CAUSE A POSSIBLE FUEL
R TANK EXPLOSION.

(5)TORQUE the screws (6) to 0.4 m.daN (35.4 lbf.in.) in a sequence of opposites.

NOTE : Make sure that the bonding strap (8) is correctly installed (Ref. 20-28-11, P. Block 1).

(6)Connect the electrical connector (4) to the plug (5).

E. Test

(1)Do the adjustment/test of each FQI probe 280253 and 280255 (Ref. 28-42-61, P. Block 501).

F. Close-Up

(1)Make certain that work area is clean and clear of tools and miscellaneous items of equipment.

(2)Install the removed maintenance cover(s) in the applicable ceiling panels(s) of the AFT cargo compartment.

(3)Install the removed access cover(s) in the applicable floor panel of the AFT passenger compartment.

(4)Install the removed passenger compartment seats (Ref. 25-21-00, P. Block 401).

(5)Remove the safety clips and tags and close the circuit breakers 1QJ, 2QJ, 1QH, 3QH, 4QH, 5QH, 1QT, 3QT, 4QT, 5QJ and 6QJ.

(6)Remove the warning notices from the refuel/defuel panel 110VU and the fueling panel 430VU.

(7)Remove the access platform.

(8)Refuel the aircraft as required (Ref. 12-11-28, P. Block 301).

NOTE : Keep a minimum of 50 litres (13.21 U.S.gal.) of fuel in the ACT. This will prevent cracks in the inner lining of the bladder tank 280257.

**ON A/C 101-200,

Post SB 28-2105 For A/C 101-200,

D. Installation (Ref. Fig. 403)

NOTE : The dimension of the screw hole centers on the FQI flange (2) is different for the left-hand FQI probe 280253 (280254) (3) and the right-hand FQI probe 280255 (280256) (3).

NOTE : The installation position of the bonding strap (8) is different for the left-hand FQI probe 280253 (280254) (3) and the right-hand FQI probe 280255 (280256) (3).

(1)Put the FQI probe (3) into the ACT (1).

NOTE : Make sure that the FQI probe (3) is installed in the collar (14).

(2)Align the bonding point of the FQI flange (2) with the bonding point of the ACT flange (11).

NOTE : The plug (5) is in the opposite direction to flight.

(3)Put the bonding strap (8) in position at the FQI flange (2).

(4)Install the screws (6) and the washers (7) in the FQI flange (2).

NOTE : Make sure that the screw (6) and the washer (7), identified during the REMOVAL, are installed at the bonding point.

NOTE : Make sure that the O-rings (9),(10) are correctly installed.

R WARNING : THIS INSTRUCTION IS APPLICABLE TO A CRITICAL DESIGN CONFIGURATION
R CONTROL LIMITATION (CDCCL). CAREFULLY OBEY ALL GIVEN INSTRUCTIONS
R WHEN YOU DO THIS STEP. IF YOU DO NOT OBEY THESE INSTRUCTIONS, A
R DANGEROUS CONDITION CAN OCCUR THAT CAN CAUSE A POSSIBLE FUEL
R TANK EXPLOSION.

(5)Tighten the screws (6) in a sequence of opposites.

NOTE : Make sure that the bonding strap (8) is correctly installed (Ref. 20-28-11, P. Block 1).

(6)Connect the electrical connector (4) to the plug (5).

E. Test

(1)Do the adjustment/test of each FQI probe 280253 (280254) and 280255 (280256) of the ACT (Ref. 28-42-61, P. Block 501).

F. Close-Up

(1)Make certain that work area is clean and clear of tools and miscellaneous items of equipment.

(2)Install the removed maintenance cover(s) in the applicable ceiling panels(s) of the AFT cargo compartment.

(3)Install the removed access cover(s) in the applicable floor panel of the AFT passenger compartment.

(4)Install the removed passenger compartment seats (Ref. 25-21-00, P. Block 401).

(5)Remove the safety clips and tags and close the circuit breakers 1QJ, 2QJ, 1QH, 3QH, 4QH, 5QH, 1QT, 3QT, 4QT, 5QJ and 6QJ.

(6)Remove the warning notices from the refuel/defuel panel 110VU and

the fueling panel 430VU.

(7)Remove the access platform.

(8)Refuel the aircraft as required (Ref. 12-11-28, P. Block 301).

NOTE : Keep a minimum of 50 litres (13.21 U.S.gal.) of fuel in the ACT. This will prevent cracks in the inner lining of the bladder tank 280257 (280258).

PROBES - FUEL QUANTITY - ADDITIONAL CENTER TANK - ADJUSTMENT/TEST

WARNING : OBEY THE SAFETY PRECAUTIONS IN 28-00-00, P. BLOCK 301 AND 28-10-00, P. BLOCK 301, BEFORE AND DURING ANY MAINTENANCE OPERATIONS DONE INSIDE A FUEL TANK.
MAKE SURE THAT THE FIRE FIGHTING EQUIPMENT IS AVAILABLE AND NEAR TO THE WORK AREA, BEFORE THE MAINTENACE OPERATIONS ARE STARTED.
MAKE SURE THAT THE ELECTRICAL CIRCUITS, ON WHICH THE WORK IS IN PROGRESS, ARE ISOLATED BEFORE POWER IS SUPPLIED TO THE AIRCRAFT.

NOTE : The test of the two fuel quantity indicator (FQI) probes 280253 and 280255 is identical. The test of one of the probes only is described.

**ON A/C 101-200,

Post SB 28-2105 For A/C 101-200,

PROBE - FUEL QUANTITY, ADDITIONAL CENTER TANK - ADJUSTMENT/TEST

WARNING : OBEY THE SAFETY PRECAUTIONS IN 28-00-00, P. BLOCK 301 AND 28-10-00, P. BLOCK 301.
MAKE SURE THAT THE FIRE FIGHTING EQUIPMENT IS AVAILABLE AND NEAR TO THE WORK AREA, BEFORE YOU START THE MAINTENANCE OPERATIONS.
MAKE SURE THAT THE ELECTRICAL CIRCUITS, ON WHICH THE WORK IS IN PROGRESS, ARE ISOLATED BEFORE YOU SUPPLY POWER TO THE AIRCRAFT.

R NOTE : In the single additional-center-tank (ACT) installation:
The installation of the fuel quantity indicator (FQI) probes 280253 and 280255 is the same.

R NOTE : In the double ACT installation:
The installation of the FQI probes 280253 and 280255 in the fwd ACT and the FQI probes 280254 and 280256 in the aft ACT is the same.

R NOTE : The test of one of the probes only is given.

**ON A/C 101-200,

1. Equipment and Materials

ITEM	DESIGNATION
A.	Access Platform, 4.6 to 5.2 m (15 to 17 ft.)
B.	Bonding Tester NOTE : A low voltage ohmmeter with connection leads and probes. The effective range must be at least up to 0.1 ohm when a test current of 1 ampere is used. The measurement accuracy must be within ± 10 % (Ref. 20-28-11, P. Block 1)

Referenced Procedures

- 20-28-11, P. Block 1	Electrical Bonding
- 25-21-00, P. Block 401	Passenger Compartment Seats
- 28-00-00, P. Block 301	Fuel - General
- 28-10-00, P. Block 301	Storage
- 28-42-00, P. Block 501	Quantity Indicating

2. Procedure

A. Job Set-Up
(1)Put the access platform in position.
(2)Get access to the AFT passenger-compartment.
(3)Get access to the appropriate FQI probe.
(a)Remove the relevant passenger-compartment seats in the AFT passenger-compartment (Ref. 25-21-00, P. Block 401).
(b)Remove the floor panel.
(c)Remove the maintenance cover from the ceiling panel of the AFT cargo-compartment.

B. Test
NOTE : Make sure that the maximum test current is 1 ampere.
(1)Do an insulation resistance and capacitance test on the individual FQI probe (Ref. 28-42-00, P. Block 501).
(2)Do a bonding test on the individual FQI probe.
(a)Connect one of the test probes of the bonding tester to the ground point nearest to the FQI probe.
(b)Check the external surface of the FQI probe with the other test probe.
(c)Get a resistance reading between the FQI probe and the ACT.
(d)Make sure that the resistance reading is not more than:
- 50 milliohms for an "In Service" FQI probe,
- 25 milliohms for a "New or Refurbished" FQI probe.
(e)Do a check of the bonding and the protective treatment (Ref. 20-28-11, P. Block 1) if the resistance is more than the necessary quantity.
(f)Disconnect the test probe from the ground point.

C. Close-Up
(1)Make sure that the work area is clean and clear of tools and other items.
(2)Install the maintenance cover in the ceiling panel of the AFT cargo-compartment.
(3)Install the floor panel in the AFT passenger-compartment.
(4)Install the relevant passenger-compartment seats (Ref. 25-21-00, P. Block 401).
(5)Remove the access platform.

MAGNETIC LEVEL INDICATORS - DESCRIPTION AND OPERATION

1. General

R

R Magnetic level indicators (MLI's) are used in conjunction with a
R clinometer, to calculate the fuel quantity in each wing tank and center tank. The MLI located in the trim tank is solely used to confirm a trim tank empty state. No electrical power is required.
R The MLI's can be used only on the ground, and are positioned in each tank, to give gaging continuity for all ground standing attitudes.
R All wing and center tank MLI's are marked in increments for use with fuel
R tabular data (Ref. 12-11-28, P. Block 301).

2. Component Location

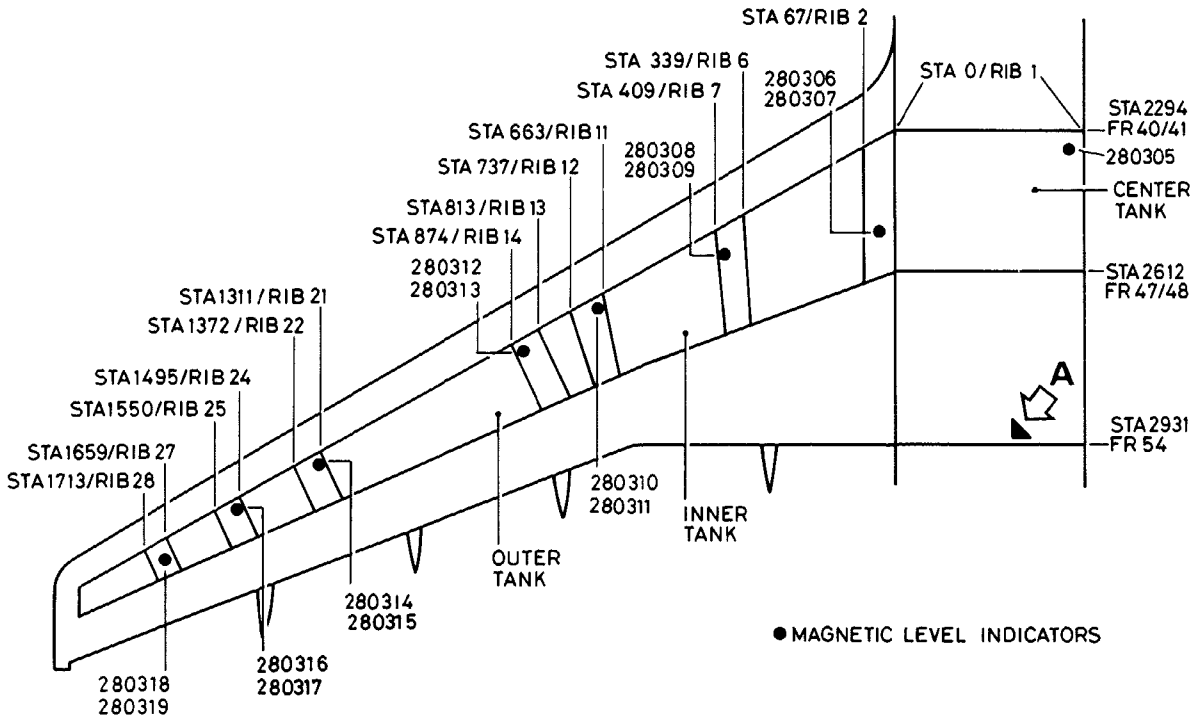
(Ref. Fig. 001)
(Ref. Fig. 002)
(Ref. Fig. 003)

FIN	FUNCTIONAL DESIGNATION	PANEL	ZONE	ACCESS DOOR	ATA REF
280150	CLINOMETER - PITCH		148	744	31-23-00
280151	CLINOMETER - ROLL		148	744	31-23-00
280305	IND - MAG LEVEL CTR TK		142	148AZ	28-43-21
280306	IND - MAG LEVEL L INR TK		540	540AB	28-43-21
280307	IND - MAG LEVEL R INR TK		640	640AB	28-43-21
280308	IND - MAG LEVEL L INR TK		540	540BB	28-43-21
280309	IND - MAG LEVEL R INR TK		640	640BB	28-43-21
280310	IND - MAG LEVEL L INR TK		540	540FB	28-43-21
280311	IND - MAG LEVEL R INR TK		640	640FB	28-43-21
280312	IND - MAG LEVEL L INR TK		540	540HB	28-43-21
280313	IND - MAG LEVEL R INR TK		640	640HB	28-43-21
280314	IND - MAG LEVEL L OUTR TK		550	550HB	28-43-21
280315	IND - MAG LEVEL R OUTR TK		650	650HB	28-43-21
280316	IND - MAG LEVEL L OUTR TK		550	550LB	28-43-21
280317	IND - MAG LEVEL R OUTR TK		650	650LB	28-43-21
280318	IND - MAG LEVEL L OUTR TK		550	550PB	28-43-21
280319	IND - MAG LEVEL R OUTR TK		650	650PB	28-43-21
280459	IND - MAG LEVEL, TRIM TK		333	333BB	28-43-21

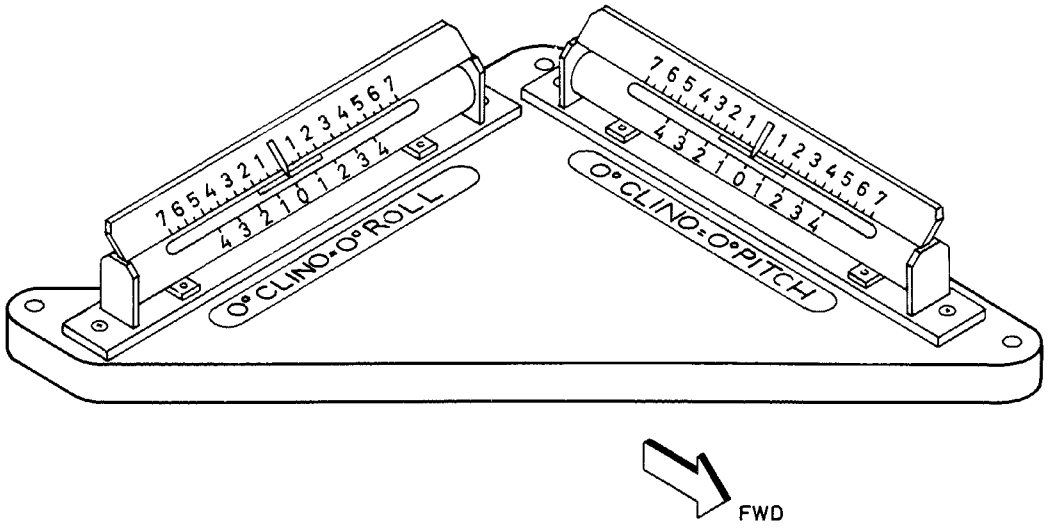
3. System Description

R

R There are three MLI's in each outer tank; four in each inner tank,
R one in the center tank and one in the trim tank. All are assembled
R into the undersurface of the aircraft. Two types of MLI are installed. One type, within protective support tubes, is assembled on
R the outermost manhole cover in each outer tank. All other MLI's are assembled to the aircraft bottom skin; their free end, being held in position by a support plate attached to a stringer of the aircraft top
R skin.
R The clinometer is an assembly of two spirit levels, mounted in the main
R landing gear bay to determine the out-of-level attitude of the aircraft,



A CLINOMETER



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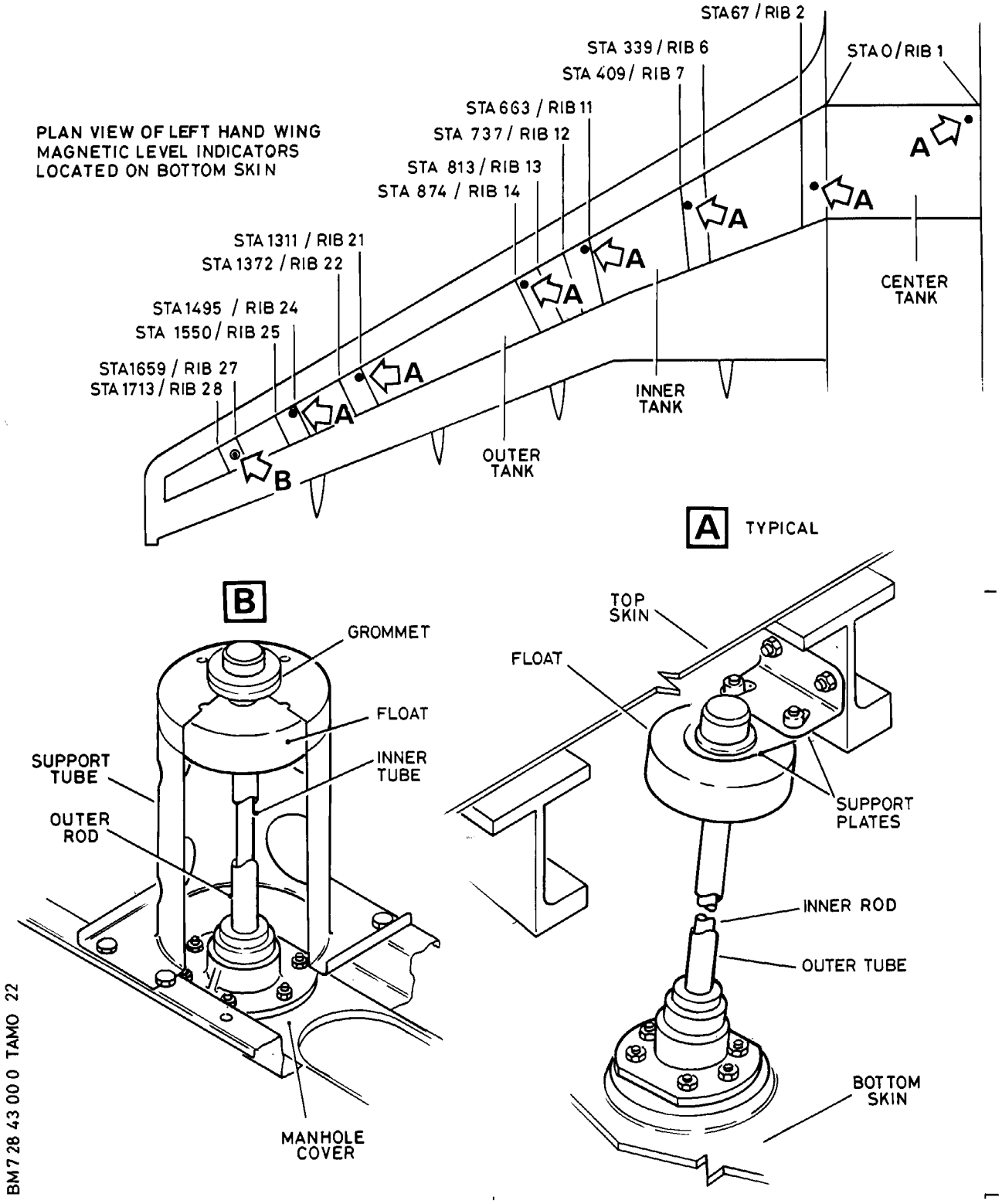
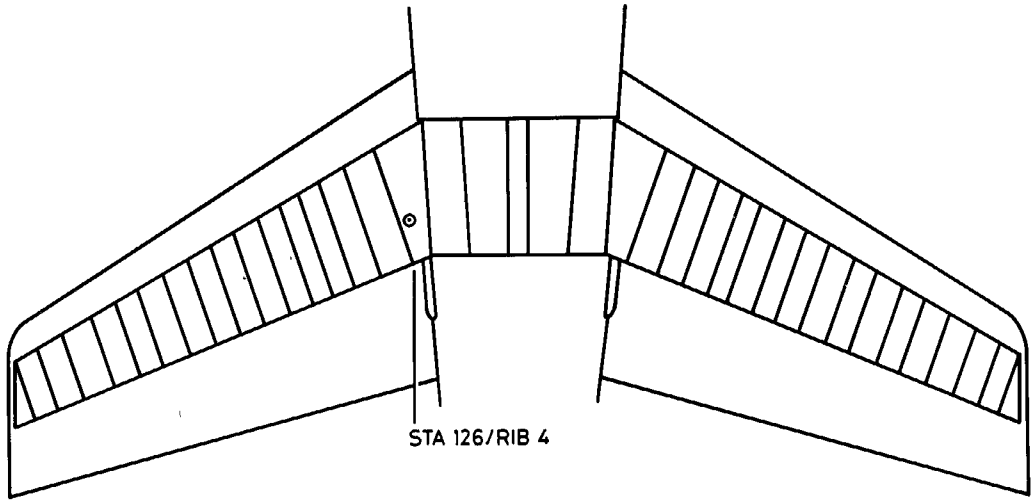
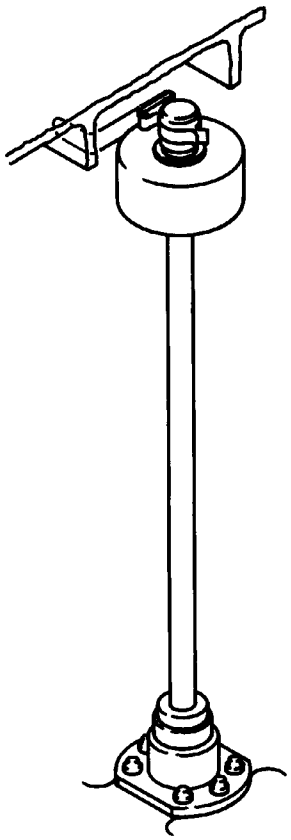
Component Location
Figure 001



Magnetic Level Indicators - Component Location
Figure 002



KEY
⊙ MAGNETIC LEVEL INDICATOR



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Magnetic Level Indicators - Component Location
Figure 003

R in the pitch and roll axes, prior to using the MLI's.

4. Component Description

A. Magnetic Level Indicator (MLI)
(Ref. Fig. 004)

R An MLI has a tube, extending from the tank bottom skin to the top
R skin, enclosing an extractable glass fiber rod of the same length
R as the tube. The rod, which is marked in increments, is secured flush to the aircraft undersurface with a bayonet-type lock.
The tube is closed at the top with an end-cap and O-ring, and is open at the bottom where the end, with sealing packing, is secured to the base by a nut. Nuts, bolts and O-rings secure the base to the wing skin or manhole cover. Rubber float stops are fitted at top and bottom of the tube.
An elastomeric annular float containing a magnet is free to slide up and down the outside of the tube as fuel level changes. Another magnet is fitted to the top of the glass fiber rod.
Indicators differ in their base angle inclination and the length of their tubes.

R B. Clinometer
(Ref. Fig. 005)

R The clinometer is an assembly of two spirit levels one in the roll axis and one in the pitch axis, mounted in the main landing gear bay. Each level has a conventional cambered tube filled with colored liquid containing a bubble; a fixed scale of degrees deviation from level is marked on the tube. A sliding cursor scale, graduated in index units on each side of a center pointer is mounted above the tube.

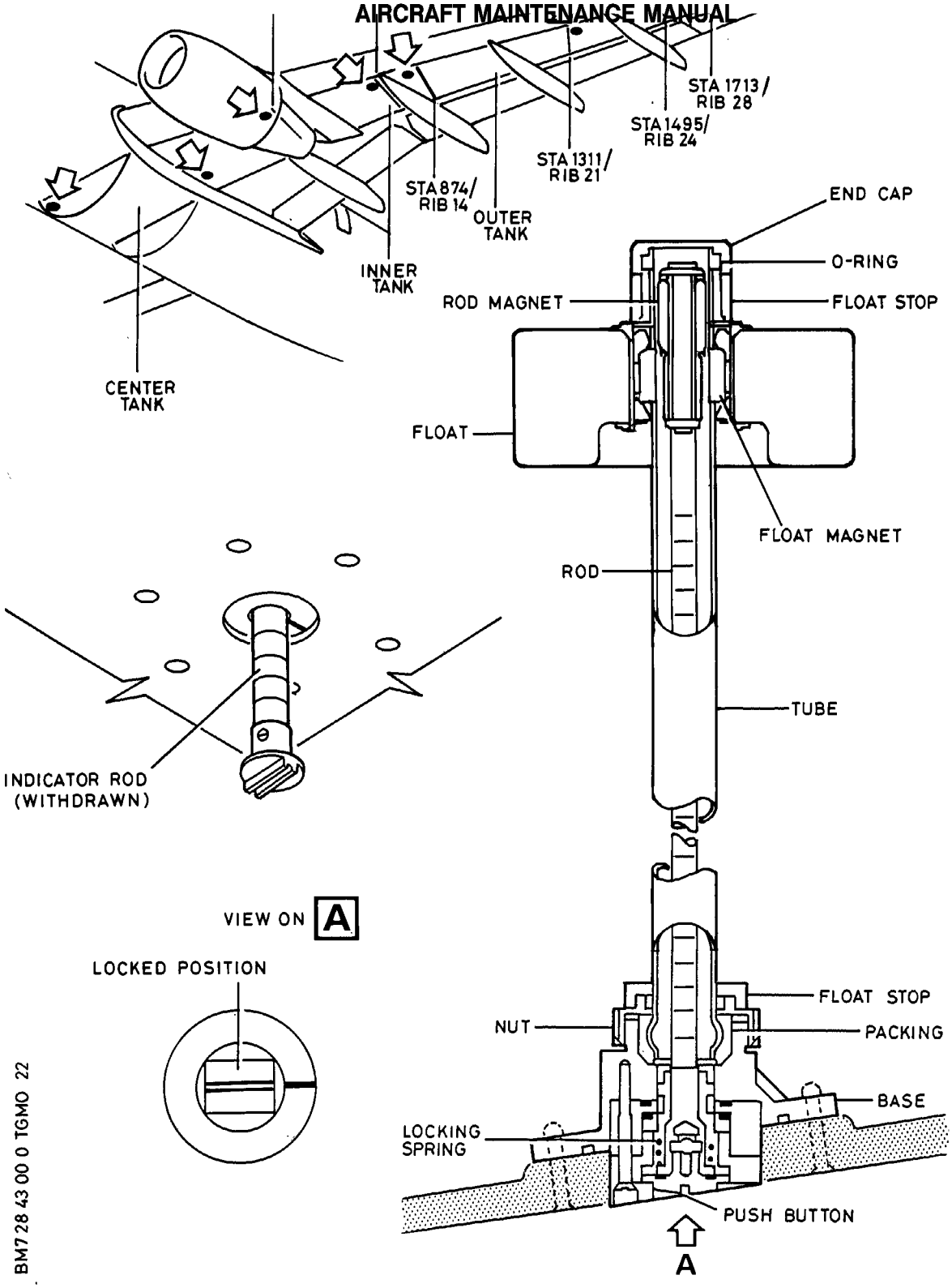
5. Operation

R Aircraft attitude in pitch and roll axes is checked:
- by sliding the cursor to position the index numbers symmetrically about the bubble.
- by reading at the cursor pointer, the degree of level on the fixed scale.

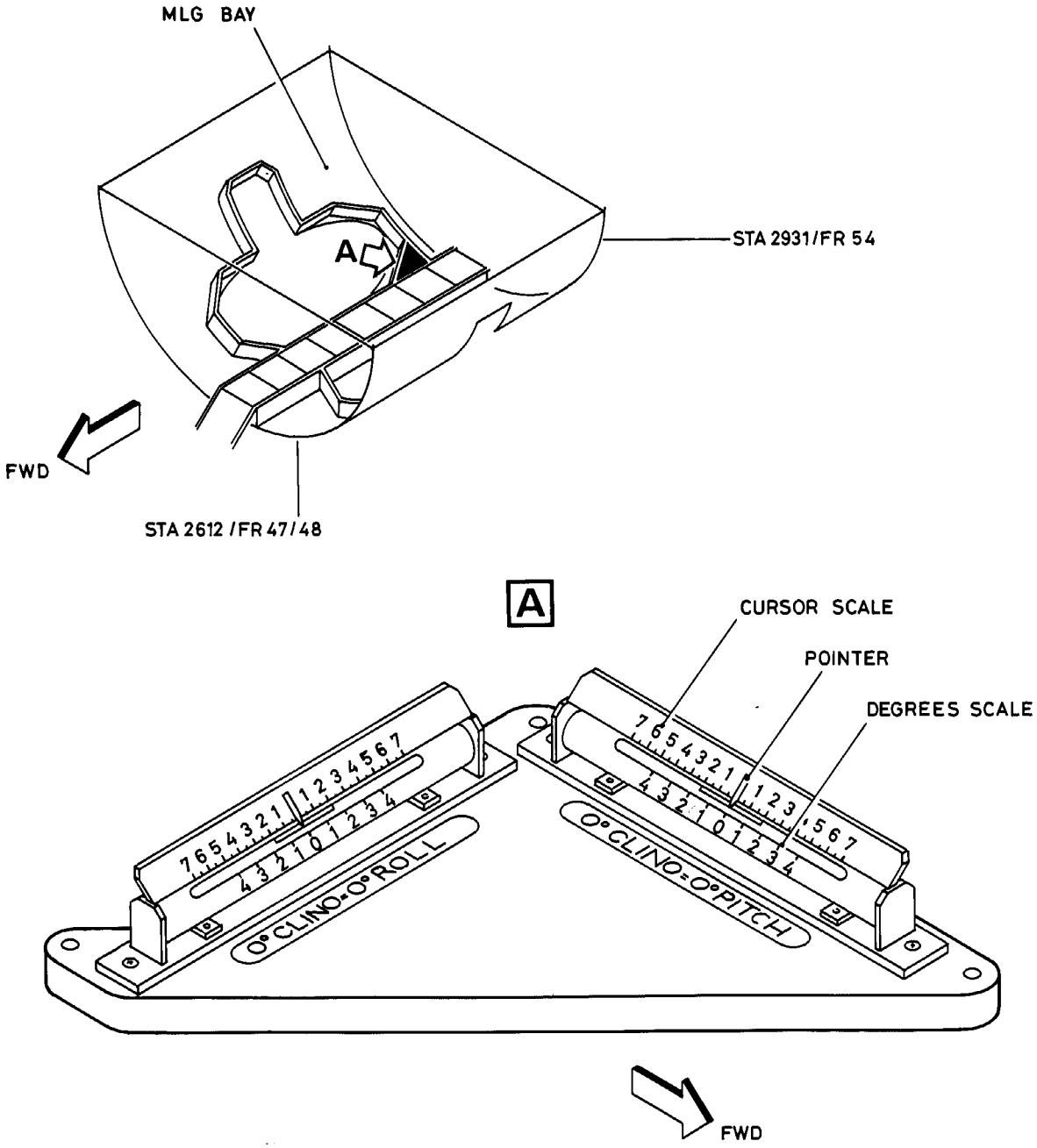
To determine the depth of fuel in a wing or center tank:
R - the slotted pushbutton, in the bottom of the indicator rod, is pressed
R in and quarter turned to unlock the indicator rod,
R - the indicator rod is withdrawn slowly from the indicator tube, until a
R magnetic link between the indicator rod magnet and float magnet is felt.

R NOTE : The indicator rod should not be withdrawn with force or the magnets might not 'engage'.

R - the fuel level is read on the indicator rod at the point coinciding with the aircraft undersurface.
- with the indicator rod reading and the fuel specific gravity figure, the quantity of fuel in the tank, is calculated, using fuel quantity charts (Ref. 12-11-28, P. Block 301).



Magnetic Level Indicators - Details
Figure 004



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Clinometer - Installation
Figure 005

R

- the indicator rod is replaced by sliding it into the tube, and locked by a quarter turn of the pushbutton, against spring pressure.

R The indicator rod is locked when red painted grooves on base and pushbutton are in line.

R To determine the presence of fuel in the trim tank:

R - the slotted pushbutton, in the bottom of the indicator rod, is pressed in and quarter turned to unlock the indicator rod,

R - the indicator rod is withdrawn slowly, from the indicator tube, until a magnetic link between the indicator rod magnet and float magnet is felt.

R NOTE: The indicator rod should not be withdrawn with force or the magnets may not 'engage'.

R - the trim tank is empty of fuel provided the 'o' mark on the indicator rod is level with the underside of the THS. Any other reading indicates fuel is present in the tank,

- the indicator rod is replaced by sliding it into the tube and locked by a

R quarter turn of the pushbutton against spring pressure. The indicator rod is locked when the red painted grooves on the base and pushbutton are in line.

MAGNETIC LEVEL INDICATORS - REMOVAL/INSTALLATION

R WARNING : THIS PROCEDURE USES A FUEL SYSTEM ITEM THAT IS IN A CATEGORY KNOWN AS
R A CRITICAL DESIGN CONFIGURATION CONTROL LIMITATION (CDCCL).
R CDCCL IDENTIFIES AN ITEM THAT CAN BE THE SOURCE OF A POSSIBLE FUEL
R TANK IGNITION. YOU MUST KEEP ALL CDCCL ITEMS IN THE APPROVED
R CONFIGURATION. DAMAGE, WEAR OR CHANGES TO A CDCCL ITEM CAN CAUSE A
R POSSIBLE FUEL TANK EXPLOSION.

R LANDING GEAR - MAKE SURE THAT THE GROUND SAFETIES AND CHOCKS ARE IN POSITION.

FLIGHT CONTROLS - MAKE SURE THAT THE GROUND SAFETIES AND NOTICES ARE IN POSITION.

FLIGHT CONTROLS - MAKE SURE THAT THE TRAVEL RANGES OF THE CONTROL SURFACES ARE CLEAR.

OBSERVE THE SAFETY PRECAUTIONS IN 28-00-00, P. BLOCK 301 AND 28-10-00, P. BLOCK 301.

MAKE SURE THAT THE FIRE FIGHTING EQUIPMENT IS AVAILABLE AND IS ADEQUATE.

MAKE SURE THAT YOU ISOLATE THE ELECTRICAL CIRCUITS UPON WHICH WORK IS IN PROGRESS.

DO NOT OPERATE THE MICROPHONE BUTTONS ON HF TRANSMISSION DURING REFUELING/DEFUELING OR GROUND MAINTENANCE-FUEL TRANSFER OPERATIONS.

1. Reason for the Job

A. Removal of Magnetic Level Indicators complete (para. 2).

B. Removal of Graduated Tube, Magnet and Bush Assembly only (para. 3).

2. Magnetic Level Indicators (complete)

A. Equipment and Materials

ITEM	DESIGNATION
A.	O-rings
B.	Grommets
C.	Access Platform 2 to 6 m (6 to 20 ft)
D. Material No. 09-001	Sealants (Ref. 20-31-00)
Referenced Procedures	
- 12-11-28, P. Block 301	Replenishing of Fuel Tanks
- 28-00-00, P. Block 301	Fuel - General
- 28-10-00, P. Block 301	Storage
- 28-11-22, P. Block 401	Manhole Covers (Wings)
- 28-11-29, P. Block 401	Manhole Cover, Center Tank

R

- 28-11-33, P. Block 401 Manhole Covers Trim Tank

B. Procedure
(Ref. Fig. 401)
(Ref. Fig. 402)

(1)Job Set-Up
(a)Wing tank
1 Remove the appropriate manhole cover (Ref. 28-11-22, P. Block 401).
(b)Center tank
1 Remove the appropriate manhole cover (Ref. 28-11-29, P. Block 401).
(c)Trim tank
1 Remove the appropriate manhole cover (Ref. 28-11-33, P. Block 401).

(2)Removal

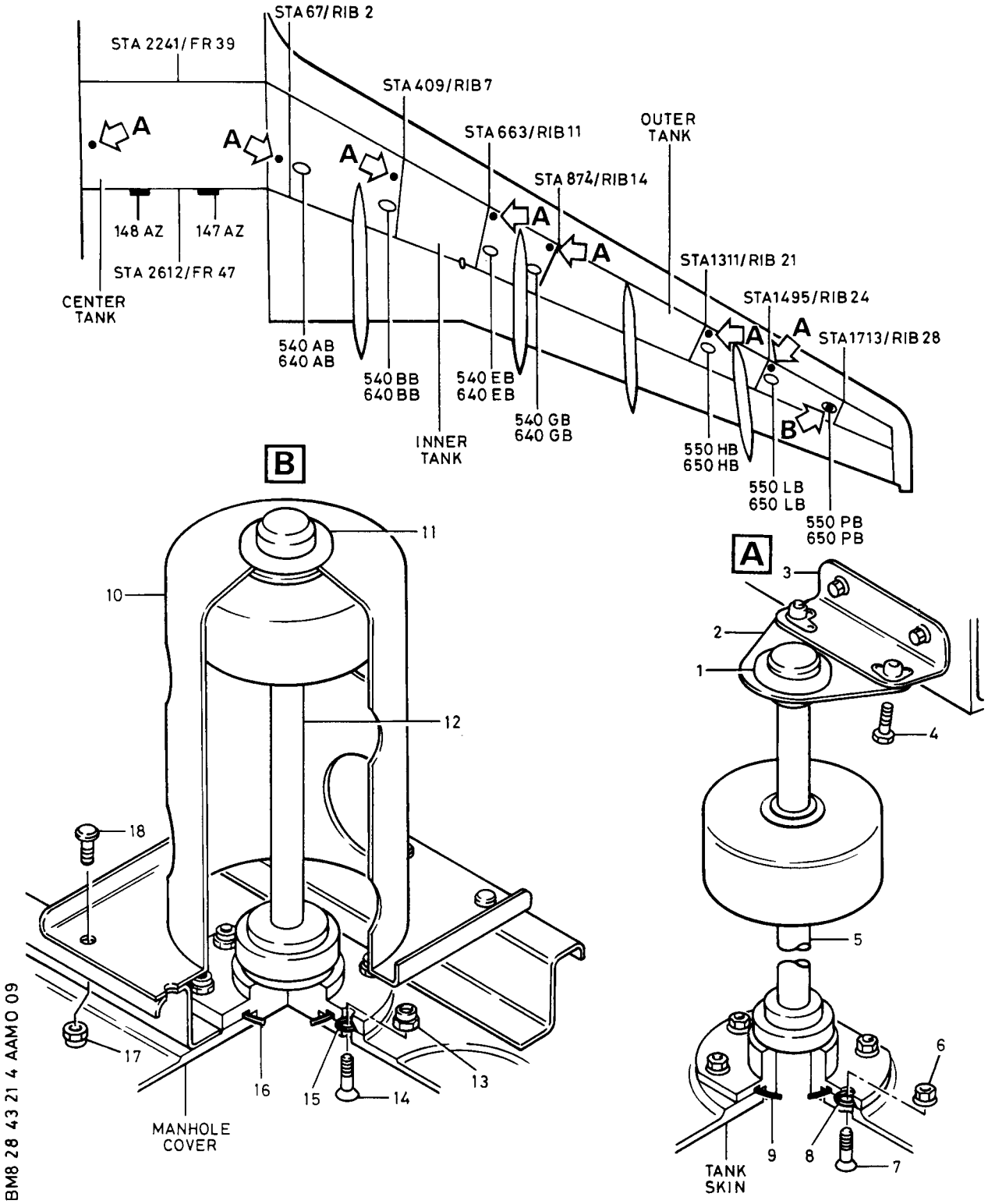
WARNING: BEFORE ENTERING THE TANK OBSERVE THE SAFETY PRECAUTIONS GIVEN IN 28-00-00 AND 28-10-00, P. BLOCK 301.

(a)Indicator No. 6 mounted on the manhole cover
1 Remove the nuts (11) and the bolts (10) securing the guard tube (9) to the manhole cover. Lift the guard tube clear of the indicator (8), remove and discard the grommet (7).
2 Remove the nuts (15), the bolts (12) and the indicator (8) from the manhole cover. Discard the O-rings (13) and (14).

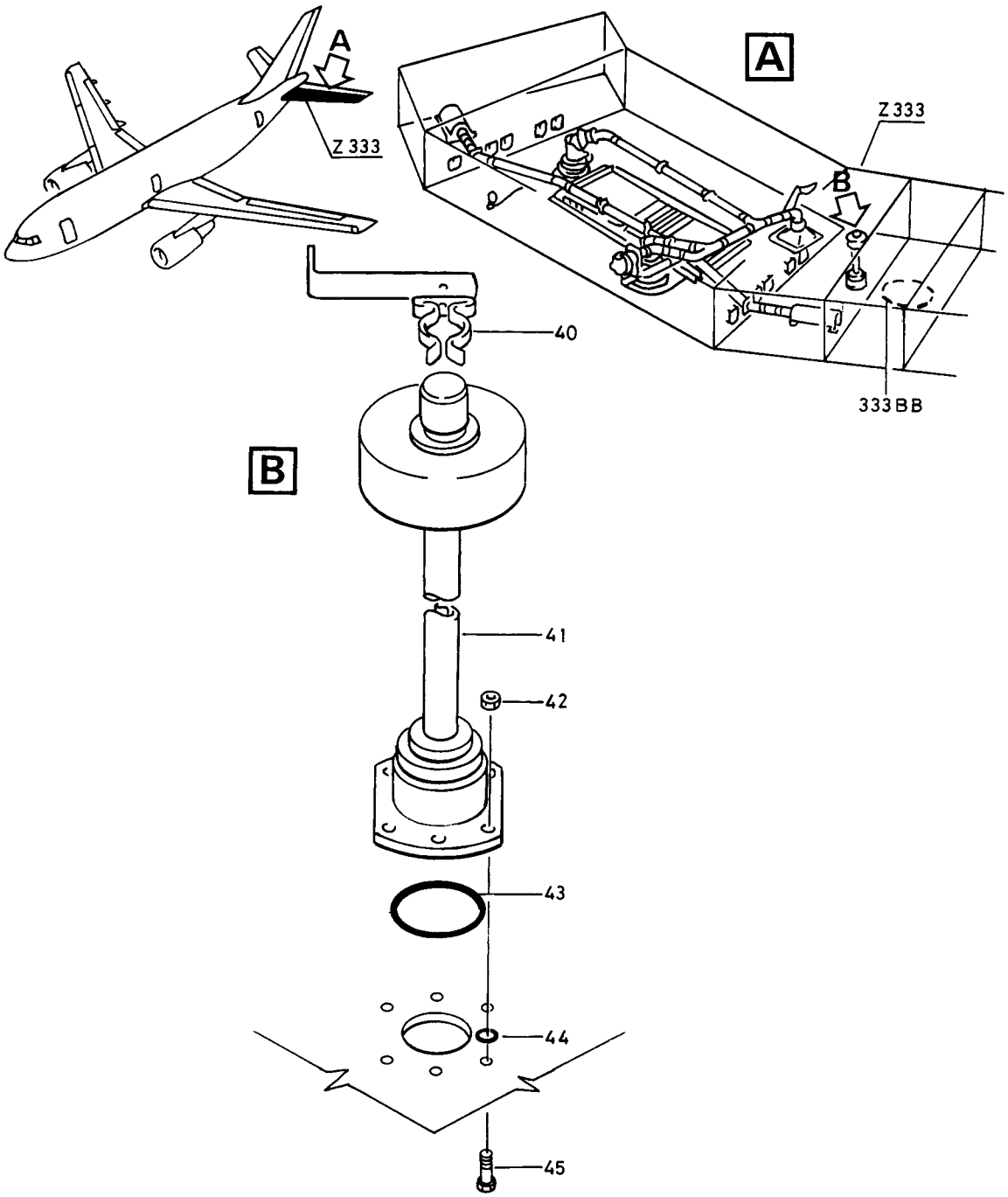
(b)Skin-mounted indicators No. 1, 3, 4 and 5
1 Remove the bolts (22) and the washers (23) securing the support plate (25) to the support bracket (27).
2 Remove the nuts (20) and the bolts (17) securing the indicator (24) to the tank skin, then remove the indicator. Discard the O-rings (18) and (19).
3 Remove the support plate (25) from the indicator (24). Remove and discard the grommet (26).

(c)Skin-mounted indicator No.2
1 Remove the bolts (22) and the washers (23) securing the support plate (25) to the support bracket (27).
2 Remove the nuts (1), the tapered washers (2) and the bolts (6), then remove the indicator (26) from the skin. Discard the O-rings (3) and (4).
3 Remove the support plate (25) from the indicator (24). Remove and discard the grommet (26).
4 If necessary, remove the tapered packing (5). Clean the tapered packing and the skin interface using a non-metallic scraper.

R



Magnetic Level Indicators - Installation
Figure 401



BM8 28 43 21 4 BAMO 00

Trim Tank Magnetic Level Indicator - Installation
Figure 402

(d)Trim tank indicator
1 Remove the nuts (42) and the screws (45).
2 Remove the magnetic level indicator (41) from the clip (40).
3 Remove the magnetic level indicator (41).
4 Remove and discard the O-rings (43) and (44).

**ON A/C ALL

Post SB 28-2153 For A/C ALL

(e)Trim tank indicator
1 Identify and record the position of the bonding bolt (45).

NOTE : The head and the tail of the bonding bolt are colored blue for identification.

2 Remove the nuts (42) and the bolts (45).
3 Release the magnetic level indicator (41) from the clip (40).
4 Remove the magnetic level indicator (41).
5 Remove and discard the O-rings (43) and (44).

**ON A/C ALL

(3)Preparation of Replacement Component
(a)Make sure that the indicator graduated tube slides freely, then lock it in the closed position.
(b)Make sure that the interface of the indicator and the cover or the skin are clean and undamaged.

**ON A/C ALL

Post SB 28-2153 For A/C ALL

(3)Preparation of Replacement Component
(a)Make sure that the indicator graduated tube slides freely, then lock it in the closed position.
(b)Make sure that the interface of the indicator and the cover of the skin are clean and undamaged.
(c)Prepare the bonding surface (Ref. 20-28-11, P. Block 1, para 3.C.) of the parts that follow:
- bonding bolts (10), (12), (17), (6) and (45) and the related holes in the manhole cover
- the indicators (8), (24) and (41)
- the guard tube (9)
- the tank skin
- the tapered packing (5).

**ON A/C ALL

(4)Installation

(a)Indicator No. 6 mounted on the manhole cover
1 Insert the bolts (12) thru the manhole cover, and position the new O-rings (14) over each bolt.
2 Install the new O-ring (13) in the base of the indicator (8).
3 Locate the indicator (8) over the bolts (12) and secure with the nuts (15). Make sure that the float (16) moves freely over its complete range.
4 Install a new grommet (7) in the guard tube (9).
5 Place the guard tube (9) over the indicator (8) and locate it on the manhole cover. Secure the guard tube with the bolts (10) and the nuts (11).
6 Unlock and extend the graduated tube. Check that the tube operates freely and engages magnetically. Retract and lock the graduated tube.

(b)Skin-mounted indicators No. 1, 3, 4 and 5.
1 Install a new grommet (26) on the support plate (25).
2 Install the support plate (25) on the indicator (24).
3 Insert the bolts (17) thru the tank skin, and position a new O-ring (19) over each bolt.
4 Install new O-ring (18) in the base of the indicator (24).
5 Locate the indicator (24) over the bolts (17) and secure with the nuts (20).
6 Locate the support plate (25) on the support bracket (27) and secure with the washers (23) and the bolts (22). Make sure that the float (21) moves freely over its complete range.
7 Unlock and extend the graduated tube. Check that the tube operates freely and engages magnetically. Retract and lock the graduated tube.

(c)Skin-mounted indicator No.2
1 Apply sealant (Mat. No. 09-001) to the tapered packing (5), if removed.
Position the tapered packing on the tank skin with the thick edge facing forward.
2 Insert the bolts (6), thru the tank skin, and position a new O-ring (3) over each bolt.
3 Install the new O-ring (4) in the base of the indicator (24).
4 Locate the indicator (24) over the bolts (6). Fit the tapered washers (2) (thin edge forward) and the nuts (1).
5 Install the new grommet (26) on the support plate (25).
6 Install the support plate (25) on the indicator (24) then locate the support plate on the support bracket (27) and secure with the washers (23) and the bolts (22). Make sure that the float (21) moves freely over its complete range.
7 Unlock and extend the graduated tube. Check that the tube operates freely and engages magnetically. Retract and lock the graduated tube.

R

(e)Trim tank indicator
1 Install the screws (45).
2 Install the O-rings (43) and (44).
3 Position the magnetic level indicator (41) on the screws (45).
4 Carefully push the magnetic level indicator to engage it in the clip (40).
5 Install the nuts (42).
6 Unlock and extend the graduated tube. Make sure that the tube operates freely and engages its magnet correctly. Retract and lock the graduated tube.

**ON A/C ALL

Post SB 28-2153 For A/C ALL

(e)Trim tank indicator
1 Install the bolts (45) through the tank skin and put the new O-rings (44) over each bolt. Do not install the bonding bolt (45) at this step.
2 Install the new O-ring (43) in the groove in the base of the indicator (41).
3 Engage the indicator (41) on the bolts (45).
4 Carefully push the magnetic level indicator to engage it in the clip (40).
5 Install the nuts (42).

WARNING : THIS INSTRUCTION IS APPLICABLE TO A CRITICAL DESIGN CONFIGURATION CONTROL LIMITATION (CDCCL) ITEM. CAREFULLY OBEY ALL GIVEN INSTRUCTIONS WHEN YOU DO THIS STEP. IF YOU DO NOT OBEY THESE INSTRUCTIONS, A DANGEROUS CONDITION CAN OCCUR THAT CAN CAUSE A POSSIBLE FUEL TANK EXPLOSION.

6 Do the electrical bonding procedure (Ref. 20-28-11, P. Block 1, para 3.D.(2)) to install the bonding bolt (45) and the nut (42). Allow the sealant to dry.
7 Apply a layer of paint (Material No. 07-001C) to the head and the tail of the bonding bolt (45). This identifies the bonding bolt (45).

**ON A/C ALL

(5)Preparation for Test
(a)Make sure that the work area is clean and clear of tools and miscellaneous items of equipment.
(b)Install the appropriate manhole covers (Ref. 28-11-22, P. Block 401/

28-11-29, P. Block 401/ 28-11-33, P. Block 401).
(c)Refuel the appropriate tank(s) (Ref. 12-11-28, P. Block 301).

(6)Test
(a)Check the indicator for leaks and check the indicator reading against the FQI readings.

(7)Close-Up
(a)Remove the access platform.

3. Graduated Tube, Magnet and Bush Assembly

A. Equipment and Materials

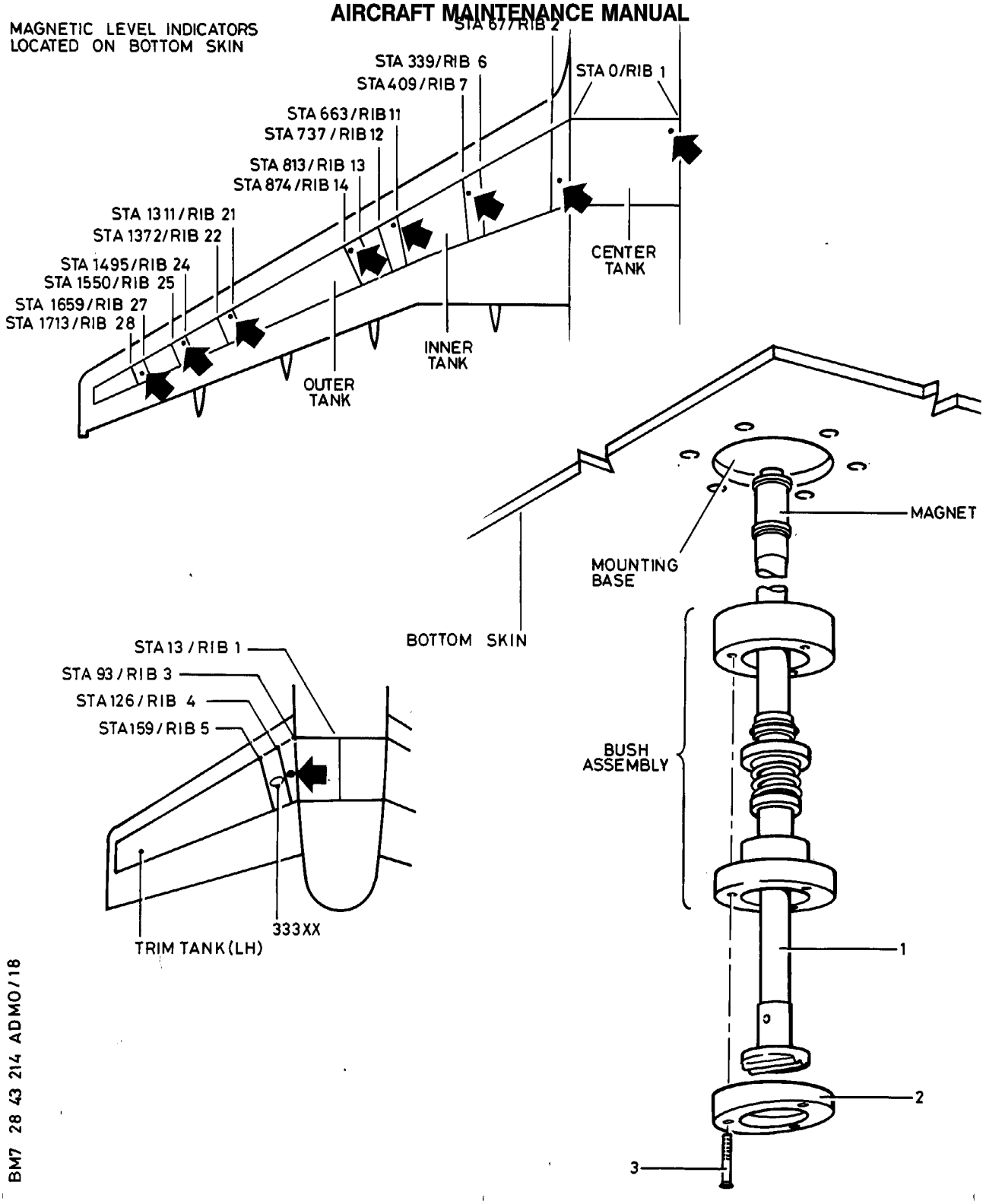
ITEM	DESIGNATION
A.	Access Platform 2 to 6 m (6 to 20 ft)
Referenced Procedures	
- 12-11-28, P. Block 301	Fuel
- 28-00-00, P. Block 301	Fuel - General

B. Procedure
(Ref. Fig. 403)

(1)Job Set-up
(a)Position access platform.
(2)Removal
(a)Unlock graduated tube (1) with screwdriver.
(b)Remove screws (3) and cover (2).
(c)Withdraw graduated tube (1) complete with magnet and bush assembly from mounting base.
(3)Preparation of Replacement Component

CAUTION: MAGNETIC LEVEL INDICATORS DIFFER IN LENGTH.

(a)Make certain that correct replacement graduated tube is to be installed.
(4)Installation
(a)Make certain that thread inserts in mounting base are in correct condition.
(b)Insert graduated tube (1) complete with magnet and bush assembly into mounting base.
(c)Locate and secure cover (2) to mounting base with screws (3).
(d)Lock graduated tube with screwdriver.
(5)Test
(a)Check indicator for leaks.
(b)Unlock graduated tube (1) and make certain it extends fully and freely.
(c)Retract graduated tube (1) and lock with screwdriver.
(6)Close-Up
(a)Remove access platform.



Graduated Tube, Magnet and Bush Assembly
- Installation
Figure 403

1. General

R **ON A/C 101-200,

R NOTE : The information for ACT(s) that follows is only applicable if the
R ACT(s) are installed and serviceable.

R **ON A/C 001-100,

(Ref. Fig. 001)

R **ON A/C 101-200,

R (Ref. Fig. 002)

R **ON A/C 101-200,

R Post SB 28-2105 For A/C 101-200,

R Post SB 28-2108 For A/C 101-200,

R (Ref. Fig. 003)

R **ON A/C ALL

The tank level warning system includes:
- a quantity of fuel level sensors
- a fuel level amplifier
- a quantity of high level annunciator lights and overflow warning lights (located on the refuel/defuel panel Ref. 28-25-00).

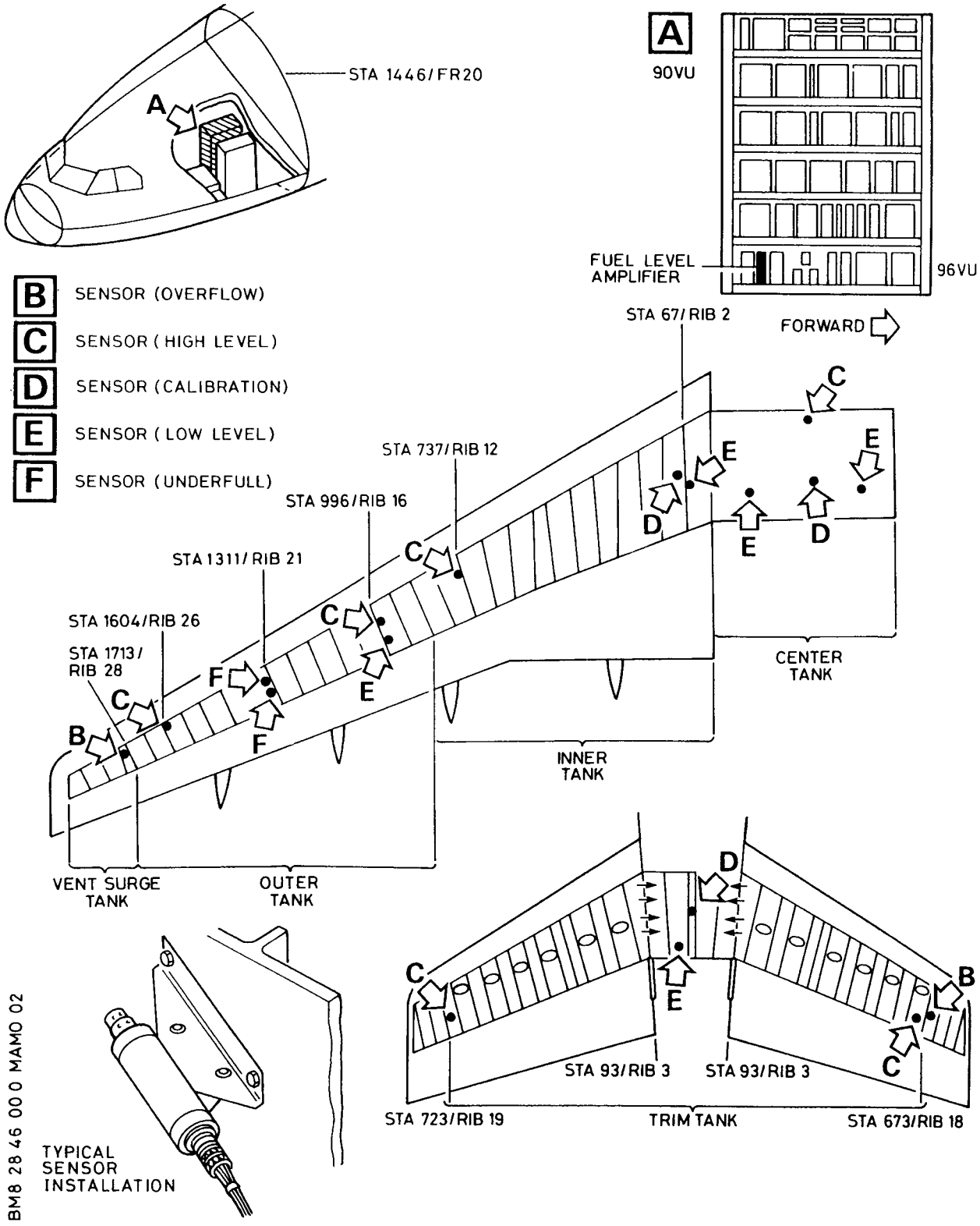
Each sensor has a specified function and gets a 28VDC supply from the fuel level amplifier.

R **ON A/C 101-200,

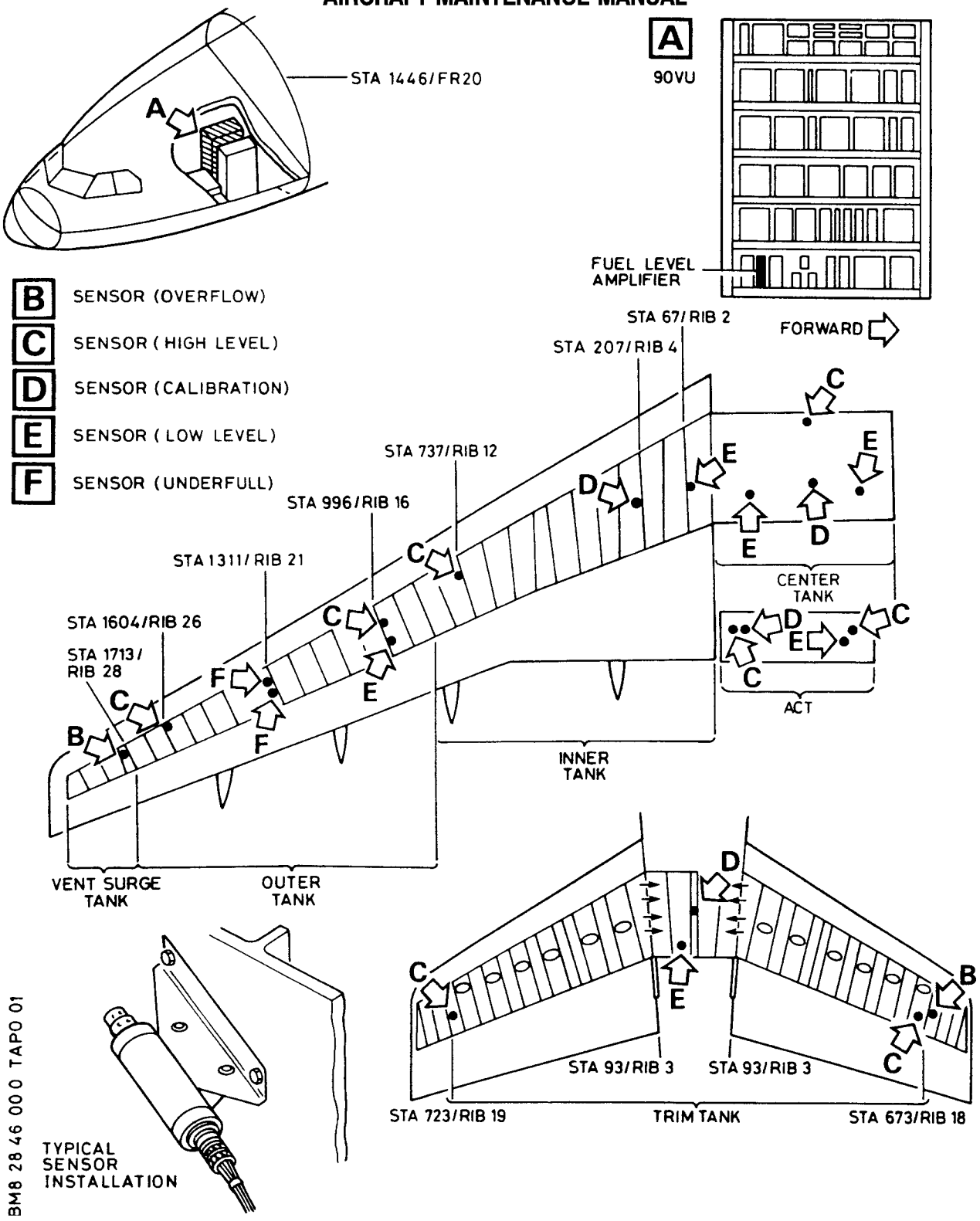
This includes the sensors in the ACT(s) (Ref. 28-42-00).

R **ON A/C ALL

The fuel level amplifier gets an input from each sensor and makes outputs for the related fuel tanks when specified conditions occur. When necessary these outputs will:
- cause the high-level annunciator lights to come on when the fuel is at high level
- cause the overflow warning lights to come on when fuel occurs in the

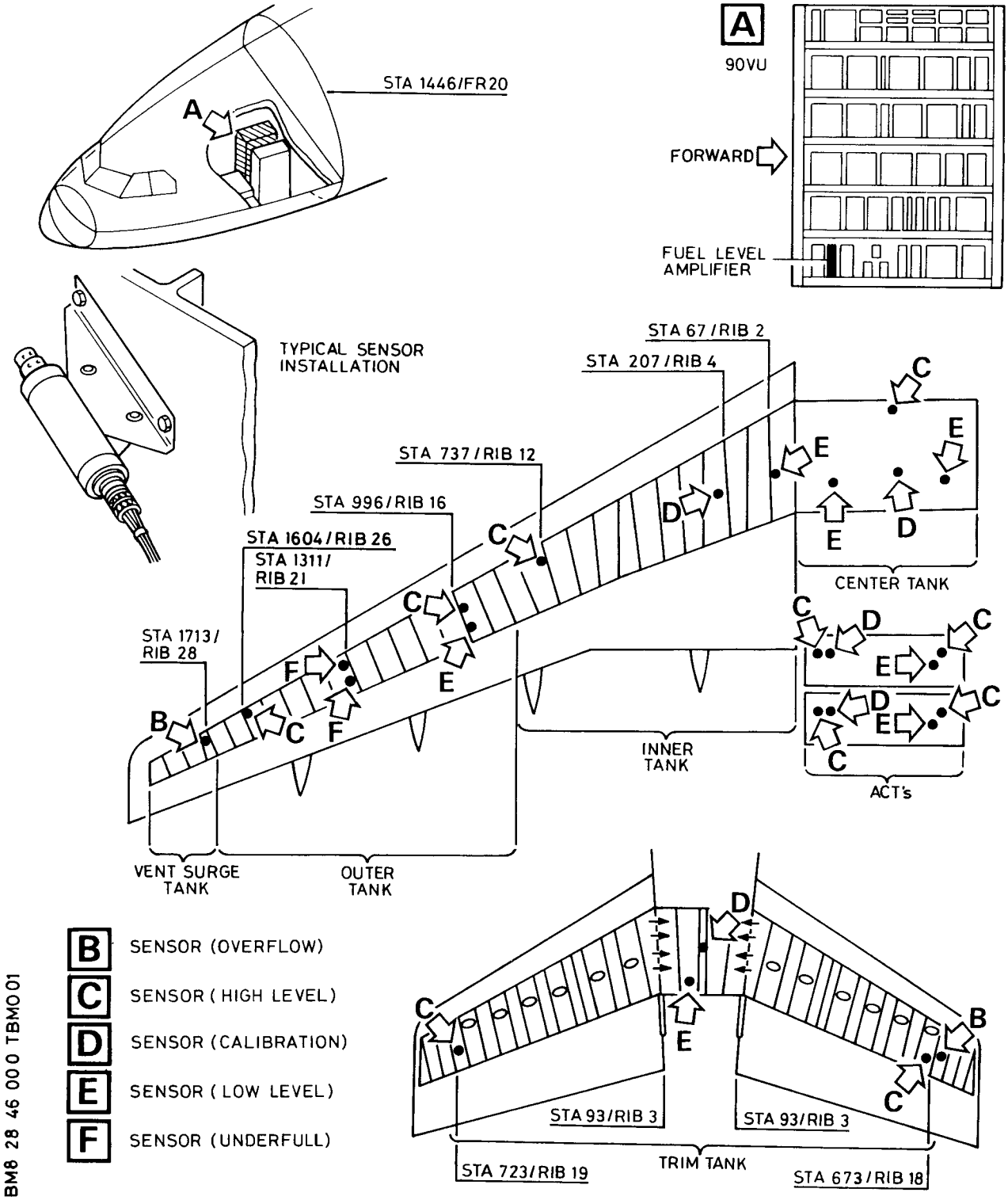


Tank Level Warning System
Figure 001



Tank Level Warning System
Figure 002

R



Tank Level Warning System
Figure 003

surge tanks.

Other systems in the aircraft use these outputs, these systems are:
- the fuel pump system to control pump operation (Ref. 28-21-00)
- the refuel/defuel system to control fuel valve operation (Ref. 28-25-00)
- the ECAM system through the FWC (Ref. 31-53-00) to show when fuel levels are low.
- the C of G computer to control the auto mode transfer of fuel to and from the trim tank (Ref. 31-46-00).

**ON A/C 101-200,

- the ACT fuel system to control the auto mode transfer of fuel to the center tank (Ref. 28-28-00).

**ON A/C ALL

- the water scavenge system (Ref. 28-11-00).

2. Component Location

**ON A/C 001-100,

(Ref. Fig. 004)

**ON A/C 101-200,

(Ref. Fig. 005)

**ON A/C 101-200,

Post SB 28-2108 For A/C 101-200,

R Post SB 28-2126 For A/C 104-104,

(Ref. Fig. 006)

**ON A/C ALL

FIN	FUNCTIONAL DESIGNATION	PANEL	ZONE	ACCESS DOOR	ATA REF
1QJ	C/B - FUEL/TK LO LVL AND CAL/L OUTR/ & R INR & CTR R	22VU	210	208/B26	
2QJ	C/B - FUEL/TK LO LVL AND CAL/R OUTR/ & L INR & CTR L	22VU	210	208/B27	
5QJ	C/B - FUEL/FUELLING/OVERFLOW & CALIBRATION	132VU	212	321/P58	
6QJ	C/B - FUEL/FUELLING/HI LVL	132VU	212	321/P57	

FIN	FUNCTIONAL DESIGNATION	PANEL	ZONE	ACCESS DOOR	ATA REF
7QJ	MOUNTING - FUEL LEVEL AMPLIFIER	96VU	122	132AZ	
8QJ	AMPLIFIER - FUEL LEVEL	96VU	122	132AZ	
9QJ	P/B SW - TEST	110VU	144	144DR	
10QJ	RELAY - FUEL LEVEL CTR TK	110VU	144	144DR	
11QJ	RELAY - FUEL LEVEL L INR TK	110VU	144	144DR	
12QJ	RELAY - FUEL LEVEL R INR TK	110VU	144	144DR	
13QJ	RELAY - FUEL LEVEL L OUTR TK	110VU	144	144DR	
14QJ	RELAY - FUEL LEVEL R OUTR TK	110VU	144	144DR	
16QJ	WARNING LIGHT - HIGH LEVEL, CTR TK	110VU	144	144DR	
17QJ	WARNING LIGHT - HIGH LEVEL, L INNER TK	110VU	144	144DR	
18QJ	WARNING LIGHT - HIGH LEVEL, R INNER TK	110VU	144	144DR	
19QJ	WARNING LIGHT - HIGH LEVEL, L OUTER TK	110VU	144	144DR	
20QJ	WARNING LIGHT - HIGH LEVEL, R OUTER TK	110VU	144	144DR	
21QJ	WARNING LIGHT - OVERFLOW, L	110VU	144	144DR	
22QJ	WARNING LIGHT - OVERFLOW, R	110VU	144	144DR	
23QJ	WARNING LIGHT - OVERFLOW, TRIM TK	110VU	144	144DR	
24QJ	WARNING LIGHT - HIGH LEVEL, TRIM TK	110VU	144	144DR	
25QJ.1	SENSOR - OVERFLOW L VENT SURGE TK		560	560AB	28-46-22
25QJ.2	SENSOR - OVERFLOW R VENT SURGE TK		660	660AB	28-46-22
26QJ.1	SENSOR - HIGH LEVEL L OUTR TK		550	550MB	28-46-21
26QJ.2	SENSOR - HIGH LEVEL R OUTR TK		650	650MB	28-46-21
27QJ.1	SENSOR - HIGH LEVEL L OUTR TK		550	550BB	28-46-21
27QJ.2	SENSOR - HIGH LEVEL R OUTR TK		650	650BB	28-46-21
28QJ.1	SENSOR - LOW LEVEL L OUTR TK		550	550BB	28-46-21
28QJ.2	SENSOR - LOW LEVEL R OUTR TK		650	650BB	28-46-21
30QJ.1	HARNESS - L OUTR TK		550		28-42-24
30QJ.2	HARNESS - R OUTR TK		650		28-42-24
31QJ.1	SENSOR - HIGH LEVEL L INR TK		540	540GB	28-46-21
31QJ.2	SENSOR - HIGH LEVEL R INR TK		640	640GB	28-46-21
32QJ.1	SENSOR - LOW LEVEL L INR TK		540	540AB	28-46-21
32QJ.2	SENSOR - LOW LEVEL R INR TK		640	640AB	28-46-21
34QJ.1	HARNESS - L INR TK		540		28-42-23
34QJ.2	HARNESS - R INR TK		640		28-42-23
35QJ	SENSOR - LOW LEVEL CTR TK L		141	147AZ	28-46-21
36QJ	SENSOR - LOW LEVEL CTR TK R		142	148AZ	28-46-21
37QJ	SENSOR - HIGH LEVEL CTR TK		142	148AZ	28-46-21
39QJ	HARNESS - CTR TK		141/142		28-42-25
40QJ	HARNESS - TRIM TK				
51QJ	SW - LO LVL TEST, U/FULL CHAN TEST	472VU	212		
52QJ	ANNUNCIATOR - U/FULL LVL TEST	472VU	121		
53QJ.1	SENSOR - U/FULL L OUTR TK		550	550HB	28-46-21
53QJ.2	SENSOR - U/FULL R OUTR TK		650	650HB	28-46-21
54QJ.1	SENSOR - U/FULL L OUTR TK		550	550HB	28-46-21
54QJ.2	LEVEL SENSOR - U/FULL R OUTR TK		650	650HB	28-46-21
59QJ	RELAY - U/FULL CHAN 1 L	90VU	121	132AZ	

FIN	FUNCTIONAL DESIGNATION	PANEL	ZONE	ACCESS DOOR	ATA REF
60QJ	RELAY - U/FULL CHAN 1 R	90VU	121	132AZ	
61QJ	RELAY - U/FULL CHAN 2 L	90VU	121	132AZ	
62QJ	RELAY - U/FULL CHAN 2 R	90VU	121	132AZ	
76QJ	RELAY - HIGH LVL, TRIM TK	104VU	120	121BL	
77QJ	RELAY - OVERFLOW, TRIM TK	104VU	120	121BL	
78QJ	RELAY - LOW LVL, TRIM TK	104VU	120	121BL	
79QJ	RELAY - HIGH LVL, INNER TK	104VU	120	121BL	
81QJ	SENSOR - L HIGH LVL, TRIM TK		330	333GB	28-46-21
82QJ	SENSOR - R HIGH LVL, TRIM TK		340	343GB	28-46-21
83QJ	SENSOR - OVERFLOW, TRIM TK		340	343GB	28-46-21
85QJ	SENSOR - LOW LVL, TRIM TK		319	319BZ	28-46-21
86QJ.1	SENSOR - CALIBRATION, L INR TK		540	540AB	28-46-28
86QJ.2	SENSOR - CALIBRATION, R INR TK		640	640AB	28-46-28
88QJ	SENSOR - CALIBRATION, TRIM TK		319	319BZ	28-46-28
89QJ	SENSOR - CALIBRATION, CENTER TK		140	148AZ	28-46-28
**ON A/C 101-200,					
90QJ	RELAY - HIGH LVL, ACT	104VU	120		
91QJ	RELAY - LOW LVL, ACT	104VU	120		
92QJ	LAMP - HIGH LVL, ACT	110VU	144		
93QJ	RELAY - HIGH LEVEL, CTR TK	104VU	120		
103QJ	RELAY - CALIBRATION SENSOR, ACT	104VU	120		
**ON A/C 101-200,					
Post SB 28-2108 For A/C 101-200,					
90QJ	RELAY - HIGH LEVEL, ACT	104VU	120		
91QJ	RELAY - LOW LEVEL, ACT 1	104VU	120		
92QJ	WARNING LIGHT - HIGH LEVEL, ACT 1	110VU	144	144DR	
93QJ	RELAY - HIGH LEVEL, CTR TK	104VU	120		
94QJ	RELAY - HIGH LEVEL, ACT 2	104VU	120		
95QJ	RELAY - LOW LEVEL, ACT 2	104VU	120		
96QJ	WARNING LIGHT - HIGH LEVEL, ACT 2	110VU	144	144DR	

FIN	FUNCTIONAL DESIGNATION	PANEL	ZONE	ACCESS DOOR	ATA REF
103QJ	RELAY - CALIBRATION SENSOR ACT 1	104VU	120		
106QJ	RELAY - CALIBRATION SENSOR ACT 2	104VU	120		
107QJ	RELAY - SLAVE LO LEVEL ACT 2	104VU	120		

**ON A/C ALL

3. Description

**ON A/C 001-100,

(Ref. Fig. 007)

**ON A/C 101-200,

(Ref. Fig. 008)

**ON A/C ALL

(Ref. Fig. 009)

**ON A/C 101-200,

Post SB 28-2105 For A/C 101-200,

Post SB 28-2108 For A/C 101-200,

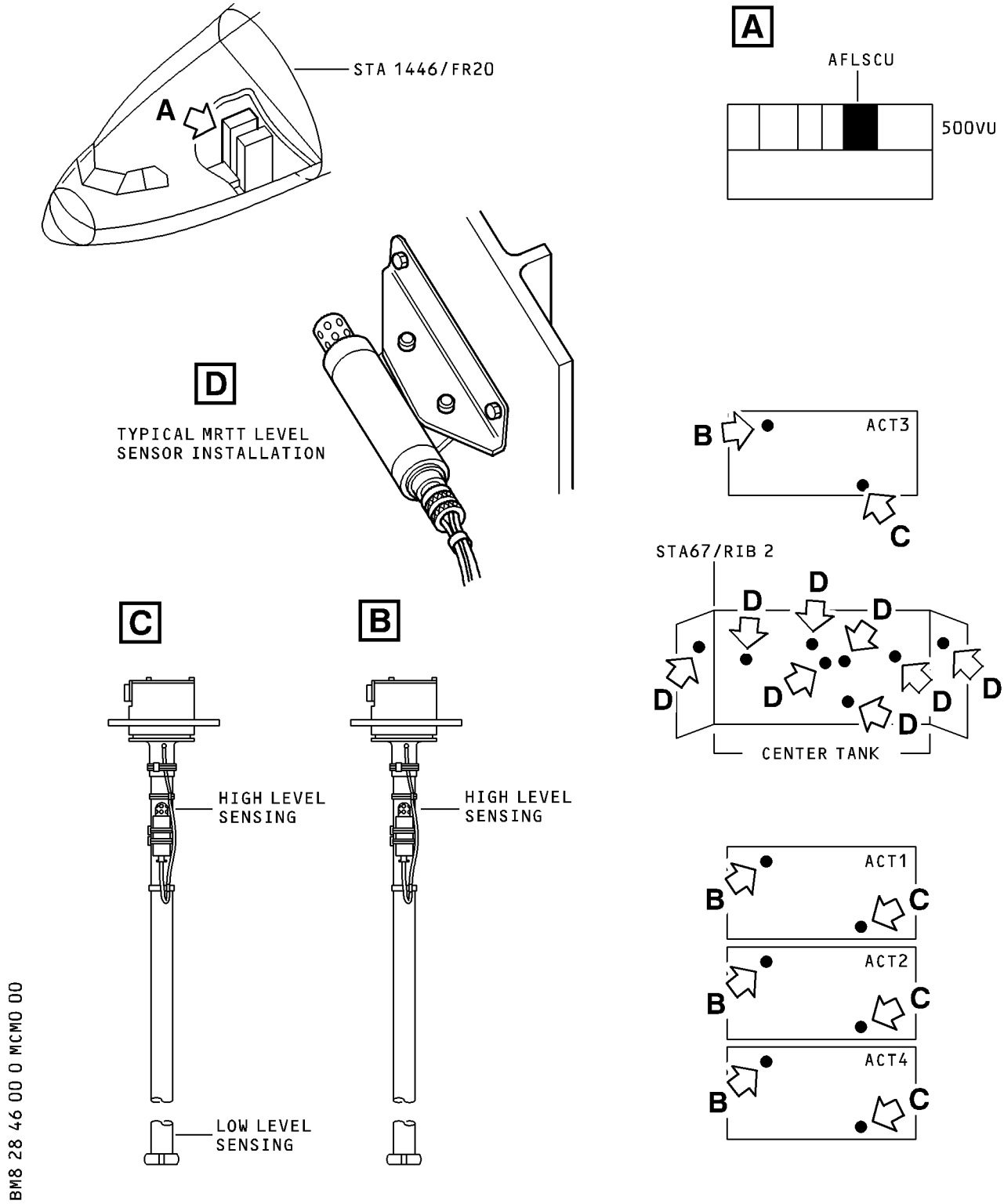
(Ref. Fig. 010)

**ON A/C 101-200,

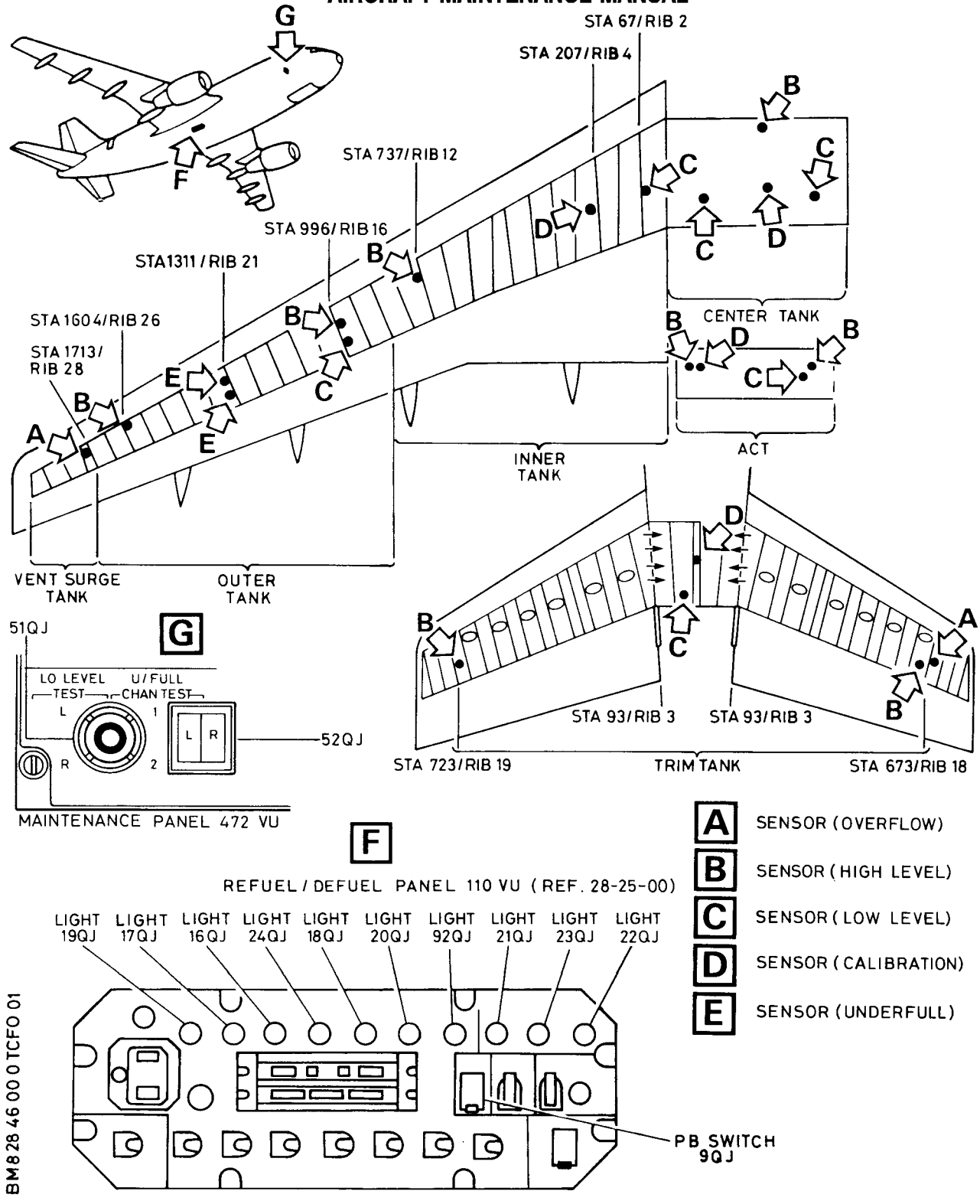
(Ref. Fig. 011)

**ON A/C 001-100,

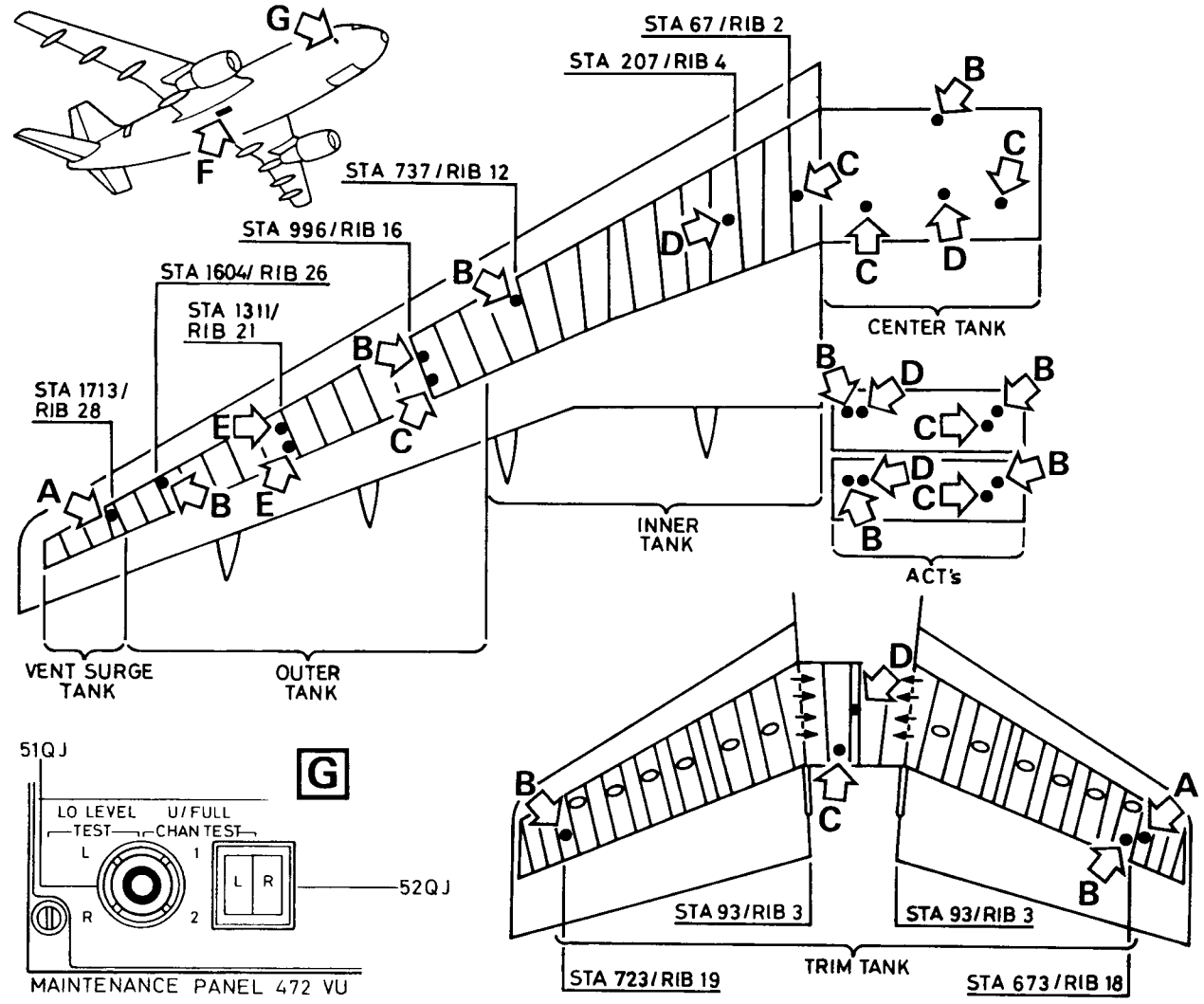
The fuel level amplifier sends a continuous power supply to each of the related level sensors in the fuel tanks. It gets an input from each sensor and when the applicable conditions occur it causes an output. These

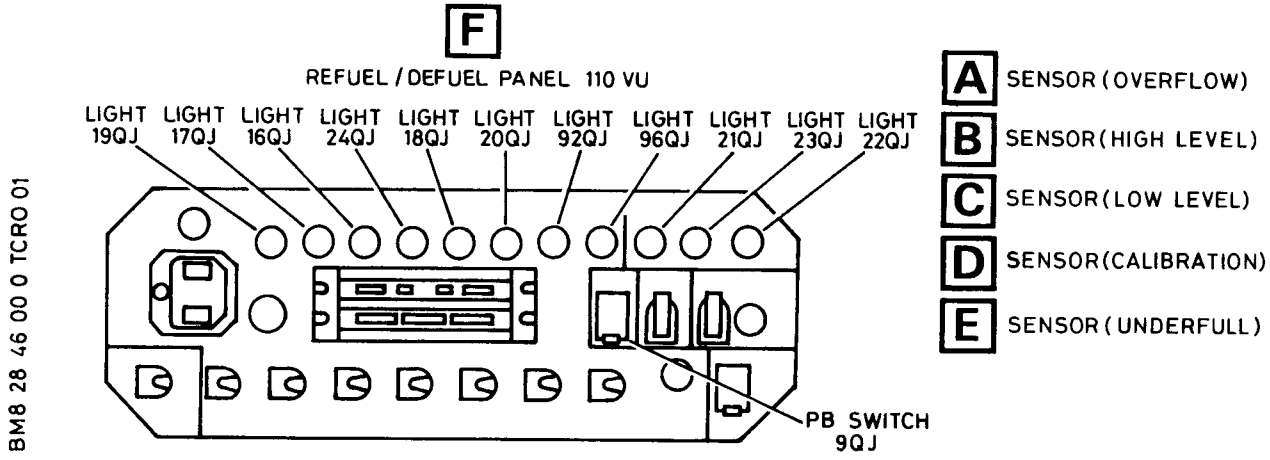


Tank Level Warning System - Component Location
Figure 004

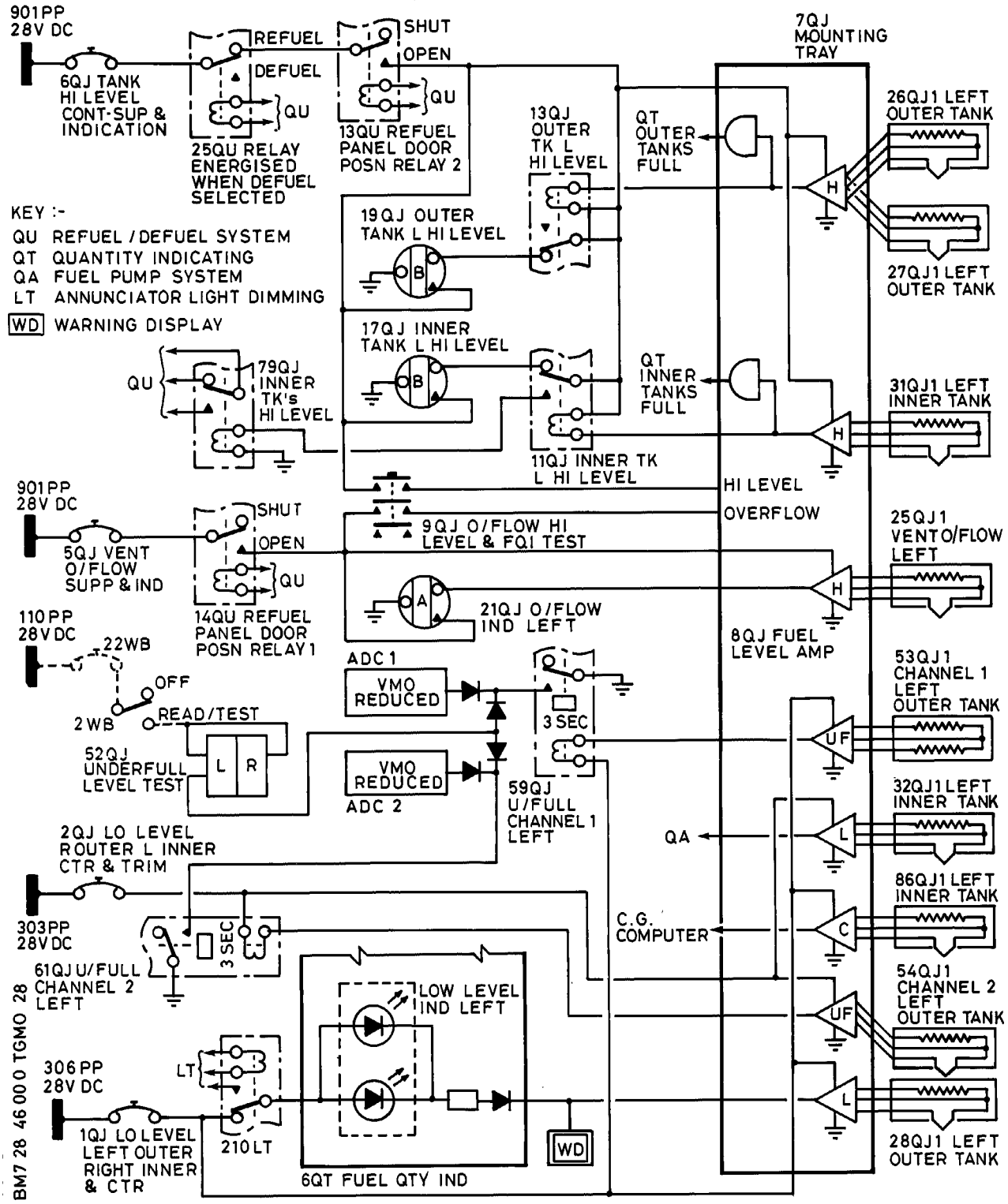


Tank Level Warning System - Component Location
Figure 005

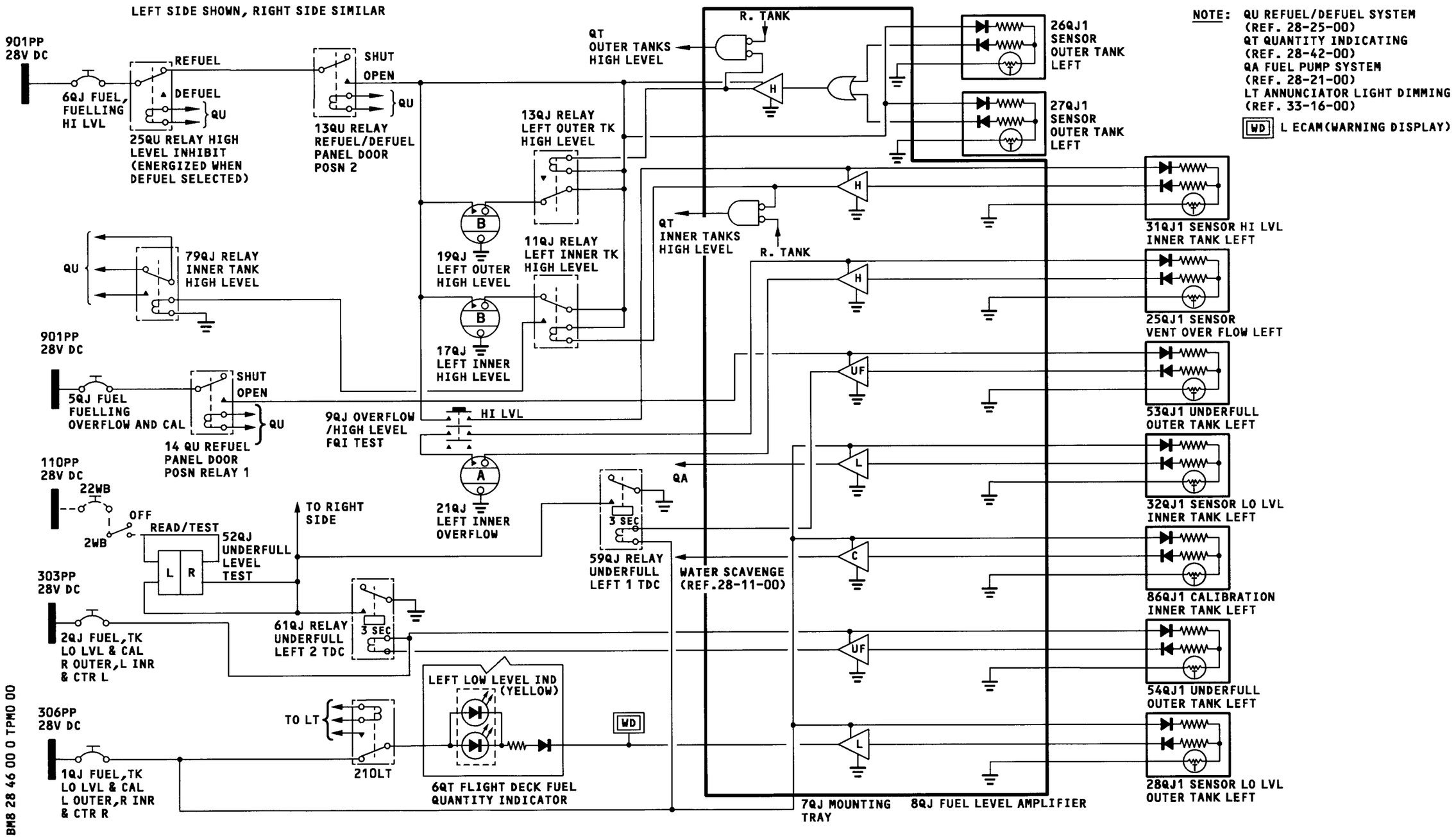




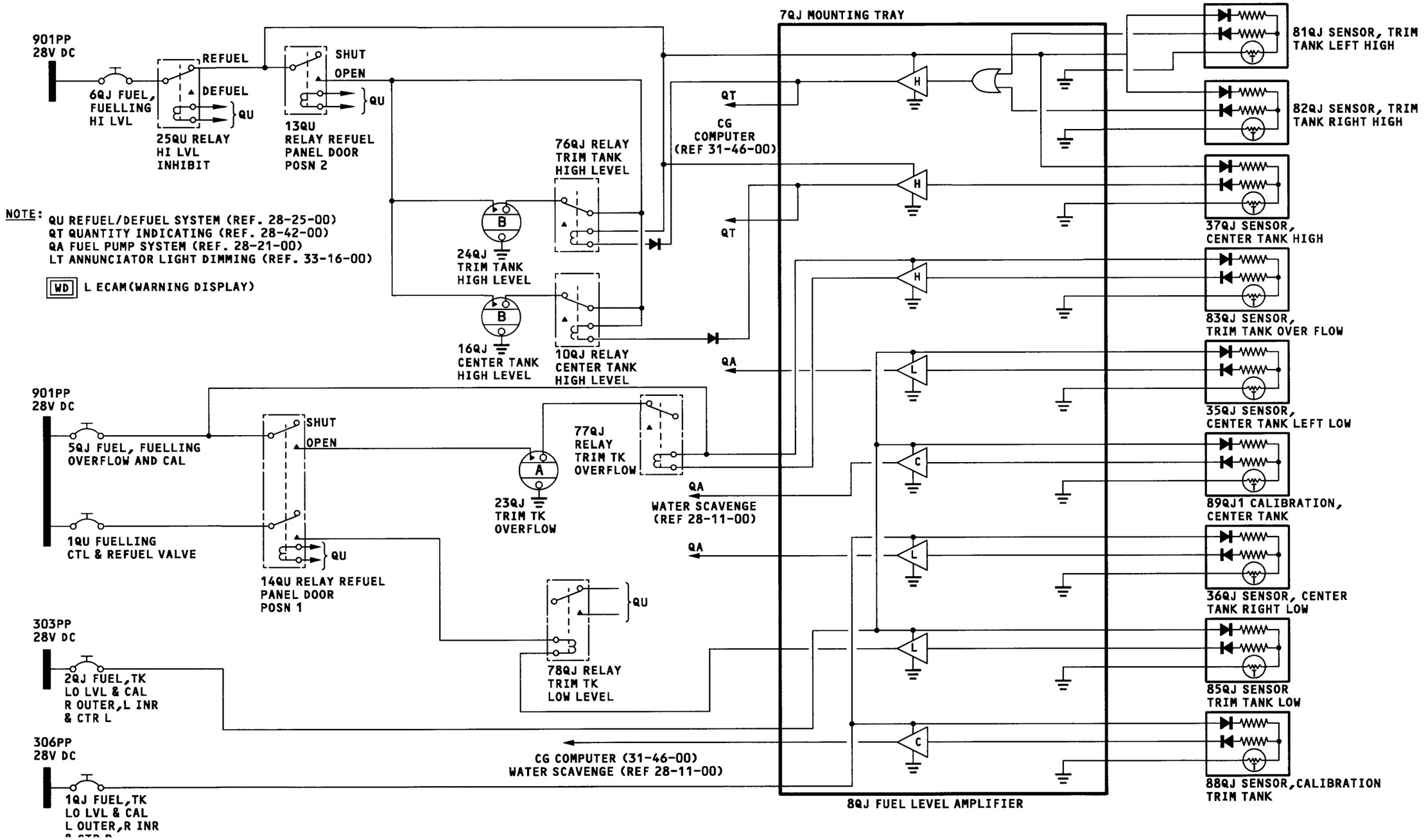
Tank Level Warning System - Component Location
Figure 006



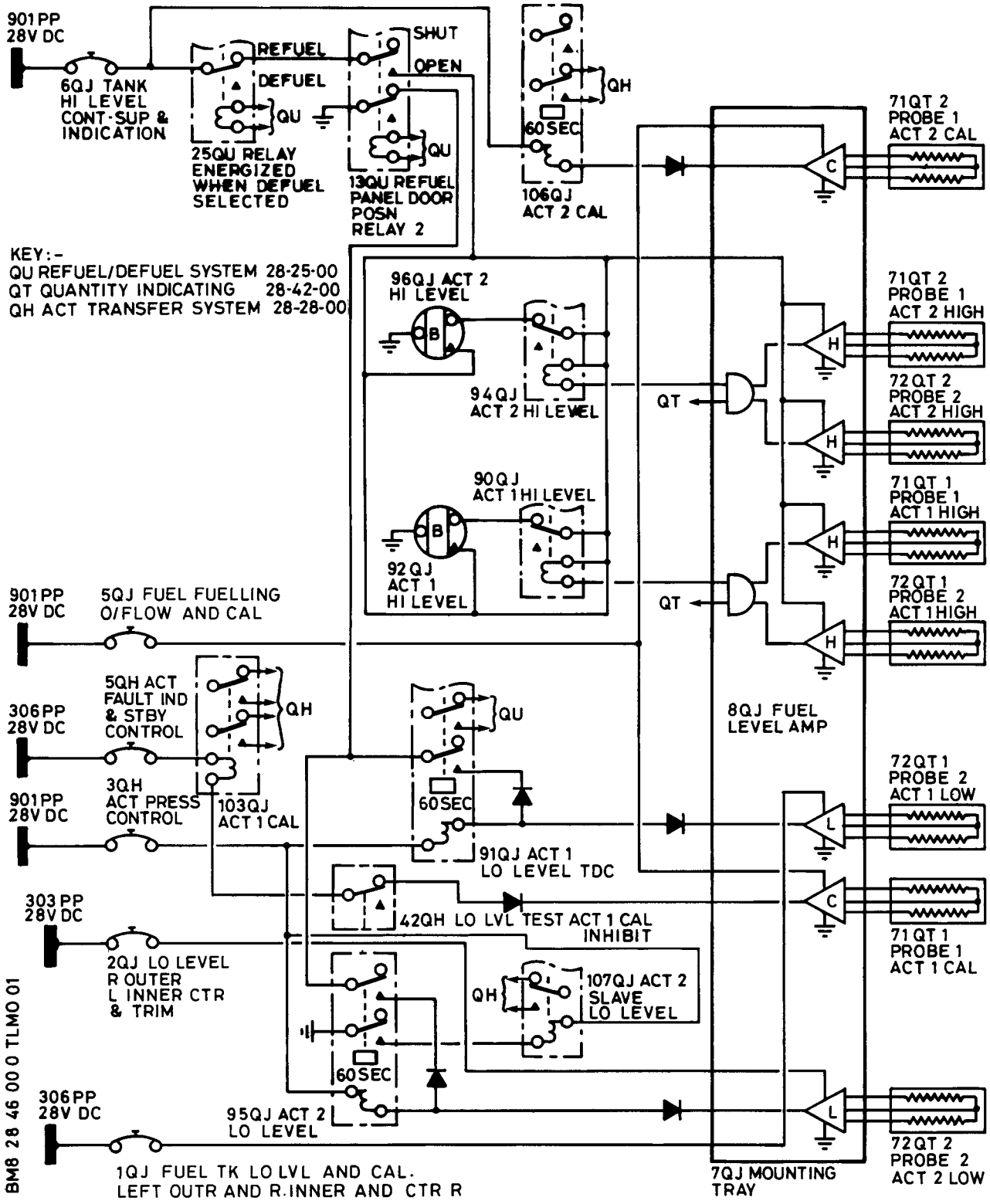
Inner and Outer Tank Level Warning -
Circuit Diagram
Figure 007



Inner and Outer Tank Fuel-Level Warning - Circuit Diagram
Figure 008

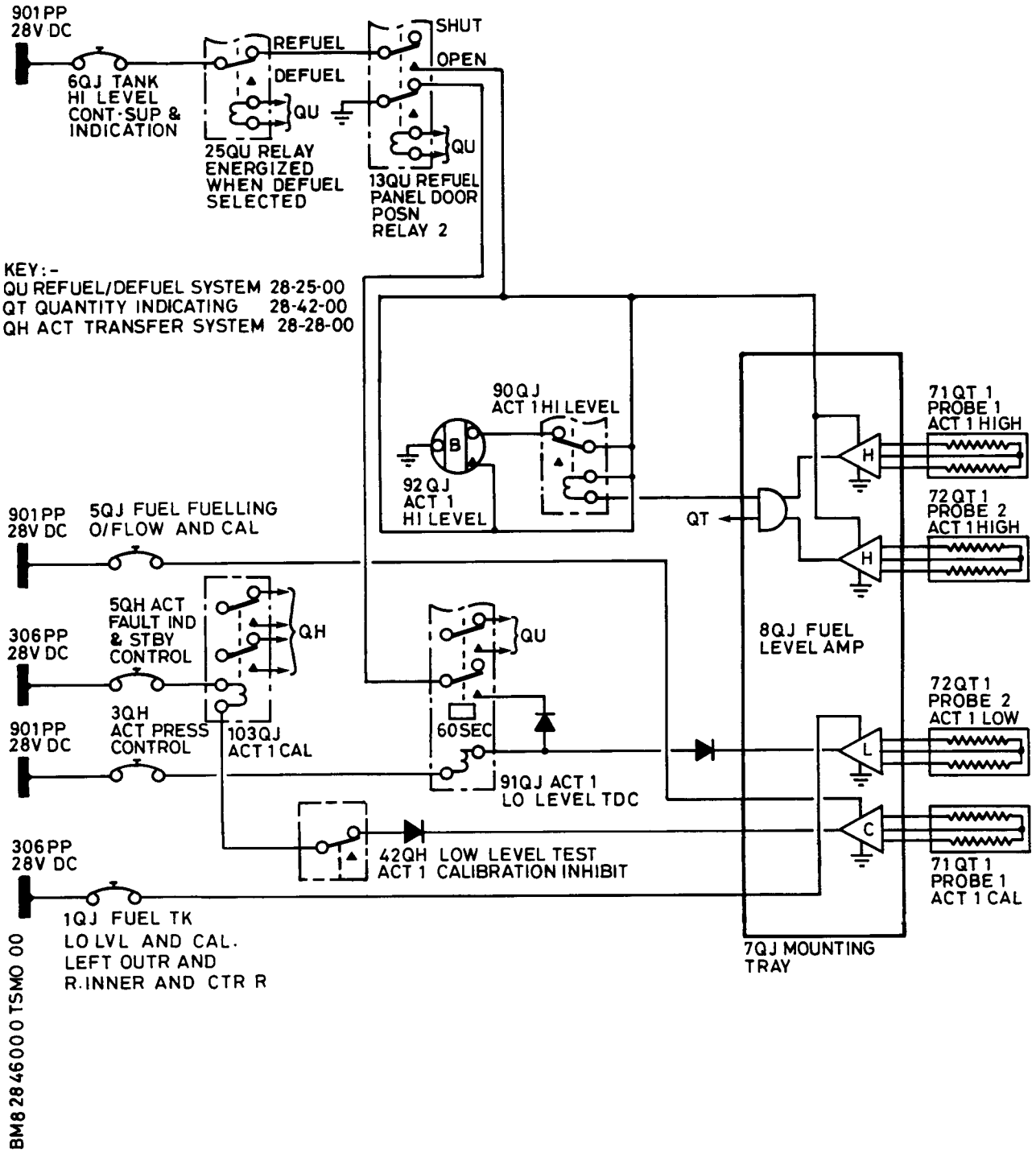


Center and Trim Tank Fuel-Level Warning - Circuit Diagram
Figure 009



ACT 1 & 2 Level Warning - Circuit Diagram
Figure 010

R



ACT Level Warning - Circuit Diagram
Figure 011

outputs:
- show when the related tanks are full
- give a warning when overflow occurs
- give signals necessary for the operation of other fuel control and indicating systems in the aircraft.

Level sensors are distributed as follows:
High level - one sensor in the center tank and one in each inner tank
- two sensors in each outer tank
- two sensors in the trim tank.

Low level - left and right sensors in the center tank
- one sensor in each inner and outer tank
- one sensor in the trim tank.

Overflow - one sensor in the two wing vent surge tanks
- one sensor in the trim tank vent surge tank.

Calibration - one sensor in each inner tank
- one sensor in the trim tank
- one sensor in the center tank.

**ON A/C 101-200,

The fuel level amplifier sends a continuous power supply to each of the related level sensors in the fuel tanks. It gets an input from each sensor and when the applicable conditions occur it causes an output. These outputs:
- show when the related tanks are full
- give a warning when overflow occurs
- give signals necessary for the operation of other fuel control and indicating systems in the aircraft.

Level sensors are distributed as follows:
High level - one sensor in the center tank and one in each inner tank
- two sensors in each outer tank
- two sensors in the trim tank
- two sensors in the ACT (if ACT installed).

Low level - left and right sensors in the center tank
- one sensor in each inner and outer tank
- one sensor in the trim tank
- one sensor in the ACT (if ACT installed).

Overflow - one sensor in each wing vent surge-tank
- one sensor in the trim-tank vent surge-tank.

Calibration - one sensor in each inner tank
- one sensor in the trim tank

- one sensor in the center tank
- one sensor in the ACT (if ACT installed).

**ON A/C 101-200,

Post SB 28-2105 For A/C 101-200,

Post SB 28-2108 For A/C 101-200,

The fuel level amplifier sends a continuous power supply to each of the related level sensors in the fuel tanks. It gets an input from each sensor and when the applicable conditions occur it causes an output. These outputs:
- show when the related tanks are full
- give a warning when overflow occurs
- give signals necessary for the operation of other fuel control and indicating systems in the aircraft.

Level sensor are distributed as follows:

High Level
- one sensor in the center tank
- one sensor in each inner tank
- two sensors in each outer tank
- two sensors in the trim tank
- two sensors in each ACT (if ACT(s) installed).

Low Level
- left and right sensors in the center tank
- one sensor in each inner tank
- one sensor in the trim tank
- one sensor in each ACT (if ACT(s) installed).

Overflow
- one sensor in each wing vent surge tank
- one sensor in the trim tank vent surge tank.

Calibration
- one sensor in each inner tank
- one sensor in the trim tank
- one sensor in the center tank
- one sensor in each ACT (if ACT(s) installed).

**ON A/C 001-100,

Underfull
- one sensor in each outer tank linked to ADC1 (air data computer)
- one sensor in each outer tank linked to ADC2.

**ON A/C 101-200,

Underfull - two sensors in each outer tank.

**ON A/C 001-100,

The 28VDC power supplies for the tank level warning system comes from the C/Bs given in Para. 2. Each C/B gets its power supply from the bus bars that follow:
- 1QJ from the essential bus 306PP
- 2QJ from the essential bus 303PP
- 5QJ and 6QJ from the fueling bus 901PP.

The C/B 1QJ supplies the left LO LVL indicator of the fuel quantity indicator (Ref. 28-42-00) during test conditions. It also supplies the left and right outer-tank underfull-relays (for the No. 1 underfull sensors) and an input through the fuel level amplifier for the sensors that follow:
- the center-tank right low-level
- the right inner-tank low-level
- the left and right inner-tank calibration-level
- the left outer-tank low-level
- the left and right outer-tank No. 1 underfull-level
- the trim-tank calibration-level.

The C/B 2QJ supplies the right LO LVL indicator of the fuel quantity indicator (Ref. 28-42-00) during test conditions. It also supplies the left and right outer-tank underfull-relays (for the No. 2 underfull sensors) and an input through the fuel level amplifier for the sensors that follow:
- the center-tank left low-level and calibration-level
- the left inner-tank low-level
- the left and right outer-tank No. 2 underfull-level
- the right outer-tank low-level
- the trim-tank low-level.

The C/B 5QJ supplies the overflow test function and the sensors that follow during the refuel procedure only:
- the left and right vent-surge-tank overflow
- the left and right inner calibration-level
- the center-tank calibration level
- the trim-tank calibration level
- the trim-tank overflow.

The C/B 6QJ supplies the high level test function, annunciator lights, high level relays and the sensors that follow during the refuel procedure only:
- the center tank high level
- the left and right inner-tank high-level
- the left and right outer-tank high-level
- the trim tank left and right high level.

**ON A/C 101-200,

The 28VDC power supplies for the tank level warning system comes from the C/Bs given in Para. 2. Each C/B gets its power supply from the bus bars that follow:
- 1QJ from the essential bus 306PP
- 2QJ from the essential bus 303PP
- 5QJ and 6QJ from the fueling bus 901PP.

The C/B 1QJ supplies the left LO LVL indicator of the fuel quantity indicator (Ref. 28-42-00) during test conditions. It also supplies the left and right outer-tank underfull-relays (for the No. 1 underfull sensors) and an input through the fuel level amplifier for the sensors that follow:
- the center-tank right low-level
- the right inner-tank low-level
- the left and right-inner tank calibration-level
- the left outer-tank low-level
- the left and right outer-tank No. 1 underfull-level
- the ACT low level (72QT) (Ref. 28-42-00)
- the trim-tank calibration level.

The C/B 2QJ supplies the right LO LVL indicator of the fuel quantity indicator (Ref. 28-42-00) during test conditions. It also supplies the left and right outer-tank underfull-relays (for the No. 2 underfull sensors) and an input through the fuel level amplifier for the sensors that follow:
- the center left low-level and calibration level
- the left inner-tank low-level
- the left and right outer-tank No. 2 underfull level
- the right outer-tank low-level
- the trim-tank low-level.

The C/B 5QJ supplies the overflow test function and the sensors that follow during the refuel procedure only:
- the center-tank calibration level
- the left and right inner-tank calibration level
- the left and right vent-surge tank-overflow
- the ACT calibration (71QT) (Ref. 28-42-00) level
- the trim-tank calibration level
- the trim-tank overflow.

The C/B 6QJ supplies the high level test function, annunciator lights, high level relays and the sensors that follow during the refuel procedure only:
- the center-tank high-level
- the left and right inner-tank high-level
- the left and right outer-tank high-level
- the ACT high level (71QT and 72QT) (Ref. 28-42-00)
- the trim tank left and right high level.

**ON A/C 101-200,

Post SB 28-2105 For A/C 101-200,

The 28VDC power supplies for the tank level warning system comes from the C/Bs given in Para. 2. Each C/B gets its power supply from the bus bars that follow:
- 1QJ from the essential bus 306PP
- 2QJ from the essential bus 303PP
- 5QJ and 6QJ from the fueling bus 901PP.

The C/B 1QJ supplies the left LO LVL indicator of the fuel quantity indicator (Ref. 28-42-00) during test conditions. It also supplies the left and right outer-tank underfull-relays (for the No. 1 underfull sensors) and an input through the fuel level amplifier for the sensors that follow:
- the center-tank right low-level
- the right inner-tank low-level
- the left and right inner-tank calibration-level
- the left outer-tank low-level
- the left and right outer-tank No. 1 underfull-level
- the ACT 1 low level (72QT1) (Ref. 28-42-00)
- the trim-tank calibration level.

The C/B 2QJ supplies the right LO LVL indicator of the fuel quantity indicator (Ref. 28-42-00) during test conditions. It also supplies the left and right outer-tank underfull-relays (for the No. 2 underfull sensors) and an input through the fuel level amplifier for the sensors that follow:
- the center-tank left low-level and calibration level
- the left inner-tank low-level
- the left and right outer-tank No. 2 underfull-level
- the right outer-tank low-level
- the ACT 2 low level (72QT2) (Ref. 28-42-00)
- the trim-tank low-level.

The C/B 5QJ supplies the overflow test function and the sensors that follow during the refuel procedure only:
- the left and right inner-tank calibration-level
- the center-tank calibration-level
- the left and right vent-surge-tank overflow
- the ACT 1 calibration (71QT1) (Ref. 28-42-00) level
- the ACT 2 calibration (71QT2) (Ref. 28-42-00) level
- the trim-tank calibration-level
- the trim tank overflow.

The C/B 6QJ supplies the high level test function, annunciator lights, high level relays and the sensors that follow during the refuel procedure only:

- the center-tank high-level
- the left and right inner-tank high-level
- the left and right outer-tank high-level
- the ACT 1 high level (71QT1 and 72QT1) (Ref. 28-42-00)
- the ACT 2 high level (71QT2 and 72QT2) (Ref. 28-42-00)
- the trim tank left and right high level.

**ON A/C ALL

4. Component Description

A. Level Sensor

(1) Description

Each sensor consists of a number of resistors and thermistors, which are mounted on a printed circuit board, and provide a constant temperature - compensated current supply to a sensing thermistor. The circuitry is potted, in a thermo-setting compound, to provide high thermal inertia while the sensing thermistor is exposed to the tank environment. The sensor assembly is mounted in a perforated protective can on a tank rib or floor member, as appropriate.

(2) Operation

When the sensing thermistor is in air, its temperature is raised by the applied current. When the thermistor, is immersed the high thermal conductivity of the fuel, in comparison with air, causes the thermistor temperature to fall. The associated change in resistance causes a voltage change to be sensed by the amplifier.

B. Amplifier (8QJ)

The rack-mounted amplifier is supplied from the aircraft 28Vdc busbar and contains a channel for each level sensor. The amplifier provides the following functions:

- a current power supply, limited to intrinsically safe values, for each sensor
- a detection circuit to identify immersion of the sensing thermistor
- a power amplifier and switching stage to provide the appropriate output to the switching circuits.

5. Operation

**ON A/C 001-100,

A. High Level Sensing

The high-level sensor(s) in each tank prevent their related tank from being overfilled during the aircraft refuel procedure. When immersed in fuel, they signal (through the fuel level amplifier) their related tank refuel/defuel valve to shut. At the same time, the related high-level warning light on the refuel/defuel panel (110VU), comes on.

**ON A/C 101-200,

A. High Level Sensing
The high-level sensor(s) in each tank prevent their related tank from being overfilled during the aircraft refuel procedure. When immersed in fuel, they signal (through the fuel level amplifier) their related tank refuel/defuel valve and/or the ACT inlet valve, to shut. At the same time, the related high-level warning light on the refuel/defuel panel 110VU, comes on.

**ON A/C ALL

The quantity of fuel permitted by the high-level sensors in each tank is as follows:

Inner tanks - 13950 liters (3685 US gal)
Outer tanks - 03700 liters (0977 US gal)
Center tank - 19640 liters (5188 US gal)

**ON A/C 101-200,

Post SB 28-2108 For A/C 101-200,

ACT(s) (if installed) - 07200 liters (1902 US gal) each

**ON A/C 101-200,

ACT (if installed) - 1902 US gal (7200 liters)

**ON A/C ALL

Trim tank - 06151 liters (1625 US gal)

**ON A/C 101-200,

The two high-level sensors in the ACT together supply the signal to control the status of:
- the refuel/defuel valve of the ACT system
- the ACT inlet valve.

During refuel, when the fuel quantity in the ACT gets to high-level the refuel/defuel valve and the inlet valve close simultaneously.

The center-tank high-level sensor also controls the transfer of fuel from the ACT during the automatic transfer mode (pressurized air). The ACT transfer valve and inlet valve open 10 minutes after the quantity of fuel

in the center-tank is less than high-level. When the center-tank high-level sensor becomes wet, the transfer valve shuts immediately. The inlet valve remains open until the main-landing-gear shock absorber is compressed.

**ON A/C 101-200,

Post SB 28-2105 For A/C 101-200,

The two high-level sensors in each ACT together supply the signal to control the status of:
- the related ACT inlet valve.
- the refuel/defuel valve of the ACT system

During refuel, when the fuel quantity in one ACT gets to high-level its inlet valve shuts. When the two ACT are at high-level both inlet valves and the refuel/defuel valve shut.

If one ACT is isolated during the refuel procedure the inlet valve of the active ACT and the refuel/defuel valve shut simultaneously when the active ACT reaches high-level.

The center-tank high-level sensor also controls the transfer of fuel from the ACTs during the automatic transfer mode (pressurized air). The ACT transfer valve and the ACT 2 or ACT 1 inlet valve open 10 minutes after the quantity of fuel in the center-tank is less than high-level. When the center-tank high-level sensor becomes wet, the transfer valve and the ACT 1 inlet valve shut immediately.

**ON A/C ALL

B. Low Level Sensing

NOTE: The fuel quantities in this sub-paragraph are quoted for an aircraft at a level attitude (i.e. 0 deg pitch and roll.)

Each low-level sensor supplies a discrete output that is used by one or more of these systems:
- the related fuel system control logic
- the flight warning system
- the center of gravity control system.

During the aircraft defuel procedure the sensors control the status of their related refuel/defuel valves.

The low-level sensors in the center and inner tanks control the operation of the related fuel pumps during the engine automatic feed mode.

Each low-level sensor in the outer tank supplies a discrete output to:
- the fuel quantity indicator in the flight compartment to make the related low level lights come on
- the flight warning computer (FWC) to put the appropriate messages on the LH ECAM when necessary.

**ON A/C 101-200,

During the automatic fuel feed mode the low-level sensor in the ACT controls:
- the operation of the ACT pressurization system
- the operation of the ACT transfer valve and inlet valve.

**ON A/C 101-200,

Post SB 28-2108 For A/C 101-200,

During the automatic fuel feed mode the low-level sensor in ACT 1 controls:
- the operation of the ACT pressurization system
- the operation of the ACT transfer valve and inlet valve.

If ACT 2 is installed its low-level sensor controls the operation of the ACT transfer valve and ACT 2 inlet valve. Control transfers to the ACT 1 low-level sensor when ACT 2 is empty.

**ON A/C ALL

The low-level sensor in the trim tank supplies its output to:
- the center of gravity control computer (CGCC) for control of the automatic transfer of fuel to and from the trim tank
- the defuel system for control of the refuel/defuel valve.

**ON A/C 101-200,

During manual forward transfer from the trim tank the sensor inhibits automatic transfer from the ACT(s) until the trim tank is low level.

**ON A/C ALL

Center tank low level sensors are exposed to air at a fuel level of approximately 400 kg (882 lb). Exposure of these sensors to air for 30 seconds continuously, or exposure of one sensor to air for 30 seconds continuously and pump pressure switch sensing low pressure from associated pump will cause:

- the center tank pumps to stop
- the inner tank pumps to run (if inner tanks contain fuel, otherwise outer tank pumps will supply fuel).

Exposure of the first inner tank low level sensor to air at a fuel level of approximately 130 kg (287 lb), will initiate an uninterrupted 3 minute scavenge for its respective tank, the second inner tank pumps will run normally. After 3 minutes the pumps are latched out.
Exposure of the second inner tank low level sensor to air will initiate a 3 minute scavenge for its respective tank but can be interrupted by the center tank pumps.

NOTE: With one pump only running in either the inner tank or the center tank at low pressure at a fuel level of approximately 130 kg (287 lb) (inner), or 400 kg (882 lb) (center), the pump pressure switch will activate a warning on ECAM.

Exposure of the trim tank low level sensor to air at a fuel level of approximately 150 kg (331 lb), causes the CGCC computer to stop the trim tank pumps after a delay of 3 minutes.

NOTE: If trim tank manual FWD transfer is selected, with one or both pumps running at a fuel level of approximately 200 kg, the pump pressure switch going to low pressure will activate a warning on ECAM.

Each outer tank low-level sensor detects a fuel level corresponding approximately to between 800 kg (1764 lb) and 1000 kg (2200 lb).
On the FUEL QTY indicator, on the flight deck overhead panel (430VU), the associated LO LVL warning light comes on and the L ECAM shows fuel management advisory messages when the sensor is exposed to air.

When refueling the outer tanks from empty the LO LVL legends on the FUEL QTY indicator will go off. The level at which they are signalled is affected by the outer tank booster pumps being selected on or off:
- pumps on legends go off at between 550 kg (1213lb) and 800 kg (1764lb)
- pumps off legends go off at approximately 550 kg (1213lb).

Exposure of the trim tank low level sensor to air at a fuel level of approximately 150 kg (331 lb) causes the CGCC computer to stop the trim tank pumps after a delay of 3 minutes.

**ON A/C 101-200,

During the automatic or manual transfer mode from the ACT, exposure of the ACT low-level sensor continuously for 60 seconds will cause the ACT transfer valve to shut. The inlet valve remains open until the main-landing-gear shock absorber is compressed.

**ON A/C 101-200,

During the automatic or manual transfer mode from the ACT(s), exposure of the ACT 2 low-level sensor to air continuously for 60 seconds will cause the ACT 2 inlet valve to shut. When this occurs the ACT 1 inlet valve will open.

When the ACT 1 low-level sensor is exposed to air continuously for 60 seconds the ACT transfer valve and ACT 1 inlet valve close simultaneously.

**ON A/C ALL

C. Overflow Level Sensing
Immersion of each vent surge tank level overflow sensor in fuel causes the associated OVERFLOW light on refuel panel (110VU) to come on. Immersion of the trim tank sensor also causes the trim tank refuel/defuel valve and refuel transfer valve to close in the event of overflow during refueling.

**ON A/C 001-100,

D. Underfull Level Sensing
The underfull level sensors are linked, via the fuel level amplifier, to the air data computer (ADC). The sensors, when exposed to air (at approximately 2000 kg (4409 lb) of fuel remaining in each outer tank) signals the ADC to effect a reduction in aircraft VMO.
Channel 1 sensor in the left outer tank, and channel 2 sensor in the right outer tank are fed to ADC1. Channel 2 sensor in the left outer tank, and Channel 1 sensor in the right outer tank are fed to ADC2. Time delays in the sensor circuits prevent intermittent signals resulting from fuel surge.

**ON A/C 101-200,

D. Underfull Level Sensing
The underfull level sensors are exposed to air when the quantity of fuel that remains in the related outer tank is approximately 2000 kg (4409 lbs). When any sensor is exposed to air the fuel level amplifier causes an output to energize a related relay. These relays have a three second time delay to avoid intermittent signals that could occur during fuel surge.

NOTE : The underfull level sensors and their related relays are installed but not used on aircraft with Pratt & Witney engines.

**ON A/C ALL

E. Calibration Sensing.
Each calibration sensor supplies its input to the fuel level amplifier. This makes the correct discrete output (for the related sensor) when each sensor is wet or dry. Other fuel control and associated systems in the aircraft use these outputs. The systems are:
- the pump control system (Ref. 28-21-00).
- the center of gravity control system (Ref. 31-46-00)

**ON A/C 101-200,

- the ACT transfer system (Ref. 28-28-00)

**ON A/C ALL

- the water scavenge system (Ref. 28-11-00).

F. Controls and Indicating
The high level and overflow sensors are tested by pressing the HI LVL TEST button on refuel panel 110VU causing the HIGH LEVEL and OVER FLOW warning lights to come on.
There is no test facility for inner and center tank low level sensors. Correct operation is demonstrated by satisfactory functioning of the automatic fuel feed system.

**ON A/C 101-200,

An ANN LT switch (2WD) located on panel 472VU, has an OFF or READ/TEST position. This switch lets you read the status of the underfull level sensors. It operates in conjunction with an adjacent annunciator (52QJ) that can show L (left) or R (right). When the switch (2WD) is set to the READ/TEST position it puts a power supply to the annunciator that goes through to the underfull relays. Each annunciator will come on if its related outer tank is underfull.

A toggle switch (51QJ) on the panel 472VU, lets you test the outer-tank low-level and underfull outputs that come from the fuel level amplifier. The switch has a central off and a L/CHAN 1 or R/CHAN 2 position and is serviceable when the switch (2WD) is in the READ/TEST position. When the toggle switch is set to the applicable position, correct operation of the fuel level amplifier causes:
- the related annunciator (L or R) on 52QJ to come on to show the underfull outputs
- the related LO level indicator on the fuel quantity indicator (6QT) (Ref. 28-42-00) to show the low level outputs.

**ON A/C 001-100,

The outer tank low level sensors are tested by operation of a single, center-off, switch marked LO LVL TEST and U/FULL CHAN TEST. The switch is situated on flight deck maintenance panel (472VU). To obtain this test facility, the panel ANN LT switch must first be set to READ. Setting the test switch to L1 position tests the left outer tank low level sensor and gives the following indication:
- on panel 430VU, the FUEL QTY indicator left LO warning light comes on.

Setting the switch to R2 position gives the corresponding indication for the right outer tank low level sensor.

WARNING : LANDING GEAR - MAKE SURE THAT THE GROUND SAFETIES AND CHOCKS ARE IN POSITION.

FLIGHT CONTROLS - MAKE SURE THAT THE GROUND SAFETIES AND NOTICES ARE IN POSITION.

OBEY THE SAFETY PRECAUTIONS IN 28-00-00, P. BLOCK 301.

MAKE SURE THAT THE FIRE FIGHTING EQUIPMENT IS AVAILABLE AND ADEQUATE.

MAKE SURE THAT YOU ISOLATE THE ELECTRICAL CIRCUITS UPON WHICH WORK IS IN PROGRESS.

DO NOT OPERATE THE MICROPHONE BUTTONS ON HF TRANSMISSION WHEN YOU DO REFUELING/DEFUELING OR GROUND MAINTENANCE - FUEL TRANSFER OPERATIONS.

CAUTION : YOU MUST NOT DO CONTINUITY TESTS OF THE FUEL LEVEL SENSORS IN THE TANKS. ONLY EQUIPMENT APPROVED FOR SAFETY CAN BE USED INSIDE THE TANKS. CONTINUITY TESTS ON FUEL LEVEL SENSORS ARE NOT POSSIBLE BECAUSE THEY ARE INSTALLED WITH VARIABLE RESISTORS WHICH MAKE CONSISTANT READINGS IMPOSSIBLE.

1. Operational Test

A. Reason for the Job

**ON A/C 001-100,

(1) To make sure of the correct operation of the fuel system high level, low level and underfull level warning indicator circuits with the test switches on panels 472VU and 110VU.

**ON A/C 101-200,

(1) To make sure of the correct operation of the fuel system high level and low level warning indicator circuits with the test switches on panels 472VU and 110VU.

**ON A/C 001-100,

(2) To make sure of the correct operation of the underfull and low level sensors in the outer tanks and the low level sensors in the inner tanks, the center tank and the trim tank, with fuel.

**ON A/C 101-200,

(2) To make sure of the correct operation of the low level sensors in the outer tanks, the inner tanks, the center tank and the trim tank, with fuel.

**ON A/C ALL

(3)To make sure of the correct operation of the high level sensors in the trim tank, with fuel.
(4)To make sure of the correct operation of the overflow sensor in the trim tank, with fuel.
(5)To make sure of the correct operation of the high level sensors in all the tanks without fuel.
(6)To make sure of the correct operation of the overflow sensors in the right and left outer tanks and the trim tank without fuel.

B. Equipment and Materials

ITEM	DESIGNATION
A.	Access Platform 2.5 m (8 ft)
B.	Access Platform 6 m (19.6 ft)
C. Material No. 01-001	Fuels (Ref. 20-31-00)
Referenced Procedures	
- 05-57-11, P. Block 1	Aircraft Stability - With Fuel in Trim Tank
- 12-11-28, P. Block 301	Replenishing of Fuel Tanks
- 24-41-00, P. Block 301	AC External Power Control
- 28-00-00, P. Block 301	Fuel - General
- 28-13-00, P. Block 501	External Ventilation System
- 28-25-00, P. Block 301	Refuel/Defuel System
- 32-12-11, P. Block 301	Main Gear - Main Door
- 55-00-00, P. Block 301	Stabilizers - Standard Warnings and Procedures

C. Procedure
(1)Job Set-Up
(a)Make sure that the circuit breakers that follow are closed:

**ON A/C ALL

Post SB 28-2122 For A/C ALL

B. Equipment and Materials

ITEM	DESIGNATION
A.	Access Platform 2.5 m (8 ft)
B.	Access Platform 6 m (19.6 ft)
C. Material No. 01-001	Fuels (Ref. 20-31-00)
Referenced Procedures	
- 05-57-11, P. Block 1	Aircraft Stability - With Fuel in Trim Tank
- 06-41-53, P. Block 1	Fuselage
- 12-11-28, P. Block 301	Replenishing of Fuel Tanks
- 24-41-00, P. Block 301	AC External Power Control
- 25-28-11, P. Block 401	Carpet - Floor Covering

ITEM	DESIGNATION
- 25-28-12, P. Block 401	Covering - Non Textile Floor
- 25-52-00, P. Block 1	Semi-Automatic Cargo loading
- 27-80-00, P. Block 301	Lift Augmenting
- 28-00-00, P. Block 301	Fuel - General
- 28-13-00, P. Block 501	External Ventilation System
- 28-25-00, P. Block 301	Refuel/Defuel System
- 32-12-11, P. Block 301	Main Gear - Main Door
- 52-30-00, P. Block 1	Cargo Compartment Door(s)
- 53-10-25, P. Block 401	Panels - Passenger Compartment Floor
- 55-00-00, P. Block 301	Stabilizers - Standard Warnings and Procedures

C. Procedure

(1)Job Set-Up

(a)Make sure that the circuit breakers that follow are closed:

**ON A/C ALL

PANEL	SERVICE	IDENT.	LOCATION
22VU	FUEL/TK LO LVL AND CAL/L OUTR & R INR & CTR R	1QJ	208/B26
22VU	FUEL/TK LO LVL AND CAL /R OUTR & L INR & CTR L	2QJ	208/B27
132VU	FUEL/FUELLING		Line 321
132VU	FUEL/FQI		Line 321

**ON A/C 001-100,

(2)Outer tank low level warning and underfull test:

R NOTE : You can do this test if the outer tanks are empty or if they
R contain fuel. Follow the work steps for 'DRY' or 'WET' tanks as
R instructed during the procedure.

(a)Energize the aircraft electrical network (Ref. 24-41-00,
R P. Block 301).
R (b)Open the access door 144DR, (refuel/defuel panel 110VU, is now
R energized).
R (c)To do this test the outer tanks must both be empty (dry) or each tank
R must contain a minimum of 1000 kg (2200 lb) of fuel (wet).
R Check the fuel quantities in the outer tanks and make the decision to
R do this test with 'DRY' or 'WET' outer tanks. Transfer the fuel or
R defuel or refuel as necessary (Ref. 28-25-00 or 12-11-28,
R P. Block 301).

R 1 If the outer tanks are both 'DRY' (defueled) then, on panel 22VU, open the circuit breakers 1QJ and 2QJ. Do not install the safety clips and tags because these circuit breakers will be closed and opened during the test.
R 2 If the outer tanks are both 'WET' (fueled) then, let the circuit breakers 1QJ and 2QJ, on panel 22VU, stay closed.
R (d)Close the access door 144DR (refuel/defuel panel 110VU, is now de-energized).
(e)Test

ACTION	RESULT
1. On panel 472VU: - put the ANN LT switch in the TEST position	On panel 472VU: - all the panel lights come on
- push (in) the MFA reset buttons on panels 470VU, 471VU and 472VU	
- put the ANN LT switch in the READ position.	- the panel lights go off.
R 2. If the outer tanks are 'DRY' then: R - on panel 22VU, close the circuit breaker 2QJ R Or R If the outer tanks are 'WET' then: R - hold the FUEL LO LVL TEST & U/FULL CHAN TEST switch in the R2 position.	R - simulates the outer right tank low level sensor, and both outer tanks channel 2 underfull sensors in air On panel 430VU: - the FUEL QTY indicator right LO LVL light comes on On panel 472VU: - the U/FULL CHAN TEST L and R legends come on.
R 3. If the outer tanks are 'DRY' then: R - on panel 22VU, open the circuit breaker 2QJ R Or R If the outer tanks are 'WET' then: R - release the FUEL LO LVL TEST & U/FULL CHAN TEST switch to the center position.	R On panel 430VU:

ACTION	RESULT
	- the FUEL QTY indicator right LO LVL light goes off On panel 472VU: - the U/FULL CHAN TEST L and R legends go off.
4. If the outer tanks are 'DRY' then: - on panel 22VU, close the circuit breaker 1QJ Or If the outer tanks are 'WET' then: - hold the FUEL LO LVL TEST & U/FULL CHAN TEST switch in the L1 position.	
	- simulates the outer left tank low level sensor and both outer tanks channel 1 underfull sensors, in air On panel 430VU: - the FUEL QTY indicator left LO LVL light comes on On panel 472VU: - the U/FULL CHAN TEST L and R legends come on.
5. If the outer tanks are 'DRY' then: - on panel 22VU, open the circuit breaker 1QJ Or If the outer tanks are 'WET' then: - release the FUEL LO LVL TEST & U/FULL CHAN TEST switch to the center position.	
	On panel 430VU: - the FUEL QTY indicator left LO LVL light goes off On panel 472VU: - the U/FULL CHAN TEST L and R legends go off.
6. Put the ANN LT switch in the OFF position.	

(f)If you did the test with the outer tanks 'DRY', then close the circuit

R breakers 1QJ and 2QJ.
R (g)If further testing is not required, continue with the close-up procedure (Ref. paragraph 1. D.).

**ON A/C 101-200,

(2)Outer tank low level warning test:

R NOTE : You can do this test if the outer tanks are empty or if they
R contain fuel. Follow the work steps for 'DRY' or 'WET' tanks as
R instructed during the procedure.

R (a)Energize the aircraft electrical network (Ref. 24-41-00, P. Block 301).
R (b)Open the access door 144DR, (refuel/defuel panel 110VU, is now energized).
R (c)To do this test the outer tanks must both be empty (dry) or each tank must contain a minimum of 1000 kg (2200 lb) of fuel (wet).
Check the fuel quantities in the outer tanks and make the decision to do this test with 'DRY' or 'WET' outer tanks. Transfer the fuel or defuel or refuel as necessary (Ref. 28-25-00 or 12-11-28, P. Block 301).
1 If the outer tanks are both 'DRY' (defueled) then, on panel 22VU, open the circuit breakers 1QJ and 2QJ. Do not install the safety clips and tags because these circuit breakers will be closed and opened during the test.
2 If the outer tanks are both 'WET' (fueled) then, let the circuit breakers 1QJ and 2QJ, on panel 22VU, stay closed.
R (d)Close the access door 144DR (refuel/defuel panel 110VU, is now de-energized.
R (e)Test

ACTION	RESULT
1. On panel 472VU: - put the ANN LT switch in the READ position - push (in) the MFA reset buttons on panels 470VU, 471VU and 472VU.	
R 2. If the outer tanks are 'DRY' then: R - on panel 22VU, close the circuit breaker 2QJ R Or R If the outer tanks are 'WET' then: R - hold the FUEL LO LVL TEST switch in the R position.	
R	- simulates the outer right tank low level sensor in air

ACTION	RESULT
	On panel 430VU: - the FUEL QTY indicator right LO LVL light comes on.
R 3. If the outer tanks are 'DRY' then: R - on panel 22VU, open the circuit breaker 2QJ R Or R If the outer tanks are 'WET' then: R - release the FUEL LO LVL TEST switch to the center position.	
R	- the FUEL QTY indicator right LO LVL light goes off.
R 4. If the outer tanks are 'DRY' then: R - on panel 22VU, close the circuit breaker 1QJ R Or R If the outer tanks are 'WET' then: R - hold the FUEL LO LVL TEST switch in the L position.	
R	- simulates the outer left tank low level sensor in air
	- the FUEL QTY indicator left LO LVL light comes on.
R 5. If the outer tanks are 'DRY' then: R - on panel 22VU, open the circuit breaker 1QJ R Or R If the outer tanks are 'WET' then: R - release the FUEL LO LVL TEST switch to the center position.	
R	- the FUEL QTY indicator left LO LVL light goes off.
R 6. Put the ANN LT switch in the OFF position.	

R (f)If you did the test with the outer tanks 'DRY', then close the circuit breakers 1QJ and 2QJ.
R (g)If further testing is not required, continue with the close-up procedure (Ref. paragraph 1. D.).

**ON A/C ALL

(3)High level and overflow warning test:
(a)Energize the aircraft electrical network (Ref. 24-41-00, P. Block 301).
(b)Make sure that access door 144DR is closed (fuel panel de-energized).
(c)Test

ACTION	RESULT
1. Open the access door 144DR.	Refuel/defuel panel 110VU is energized.
2. On panel 110VU: - lift the guard then push and hold the HI LVL TEST switch	On panel 110VU: - all the HIGH LEVEL and OVERFLOW legends come on
- release the HI LVL TEST switch and lower the guard	- all the HIGH LEVEL and OVERFLOW legends go off.

(d)If further testing is not required, continue with the close-up procedure (Ref. paragraph 1. D.).

**ON A/C 001-100,

(4)Outer tank underfull and low level sensor test with fuel.

**ON A/C 101-200,

(4)Outer tank low level sensor test with fuel.

**ON A/C ALL

R (c)Refuel,defuel or transfer fuel as necessary (Ref. 12-11-28 or 28-25-00, P. Block 301 to get the fuel condition that follows:

**ON A/C 001-100,

L OUTR TK	L INR TK	CTR TK	R INR TK	R OUTR TK	TRIM TK
FULL	0	0	0	FULL	0

**ON A/C 101-200,

L OUTR TK	L INR TK	CTR TK	ACT	R INR TK	R OUTR TK	TRIM TK
FULL	0	0	0	0	FULL	0

**ON A/C 101-200,

Post SB 28-2105 For A/C 101-200,

L OUTR TK	L INR TK	CTR TK	ACT 1 ACT 2	R INR TK	R OUTR TK	TRIM TK
FULL	0	0	0	0	FULL	0

**ON A/C ALL

R (d)Energize the aircraft electrical network (Ref. 24-41-00, P. Block 301).
R (e)Make sure that access door 144DR is closed (fuel panel de-energized).
R (f)On panel 430VU:
1 Make sure on the FUEL QTY indicator that the left and right LO LVL lights, are off.
R (g)Put the ANN LT switch on panel 472VU, to the READ position.

R (h)Make sure that the circuit breaker that follows is closed:

PANEL	SERVICE	IDENT.	LOCATION
132VU	LIGHTING/MAINT PANEL/ANN AND MFA	22WB	324/L79

**ON A/C 001-100,

R (j)Test

ACTION	RESULT
1. Transfer fuel from the left and right outer tanks into the center tank (Ref. 28-25-00, P. Block 301).	
2. On panel 430VU: - monitor the fuel level on the FUEL QTY indicator - when the quantity in each outer tank is approximately 2200 kg (4850 lb).	On panel 472VU: - the U/FULL CHAN 1 and 2 TEST L/R annunciator comes on.
3. Continue to monitor the fuel level on the FUEL QTY indicator - when the quantity in each outer tank is between approximately 800 kg (1764 lb) and 1000 kg (2200 lb).	On the FUEL QTY indicator on the panel 430VU: - the left and right LO LVL lights come on.

R (k)Put the ANN LT switch on panel 472VU, in the OFF position.
R (l)Transfer all the fuel in the center tank into the L and R outer tanks (Ref. 28-25-00, P, Block 301).
R (m)If further testing is not required, continue with the close-up procedure (Ref. paragraph 1. D.).

**ON A/C 101-200,

R (j)Test

ACTION	RESULT
1. Transfer fuel from the left and right outer tanks into the center tank (Ref. 28-25-00, P. Block 301).	
2. On panel 430VU: - monitor the fuel level on the FUEL QTY indicator - when the quantity in each tank is between approximately 800 kg (1764 lb) and 1000 kg (2200 lb).	On panel 430VU, FUEL QTY indicator: - the left and right LO LVL lights come on.

R (k)Put the ANN LT switch on panel 472VU, in the OFF position.
R (l)Transfer all the fuel in the center tank into the L and R outer tanks (Ref. 28-25-00, P, Block 301).
R (m)If further testing is not required, continue with the close-up procedure (Ref. paragraph 1. D.).

**ON A/C ALL

(5)Inner and center tank low level test
(a)Make sure that the inner tanks and the center tank do not contain fuel. If necessary, defuel or transfer the fuel (Ref. 28-25-00, P. Block 301).
(b)Make sure that the access door 144DR is closed (fuel panel de-energized).
(c)Make sure that the circuit breakers that follow are closed:

PANEL	SERVICE	IDENT.	LOCATION
22VU	FUEL/TK LO LVL AND CAL/L OUTR & R INR & CTR R	1QJ	208/B26
132VU	FUEL/L INR TK PUMP 2 WARN	11QA	322/N61
132VU	FUEL/R INR TK PUMP 1 WARN	12QA	323/M62
132VU	FUEL/L INR TK PUMP 1 WARN	17QA	323/M60
132VU	FUEL/R INR TK PUMP 2 WARN	18QA	322/N63
132VU	FUEL/CTR TK L PUMP WARN	101QA	323/M58
132VU	FUEL/CTR TK R PUMP WARN	102QA	322/N59

(d)Open, safety and tag the circuit breakers that follow:

PANEL	SERVICE	IDENT.	LOCATION
22VU	FUEL/TK LO LVL AND CAL/R OUTR & L INR & CTR L	2QJ	208/B27
101VU	FUEL/L INR TK PUMP 2 SUPPLY	1QA	ESS/B01
101VU	FUEL/R INR TK PUMP 1 SUPPLY	2QA	ESS/A01
101VU	FUEL/L INR TK PUMP 1 SUPPLY	7QA	GEN2/A23
101VU	FUEL/R INR TK PUMP 2 SUPPLY	8QA	GEN2/A20
101VU	FUEL/CTR TK L PUMP SUPPLY	99QA	ESS/B04
101VU	FUEL/CTR TK R PUMP SUPPLY	100QA	GEN2/B17
132VU	FUEL/AUTO FEED CTL	65QA	323/M55
132VU	FUEL/AUTO FEED WARN	66QA	322/N55

(e)Test

ACTION	RESULT
1. On panel 430VU: - push (in) the CTR TK PUMP and INR TK PUMP p/bsw's.	On panel 430VU: - the CTR TK and INR TK PUMP p/bsw FAULT legends come on.
2. On panel 132VU: - close the circuit breaker 65QA (323/M55).	- the INR TK PUMP p/bsw FAULT legends go off - the CTR TK PUMP p/bsw FAULT legends stay on. 30 ± 3 seconds after the INR TK PUMP p/bsw FAULT legends go off: - the CTR TK PUMP p/bsw FAULT legends go off - the INR TK PUMP p/bsw FAULT legends come on. 3 min ± 18 seconds after the INR TK PUMP p/bsw FAULT legends come on: - the R INR TK PUMP p/bsw FAULT legends go off.
3. On panel 22VU: - open the circuit breaker 1QJ (208/B26) and close the circuit breaker 2QJ (208/B27).	
4. On panel 132VU:	

ACTION	RESULT
- open the circuit breaker 65QA (323/M55)	- the auto feed control sequence resets - all the CTR and INR TK PUMP p/bsw FAULT legends come on.
- close the circuit breaker 65QA (323/M55).	- the INR TK PUMP p/bsw FAULT legends go off - the CTR TK PUMP p/bsw FAULT legends stay on. 30 ± 3 seconds after the INR TK PUMP p/bsw FAULT legends go off: - the CTR TK PUMP p/bsw FAULT legends go off - the INR TK PUMP p/bsw FAULT legends come on. 3 min ± 18 seconds after the INR TK PUMP p/bsw FAULT legends come on: - the L INR TK PUMP p/bsw FAULT legends go off.

(f)Remove the safety clips and tags and close the circuit breakers 1QJ, 1QA, 2QA, 7QA, 8QA, 99QA, 100QA and 66QA.

(g)If further testing is not required, continue with the close-up procedure (Ref. paragraph 1. D.).

**ON A/C 001-100,

(6)Not applicable.

(7)Not applicable.

(8)Not applicable.

**ON A/C 101-200,

(6)Not applicable.

(7)Operational Test of the Low Level Sensing System in the ACT 1 (if the ACT is installed).

(a)Preparation for test

1 Energize the aircraft electrical network (Ref. 24-41-00, P. Block 301).

2 Make sure that the slats are fully retracted (Ref. 27-80-00, P. Block 301).
3 Open the access door 144DR.
4 On the panel 110VU, put the FQI DISPLAY switch in the CTR position, and then the ACT 1 position (to find the fuel quantity in the center tank and ACT 1).

NOTE : DO NOT REFUEL THE CENTER TANK TO MORE THAN 10T BECAUSE THIS WILL NOT LET THE ACT TRANSFER VALVE OR INLET VALVE(S) OPEN.

5 Refuel or defuel as necessary (Ref. 12-11-28 or 28-25-00, P. Block 301), to get the fuel states that follow:
- Center tank - less than 10T (the CTR TK HIGH LEVEL indicator light on panel 110VU, must not be on)
- ACT 1 - 600 KG (1322 lb).

6 Set the FQI DISPLAY switch in the CTR-TT and ACT position and close the access door 144DR.
7 Make sure that the circuit breakers that follow are closed:

PANEL	SERVICE	IDENT.	LOCATION
22VU	FUEL/TK LO LVL AND CAL/L OUTR AND R INR AND CTR R	1QJ	208/B26
22VU	FUEL/TK LO LVL AND CAL/R OUTR AND L INR AND CTR L	2QJ	208/B27
101VU	FUEL/CARGO TK/PUMP SUPPLY	1QH	GEN1/A02
132VU	FUEL/FUELLING/HI LVL	6QJ	321/P57
132VU	FUEL/FUELLING/OVERFLOW & CAL	5QJ	321/P58
132VU	FUEL/AUX TK/VENT & PRESS VALVE	3QH	325/K57
132VU	FUEL/AUX TK/XFR VALVE/MOTOR 1	4QH	325/K58
132VU	FUEL/AUX TK/PUMP CTL/XFR VALVE MOTOR 2	5QH	325/K59

8 Open the RH main landing-gear bay door (Ref. 32-12-11, P. Block 301).
9 Put the access platform in position for access to the ACT transfer valve on the RH center-tank manhole cover 148AZ.
10 Get access to the actuator on the air shut-off valve, behind the sidewall (on the RH side of the aft cargo compartment).

NOTE : You can get access:
- through the passenger compartment floor. Or,
- through the AFT cargo compartment (if only one ACT is installed).

11 Access through the passenger compartment floor:
- remove the applicable passenger compartment seats (Ref. 25-21-00, P. Block 401).
- remove the floor covering (Ref. 25-28-11 and 25-28-12, P. Block 401).
- remove the applicable floor panel (Ref. 06-41-53, P. Block 1 and

53-10-25, P. Block 401).

12 Access through the aft cargo compartment:
- put the access platform in position.
- open the aft cargo compartment door (Ref. 52-30-00, P. Block 1).
- if installed, remove the cargo container(s) located behind the ACT (Ref. 25-52-00, P. Block 1).
- remove the sidewall panel 152 BX in zone 152 (Ref. 06-41-53, P. Block 1).

13 On panel 430VU, make sure that the AUX TK/ACT AUTO P/BSW is released (out) in the AUTO position.

14 Put one person in position at the RH center-tank manhole cover 148AZ in the main landing-gear bay to make sure (by audible and visual means) that the ACT transfer valve functions correctly.

15 Put one person in position in the passenger compartment or aft cargo compartment to make sure (by audible and visual means) that the air shut-off valve functions correctly.

16 Visually examine the indicators on the valve actuators and check that they indicate as follows:
- the Air Shut-Off Valve (ACT pressurization line, passenger compartment/aft cargo compartment) - SHUT
- the ACT Transfer Valve (RH center-tank manhole cover 148AZ) - SHUT.

NOTE : MAKE SURE THAT THERE IS NO BREAK IN THE ELECTRICAL POWER SUPPLY TO THE FUEL SYSTEM CONTROL CIRCUITS DURING THE TEST, UNLESS THERE IS AN INSTRUCTION TO OPEN A CIRCUIT BREAKER.

(b)Test

ACTION	RESULT
1. Wait until 10 minutes after the aircraft electrical network was energized with the center tank quantity below HI LVL.	- This makes sure that the relay 41QH center tank Hi level is unlatched.
2. On the circuit breaker panel 133VU: - open L/G PROX DET and relays SY2/FLT/GND circuit breaker 1GB (line 331/V52)	- this simulates flight condition.
In the main landing-gear bay, on the center-tank manhole cover 148AZ: - listen to make sure that the valve motor opens the ACT transfer valve	- the ACT transfer valve opens
- do a visual check of the actuator to make sure the valve has opened.	- on the valve actuator the indicator groove shows OPEN.
3. Wait 5 +/- 3 minutes after you do step 2. In the aft cargo compartment:	In the aft cargo compartment:

ACTION	RESULT
- listen to make sure the electrical motor opens the Air Shut-Off Valve	- the Air Shut-Off Valve opens
- do a visual check of the actuator to make sure the valve has opened.	- on the valve actuator the indicator groove shows OPEN.
- listen to make sure the electrical motor closes the ACT Vent Valve	- the ACT vent valve closes
- do a visual check of the actuator to make sure that the valve has closed	- on the valve actuator the indicator groove shows SHUT
4. Do a manual forward transfer (Ref. 28-28-00, P. Block 501). Make sure that the fuel quantity is less than 300 KG (660 lb).	- the low level sensor returns to a dry condition.
5. During the forward transfer, and 1 minute after the low level sensors are dry.	
In the aft cargo compartment:	In the aft cargo compartment:
- listen to make sure the electrical motor closes the Air Shut-Off Valve	- the Air Shut-Off Valve closes
- do a visual check of the actuator to make sure that the valve has closed	- on the valve actuator the indicator groove shows SHUT
- listen to make sure the electrical motor opens the ACT Vent Valve	- the ACT vent valve opens
- do a visual check of the actuator to make sure the valve has opened.	- on the valve actuator the indicator groove shows OPEN.
6. On the panel 430VU release out the P/BSW FUEL ACT PUMP AND XFR.	
NOTE : the ACT transfer valve will not close if the P/BSW 21QH is selected in.	
On the center-tank manhole cover 148AZ:	
- listen to make sure that the valve motor closes the ACT transfer valve	- the ACT transfer valve closes
- do a visual check of the actuator to make sure that	- on the valve actuator the indicator groove shows SHUT

ACTION	RESULT
the valve has closed	
8. On the panel 133VU: - close the circuit breaker 1GB (line 331/V52).	- the aircraft is now in the ground configuration.

(c)Close up
1 Refuel or defuel the aircraft to the necessary fuel load (Ref. 12-11-28 or 28-25-00, P. Block 301).
2 De-energize the aircraft electrical network (Ref. 24-41-00, P. Block 301).
3 Make sure that the main landing-gear bay is clean and clear of tools and all other items of equipment.
4 Remove the access platform and close the RH main landing-gear bay door (Ref. 32-12-11, P. Block 301).
5 If access to the air shut of valve was through the passenger compartment:
- install the applicable floor panel (Ref. 06-41-53, P. Block 1 and 53-10-25, P. Block 401).
- install the floor covering (Ref. 25-28-11 and 25-28-12, P. Block 401).
- install the applicable passenger compartment seats (Ref. 25-21-00, P. Block 401).
6 If access to the air shut-off valve was through the aft cargo compartment:
- install the sidewall panel 152BX in zone 152 (Ref. 06-41-53, P. Block 1).
- install the cargo container(s) (Ref. 25-52-00, P. Block 1).
7 Close the aft cargo compartment door (Ref. 52-30-00, P. Block 1) and remove the access platform.

(8)Not applicable.

**ON A/C 101-200,

Post SB 28-2105 For A/C 101-200,

Post SB 28-2122 For A/C 101-200,

(7)Operational Test of the Low Level Sensing System in the ACT 1 (if 2 ACT are installed).
(a)Preparation for test
1 Energize the aircraft electrical network (Ref. 24-41-00, P. Block 301).
2 Make sure that the slats are fully retracted (Ref. 27-80-00,

P. Block 301).

3 Open the access door 144DR.

4 On the panel 110VU, put the FQI DISPLAY switch in the CTR position, then the ACT 1 position and then the ACT 2 position (to find the fuel quantity in the center tank, ACT 1 and ACT 2).

NOTE : DO NOT REFUEL THE CENTER TANK TO MORE THAN 10T BECAUSE THIS WILL NOT LET THE ACT TRANSFER VALVE OR INLET VALVE(S) OPEN.

5 Refuel or defuel as necessary (Ref. 12-11-28 or 28-25-00, P. Block 301), to get the fuel states that follow:
- Center tank - less than 10T (the CTR TK HIGH LEVEL indicator light on panel 110VU, must not be on)
- ACT 1 - 600 KG (1322 lb)
- ACT 2 - EMPTY.

6 Set the FQI DISPLAY switch in the CTR-TT and ACT position and close the access door 144DR.

7 Make sure that the circuit breakers that follow are closed:

PANEL	SERVICE	IDENT.	LOCATION
22VU	FUEL/TK LO LVL AND CAL/L OUTR AND R INR AND CTR R	1QJ	208/B26
22VU	FUEL/TK LO LVL AND CAL/R OUTR AND L INR AND CTR L	2QJ	208/B27
101VU	FUEL/CARGO TK/PUMP SUPPLY	1QH	GEN1/A02
132VU	FUEL/FUELLING/HI LVL	6QJ	321/P57
132VU	FUEL/FUELLING/OVERFLOW & CAL	5QJ	321/P58
132VU	FUEL/AUX TK/VENT & PRESS VALVE	3QH	325/K57
132VU	FUEL/AUX TK/XFR VALVE/MOTOR 1	4QH	325/K58
132VU	FUEL/AUX TK/PUMP CTL/XFR VALVE MOTOR 2	5QH	325/K59

8 Open the RH main landing-gear bay door (Ref. 32-12-11, P. Block 301).

9 Put the access platform in position for access to the ACT transfer valve on the RH center-tank manhole cover 148AZ.

10 Get access to the actuator on the air shut-off valve, behind the sidewall (on the RH side of the aft cargo compartment).

NOTE : You can get access:
- through the passenger compartment floor. Or,
- through the AFT cargo compartment (if only one ACT is installed).

11 Access through the passenger compartment floor:
- remove the applicable passenger compartment seats (Ref. 25-21-00, P. Block 401).
- remove the floor covering (Ref. 25-28-11 and 25-28-12, P. Block 401).
- remove the applicable floor panel (Ref. 06-41-53, P. Block 1 and

53-10-25, P. Block 401).

12 Access through the aft cargo compartment:
- put the access platform in position.
- open the aft cargo compartment door (Ref. 52-30-00, P. Block 1).
- if installed, remove the cargo container(s) located behind the ACT (Ref. 25-52-00, P. Block 1).
- remove the sidewall panel 152 BX in zone 152 (Ref. 06-41-53, P. Block 1).

13 On panel 430VU, make sure that the AUX TK/ACT AUTO P/BSW is released (out) in the AUTO position.

14 Put one person in position at the RH center-tank manhole cover 148AZ in the main landing-gear bay to make sure (by audible and visual means) that the ACT transfer valve functions correctly.

15 Put one person in position in the passenger compartment or aft cargo compartment to make sure (by audible and visual means) that the air shut-off valve functions correctly.

16 Visually examine the indicators on the valve actuators and check that they indicate as follows:
- the Air Shut-Off Valve (ACT pressurization line, passenger compartment/aft cargo compartment) - SHUT
- the ACT Transfer Valve (RH center-tank manhole cover 148AZ) - SHUT.

NOTE : MAKE SURE THAT THERE IS NO BREAK IN THE ELECTRICAL POWER SUPPLY TO THE FUEL SYSTEM CONTROL CIRCUITS DURING THE TEST, UNLESS THERE IS AN INSTRUCTION TO OPEN A CIRCUIT BREAKER.

(b)Test

ACTION	RESULT
1. Wait until 35 minutes after the aircraft electrical network was energized with the center tank quantity below HI LVL.	- This makes sure that the relay 41QH center tank Hi level is unlatched.
2. On the circuit breaker panel 133VU: - open L/G PROX DET and relays SY2/FLT/GND circuit breaker 1GB (line 331/V52)	- this simulates flight condition.
In the main landing-gear bay, on the center-tank manhole cover 148AZ: - listen to make sure that the valve motor opens the ACT transfer valve	- the ACT transfer valve opens
- do a visual check of the actuator to make sure the valve has opened.	- on the valve actuator the indicator groove shows OPEN.
3. Wait 30 +/- 3 minutes after you do step 2. In the aft cargo compartment:	In the aft cargo compartment:

ACTION	RESULT
- listen to make sure the electrical motor opens the Air Shut-Off Valve	- the Air Shut-Off Valve opens
- do a visual check of the actuator to make sure the valve has opened.	- on the valve actuator the indicator groove shows **OPEN.**
- listen to make sure the electrical motor closes the **ACT 1** and **ACT 2** vent valves.	- the **ACT 1** and **ACT 2** vent valves close
- do a visual check of the actuator to make sure that the valve has closed	- on the valve actuator the indicator groove shows **SHUT**
4. Do a manual forward transfer from the **ACT 1** to the center tank (Ref. 28-28-00, P. Block 501). Make sure that the fuel quantity in the **ACT 1** is less than 300 **KG** (660 lb).	- the low level sensor returns to a dry condition.
5. During the forward transfer, and 1 minute after the low level sensors are dry.	
In the aft cargo compartment:	In the aft cargo compartment
- listen to make sure the electrical motor closes the Air Shut-Off Valve	- the Air Shut-Off Valve closes
- do a visual check of the actuator to make sure that the valve has closed	- on the valve actuator the indicator groove shows **SHUT**
- listen to make sure the electrical motor opens the **ACT 1** and **ACT 2** vent valves.	- the **ACT 1** and **ACT 2** vent valves open
- do a visual check of the actuator to make sure the valve has opened.	- on the valve actuator the indicator groove shows **OPEN.**
6. On the panel 430VU release out the **P/BSW FUEL ACT PUMP AND XFR.**	
NOTE : the **ACT** transfer valve will not close if the **P/BSW 21QH** is selected in.	
On the center-tank manhole cover **148AZ:**	
- listen to make sure that the valve motor closes the **ACT** transfer valve	- the **ACT** transfer valve closes
- do a visual check of the	- on the valve actuator the

ACTION	RESULT
actuator to make sure that the valve has closed	indicator groove shows SHUT
8. On the panel 133VU: - close the circuit breaker 1GB (line 331/V52).	- the aircraft is now in the ground configuration.

(c)Close up

1 Refuel or defuel the aircraft to the necessary fuel load (Ref. 12-11-28 or 28-25-00, P. Block 301).

2 De-energize the aircraft electrical network (Ref. 24-41-00, P. Block 301).

3 Make sure that the main landing-gear bay is clean and clear of tools and all other items of equipment.

4 Remove the access platform and close the RH main landing-gear bay door (Ref. 32-12-11, P. Block 301).

5 If access to the air shut of valve was through the passenger compartment:
- install the applicable floor panel (Ref. 06-41-53, P. Block 1 and 53-10-25, P. Block 401).
- install the floor covering (Ref. 25-28-11 and 25-28-12, P. Block 401).
- install the applicable passenger compartment seats (Ref. 25-21-00, P. Block 401).

6 If access to the air shut-off valve was through the aft cargo compartment:
- install the sidewall panel 152BX in zone 152 (Ref. 06-41-53, P. Block 1).
- install the cargo container(s) (Ref. 25-52-00, P. Block 1).

7 Close the aft cargo compartment door (Ref. 52-30-00, P. Block 1) and remove the access platform.

(8)Operational Test of the Low Level Sensing System in the ACT 2 (if 2 ACT are installed).

(a)Preparation for test

1 Energize the aircraft electrical network (Ref. 24-41-00, P. Block 301).

2 Make sure that the slats are fully retracted (Ref. 27-80-00, P. Block 301).

3 Open the access door 144DR.

4 On the panel 110VU, put the FQI DISPLAY switch in the CTR position, then the ACT 1 position and then the ACT 2 position (to find the fuel quantity in the center tank, ACT 1 and ACT 2).

NOTE : DO NOT REFUEL THE CENTER TANK TO MORE THAN 10T BECAUSE THIS WILL NOT LET THE ACT TRANSFER VALVE OR INLET VALVE(S) OPEN.

5 Refuel or defuel as necessary (Ref. 12-11-28 or 28-25-00, P. Block 301), to get the fuel states that follow:
- Center tank - less than 10T (the CTR TK HIGH LEVEL indicator light on panel 110VU, must not be on)
- ACT 1 - EMPTY
- ACT 2 - 600 KG (1100 lb).

6 Set the FQI DISPLAY switch in the CTR-TT and ACT position and close the access door 144DR.

7 Make sure that the circuit breakers that follow are closed:

PANEL	SERVICE	IDENT.	LOCATION
22VU	FUEL/TK LO LVL AND CAL/L OUTR AND R INR AND CTR R	1QJ	208/B26
22VU	FUEL/TK LO LVL AND CAL/R OUTR AND L INR AND CTR L	2QJ	208/B27
101VU	FUEL/CARGO TK/PUMP SUPPLY	1QH	GEN1/A02
132VU	FUEL/FUELLING/HI LVL	6QJ	321/P57
132VU	FUEL/FUELLING/OVERFLOW & CAL	5QJ	321/P58
132VU	FUEL/AUX TK/VENT & PRESS VALVE	3QH	325/K57
132VU	FUEL/AUX TK/XFR VALVE/MOTOR 1	4QH	325/K58
132VU	FUEL/AUX TK/PUMP CTL/XFR VALVE MOTOR 2	5QH	325/K59

8 Open the RH main landing-gear bay door (Ref. 32-12-11, P. Block 301).

9 Put the access platform in position for access to the ACT transfer valve on the RH center-tank manhole cover 148AZ.

10 Get access to the actuator on the air shut-off valve, behind the sidewall (on the RH side of the aft cargo compartment).

NOTE : You can get access:
- through the passenger compartment floor. Or,
- through the AFT cargo compartment (if only one ACT is installed).

11 Access through the passenger compartment floor:
- remove the applicable passenger compartment seats (Ref. 25-21-00, P. Block 401).
- remove the floor covering (Ref. 25-28-11 and 25-28-12, P. Block 401).
- remove the applicable floor panel (Ref. 06-41-53, P. Block 1 and 53-10-25, P. Block 401).

12 Access through the aft cargo compartment:
- put the access platform in position.
- open the aft cargo compartment door (Ref. 52-30-00, P. Block 1).
- if installed, remove the cargo container(s) located behind the ACT (Ref. 25-52-00, P. Block 1).
- remove the sidewall panel 152 BX in zone 152 (Ref. 06-41-53, P. Block 1).

13 On panel 430VU, make sure that the AUX TK/ACT AUTO P/BSW is released (out) in the AUTO position.

14 Put one person in position at the RH center-tank manhole cover 148AZ in the main landing-gear bay to make sure (by audible and visual means) that the ACT transfer valve functions correctly.

15 Put one person in position in the passenger compartment or aft cargo compartment to make sure (by audible and visual means) that the air shut-off valve functions correctly.

16 Visually examine the indicators on the valve actuators and check that they indicate as follows:
- the Air Shut-Off Valve (ACT pressurization line, passenger compartment/aft cargo compartment) - SHUT
- the ACT Transfer Valve (RH center-tank manhole cover 148AZ) - SHUT.

NOTE : MAKE SURE THAT THERE IS NO BREAK IN THE ELECTRICAL POWER SUPPLY TO THE FUEL SYSTEM CONTROL CIRCUITS DURING THE TEST, UNLESS THERE IS AN INSTRUCTION TO OPEN A CIRCUIT BREAKER.

(b)Test

ACTION	RESULT
1. Wait until 35 minutes after the aircraft electrical network was energized with the center tank quantity below HI LVL.	- This makes sure that the relay 41QH center tank Hi level is unlatched.
2. On the circuit breaker panel 133VU: - open L/G PROX DET and relays SY2/FLT/GND circuit breaker 1GB (line 331/V52)	- this simulates flight condition.
In the main landing-gear bay, on the center-tank manhole cover 148AZ: - listen to make sure that the valve motor opens the ACT transfer valve	- the ACT transfer valve opens
- do a visual check of the actuator to make sure the valve has opened.	- on the valve actuator the indicator groove shows OPEN.
3. Wait 30 +/- 3 minutes after you do step 2. In the aft cargo compartment: - listen to make sure the electrical motor opens the Air Shut-Off Valve	In the aft cargo compartment: - the Air Shut-Off Valve opens
- do a visual check of the actuator to make sure the valve has opened.	- on the valve actuator the indicator groove shows OPEN.
- listen to make sure the electrical motor closes the ACT 1 and ACT 2 vent valves.	- the ACT 1 and ACT 2 vent valves close
- do a visual check of the	- on the valve actuator the

ACTION	RESULT
actuator to make sure that the valve has closed	indicator groove shows SHUT
4. Do a manual forward transfer from the ACT 2 to the center tank (Ref. 28-28-00, P. Block 501). Make sure that the fuel quantity in the ACT 2 is less than 300 KG (660 lb).	- the low level sensor returns to a dry condition.
5. During the forward transfer, and 1 minute after the low level sensors are dry.	
In the aft cargo compartment:	In the aft cargo compartment
- listen to make sure the electrical motor closes the Air Shut-Off Valve	- the Air Shut-Off Valve closes
- do a visual check of the actuator to make sure that the valve has closed	- on the valve actuator the indicator groove shows SHUT
- listen to make sure the electrical motor opens the ACT 1 and ACT 2 vent valves.	- the ACT 1 and ACT 2 vent valves open
- do a visual check of the actuator to make sure the valve has opened.	- on the valve actuator the indicator groove shows OPEN.
6. On the panel 430VU release out the P/BSW FUEL ACT PUMP AND XFR.	
NOTE : the ACT transfer valve will not close if the P/BSW 21QH is selected in.	
On the center-tank manhole cover 148AZ:	
- listen to make sure that the valve motor closes the ACT transfer valve	- the ACT transfer valve closes
- do a visual check of the actuator to make sure that the valve has closed	- on the valve actuator the indicator groove shows SHUT
8. On the panel 133VU:	
- close the circuit breaker 1GB (line 331/V52).	- the aircraft is now in the ground configuration.
(c)Close up	
1 Refuel or defuel the aircraft to the necessary fuel load	

(Ref. 12-11-28 or 28-25-00, P. Block 301).
2 De-energize the aircraft electrical network (Ref. 24-41-00, P. Block 301).
3 Make sure that the main landing-gear bay is clean and clear of tools and all other items of equipment.
4 Remove the access platform and close the RH main landing-gear bay door (Ref. 32-12-11, P. Block 301).
5 If access to the air shut of valve was through the passenger compartment:
- install the applicable floor panel (Ref. 06-41-53, P. Block 1 and 53-10-25, P. Block 401).
- install the floor covering (Ref. 25-28-11 and 25-28-12, P. Block 401).
- install the applicable passenger compartment seats (Ref. 25-21-00, P. Block 401).
6 If access to the air shut-off valve was through the aft cargo compartment:
- install the sidewall panel 152BX in zone 152 (Ref. 06-41-53, P. Block 1).
- install the cargo container(s) (Ref. 25-52-00, P. Block 1).
7 Close the aft cargo compartment door (Ref. 52-30-00, P. Block 1) and remove the access platform.

**ON A/C 001-100,

(9)Trim Tank Low Level Sensor Test
(a)Energize the aircraft electrical network (Ref. 24-41-00, P. Block 301).
R (b)Not applicable.
R (c)Open the access door 144DR.
R (d)On panel 110VU, hold the FUEL QTY switch in the TT position.
R (e)On the FUEL QTY indicator make sure the trim-tank does not contain fuel. If necessary defuel the trim-tank (Ref. 28-25-00, P. Block 301).
R (f)Release the FUEL QTY switch to the CTR & TT position.
R (g)Make sure that on the FUEL QTY indicator that the two inner tanks are not full and the two HIGH LEVEL lights are off.
R (h)Make sure the circuit breaker that follows is closed:

**ON A/C 101-200,

(9)Trim Tank Low Level Sensor Test
(a)Energize the aircraft electrical network (Ref. 24-41-00, P. Block 301).
R (b)Not applicable.
R (c)Open the access door 144DR.
R (d)On panel 110VU, put the FQI DISPLAY switch in the TT position.
R (e)On the FUEL QTY indicator make sure the trim-tank does not contain fuel. If necessary defuel the trim-tank (Ref. 28-25-00, P. Block 301).
R (f)Put the FQI DISPLAY switch in the CTR & AUX & TT position.
R (g)Make sure that on the FUEL QTY indicator, the two inner tanks are not

full and the two HIGH LEVEL lights are off.

R (h)Make sure the circuit breaker that follows is closed:

**ON A/C 101-200,

Post SB 28-2108 For A/C 101-200,

(9)Trim Tank Low Level Sensor Test

(a)Energize the aircraft electrical network (Ref. 24-41-00, P. Block 301).

R (b)Not applicable.

R (c)Open the access door 144DR.

R (d)On panel 110VU, put the FQI DISPLAY switch in the TT position.

R (e)On the FUEL QTY indicator make sure the trim-tank does not contain fuel. If necessary defuel the trim-tank (Ref. 28-25-00, P. Block 301).

R (f)Put the FQI DISPLAY switch in the CTR-TT & ACT position.

R (g)Make sure that on the FUEL QTY indicator, the two inner tanks are not full and the two HIGH LEVEL lights are off.

R (h)Make sure that the circuit breaker that follows is closed.

**ON A/C ALL

R	PANEL	SERVICE	IDENT.	LOCATION
R	132VU	FUEL/FUELLING/HI LVL	6QJ	321/P57

R (j)Open, safety and tag the following circuit breaker:

R	PANEL	SERVICE	IDENT.	LOCATION
R	22VU	FUEL/TK LO LVL & CAL/R OUTR & L INR & CTR L	2QJ	208/B27

R (k)Test

ACTION	RESULT
1. On panel 110VU: - lift the guard and put the TRANSF. VALVE switch in the OPEN position. - put the TRANSF. VALVE switch in the CLOSED position and lower the guard.	On panel 110VU: - make sure that the TRANSF. VALVE OPEN indicator light stays off.
2. On panel 22VU: - close the circuit breaker 2QJ.	
3. On panel 110VU:	On panel 110VU:

ACTION	RESULT
- lift the guard and put the TRANSF. VALVE switch in the OPEN position.	- make sure that the TRANSF. VALVE OPEN indicator light comes on.
- put the TRANSF. VALVE switch in the the CLOSED position and lower the guard.	- make sure that the TRANSF. VALVE OPEN indicator light goes off.

R (l)Close the access door 144DR.
R (m)If further testing is not required, continue with the close-up procedure (Ref. paragraph 1. D.).

WARNING : OBEY THE AIRCRAFT STABILITY PRECAUTIONS (REF. 05-57-11, P. BLOCK 1). MAKE SURE THAT THE AIRCRAFT STAYS WITHIN SAFE CG LIMITS WHEN YOU DO A REARWARD FUEL TRANSFER TO THE TRIM TANK.

(10)Trim tank high level sensors test with fuel

R (a)Energize the aircraft electrical network (Ref. 24-41-00, P. Block 301).
R (b)Refuel, defuel or transfer fuel as necessary (Ref. 12-11-28 or 28-25-00, P. Block 301) to get the fuel condition that follows:

**ON A/C 001-100,

L OUTR TK	L INR TK	CTR TK	R INR TK	R OUTR TK	TRIM TK
0	FULL	FULL	FULL	0	0

**ON A/C 101-200,

L OUTR TK	L INR TK	CTR TK	ACT	R INR TK	R OUTR TK	TRIM TK
0	FULL	FULL	0	FULL	0	0

**ON A/C 101-200,

Post SB 28-2105 For A/C 101-200,

L OUTR TK	L INR TK	CTR TK	ACT 1 ACT 2	R INR TK	R OUTR TK	TRIM TK
0	FULL	FULL	0	FULL	0	0

**ON A/C 001-100,

R (c)Not applicable.
R (d)Open the access door 144DR to get access to the refuel/defuel panel 110VU.
R (e)On panel 110VU, put the FUEL QTY switch to the TT position.

**ON A/C 101-200,

R (c)Not applicable.
R (d)Open the access door 144DR to get access to the refuel/defuel panel 110VU.
R (e)On panel 110VU, put the FQI DISPLAY switch to the TT position.

**ON A/C ALL

R (f)Test

ACTION	RESULT
1. On panel 430VU: - make sure that all the PUMP P/BSW's are released (out)	On panel 430VU: - make sure that all the PUMP P/BSW OFF legends, are on
- make sure that all the ISOL VALVES P/BSW's are pushed (in)	- make sure that the ISOL VALVES P/BSW in-line flowbars are on (isolation valves open)
- push (in) the X FEED valve P/BSW	- make sure that: - the crossline flowbar, goes off - the in-line flowbar, comes on
- push (in) the L and R CTR TK PUMP P/BSW's.	- make sure that the L and R CTR TK PUMP P/BSW OFF legends, go off - the pumps run.
2. On panel 110VU: - lift the guard and put the MODE SELECT/SELECTOR switch in the REFUEL position.	
- lift the guards and put the CTR TK and the TRIM TK REFUEL-DEFUEL-VALVES switches in the OPEN position NOTE : The trim tank can only receive fuel if the center tank refuel/defuel	

ACTION	RESULT
valve is open, or both the inner tanks filled to high level.	
- lift the guards and put all the other **REFUEL-DEFUEL-VALVES** switches in the **SHUT** position	
- lift the guard and put the **TRANSF. VALVE** switch in the **OPEN** position.	On panel 110VU: - make sure that the **TRANSF. VALVE OPEN** indicator light comes on.
3. Monitor the fuel transfer on the **FUEL QTY** indicator and the **TRIM TK HIGH LEVEL** indicator light.	
4. When the trim tank high level sensors become wet:	On panel 110VU: - the **TRIM TK HIGH LEVEL** indicator light comes on. - the fuel transfer is stopped by the closure of the trim tank refuel/defuel valve in zone 148 and the trim tank refuel/transfer valve in zone 319.
5. When the **TRIM TK HIGH LEVEL** indicator light comes on - monitor the **FUEL QTY** indicator on panel 110VU.	On panel 110VU: - make sure that the quantity of fuel in the trim tank stays stable and does not increase.
6. When the trim tank high level sensor test is complete: On panel 430VU: - release (out) the L and R **CTR TK PUMP P/BSW**'s.	On panel 430VU: - make sure that the L and R **CTR TK PUMP P/BSW OFF** legends, come on and the pumps stop.

**ON A/C 001-100,

R (g) On panel 110VU:
1 Put the **FUEL QTY** switch in the **CTR & TT** position.

**ON A/C 101-200,

R (g)On panel 110VU:
1 Put the FQI DISPLAY switch in the CTR & AUX & TT position.

**ON A/C 101-200,

Post SB 28-2108 For A/C 101-200,

R (g)On panel 110VU:
1 Put the FQI DISPLAY switch in the CTR-TT & ACT position.

**ON A/C ALL

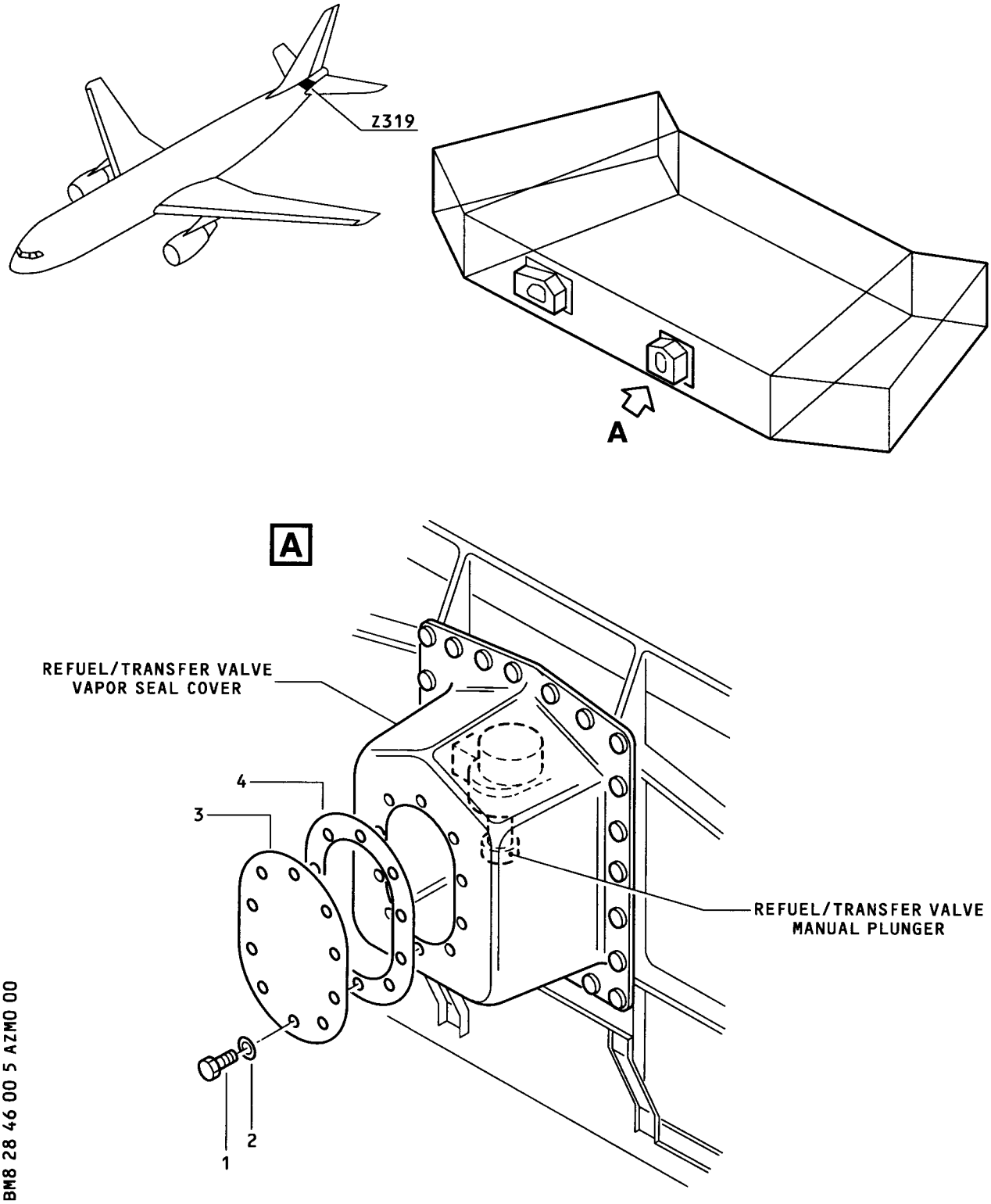
2 Put the TRANSF. VALVE switch in the CLOSED position and lower the guard. Make sure that the TRANSF. VALVE OPEN indicator light goes off.
3 Put all the REFUEL-DEFUEL-VALVES switches in the NORM position and lower the guards.
4 Put the MODE SELECT/SELECTOR switch in the OFF position and lower the guard.

R (h)If you do the trim tank overflow sensor test, ignore the steps that
R follow and continue with paragraph 1. C. (11).
R (j)Close the access door 144DR.
R (k)On panel 430VU, release (out) the X FEED P/BSW. Make sure that the in-line flowbar goes off and the crossline flowbar comes on.
R (l)Transfer the fuel from the trim tank into the center tank (Ref. 28-25-00, P. Block 301).
R (m)If further testing is not required, continue with the close-up procedure (Ref. paragraph 1. D.).

WARNING : OBEY THE AIRCRAFT STABILITY PRECAUTIONS (REF. 05-57-11, P. BLOCK 1). MAKE SURE THAT THE AIRCRAFT STAYS IN THE SAFE CG LIMITS WHEN YOU DO A REARWARD FUEL TRANSFER TO THE TRIM TANK.

(11)Trim tank overflow sensor test with fuel
(Ref. Fig. 501)

(a)Make sure that the aircraft electrical network is de-energized (Ref. 24-41-00, P. Block 301).
(b)Make the trimmable horizontal stabilizer (THS) and vertical stabilizer safe (Ref. 55-00-00, P. Block 301).
(c)Prepare access to the trim tank refuel/defuel valve:
1 Open the RH main landing gear door (Ref. 32-12-11, P. Block 301).
2 Put the 2.5 m (8 ft) access platform in position.
(d)Prepare access to the trim tank refuel/transfer valve in zone 319:
1 Put the 6 m (19.6 ft) access platform in zone 311 and open the access door 312AR.
2 Get access to the vapor seal cover of the trim-tank refuel/transfer valve on the front spar of the trim tank in zone 319.
3 Loosen the bolts (1) in the access panel (3) (in the vapor seal



Trim Tank Refuel/Transfer Valve Vapor Seal Cover
Figure 501

cover) in a symmetrical diagonal pattern.
4 Remove the bolts (1) and the sealing washers (2).
5 Remove the access panel (3) and the seal (4).

(e)Energize the aircraft electrical network (Ref. 24-41-00, P. Block 301).

R (f)If the trim tank high level sensor test in paragraph 1.C. (10) has been completed, the trim tank will already be refueled to high level;
R continue with step (11)(m).
R If the trim tank high level sensor test in paragraph 1.C. (10) has not
R been completed, continue with step (11) (g).
R
R (g)Not applicable.
R (h)Refuel, defuel or transfer the fuel as necessary (Ref. 12-11-28 or
R 28-25-00, P. Block 301) to get the fuel condition that follows:

**ON A/C 001-100,

L OUTR TK	L INR TK	CTR TK	R INR TK	R OUTR TK	TRIM TK
0	FULL	FULL	FULL	0	0

**ON A/C 101-200,

L OUTR TK	L INR TK	CTR TK	ACT	R INR TK	R OUTR TK	TRIM TK
0	FULL	FULL	0	FULL	0	0

**ON A/C 101-200,

Post SB 28-2105 For A/C 101-200,

L OUTR TK	L INR TK	CTR TK	ACT 1 ACT 2	R INR TK	R OUTR TK	TRIM TK
0	FULL	FULL	0	FULL	0	0

**ON A/C 001-100,

R (j)Open access door 144DR to get access to refuel/defuel panel 110VU.
R (k)On panel 110VU, put the FUEL QTY switch in the TT position.

**ON A/C 101-200,

R (j)Open access door 144DR to get access to refuel/defuel panel 110VU.
R (k)On panel 110VU, put the FQI DISPLAY switch in the TT position.

**ON A/C ALL

R (l)Test

ACTION	RESULT
1. On panel 430VU: - make sure that all the PUMP P/BSW's are released (out)	On panel 430VU: - make sure that all the PUMP P/BSW OFF legends, are on
- make sure that all the ISOL VALVES P/BSW's are pushed (in)	- make sure that the ISOL VALVES P/BSW in-line flowbars are on (isolation valves open)
- push (in) the X FEED valve P/BSW	- the crossline flowbar, goes off - the in-line flowbar, comes on
- push (in) the L and R CTR TK PUMP P/BSW's.	- make sure that the L and R CTR TK PUMP P/BSW OFF legends, go off - the pumps run.
2. On panel 110VU: - lift the guard and put the MODE SELECT/SELECTOR switch in the REFUEL position.	
- lift the guards and put the CTR TK and the TRIM TK REFUEL-DEFUEL-VALVES switches in the OPEN position NOTE : The trim tank can only receive fuel if the center tank refuel/defuel valve is open, or both the inner tanks filled to high level.	
- lift the guards and put all the other REFUEL-DEFUEL-VALVES switches in the SHUT position	
- lift the guard and put the TRANSF. VALVE switch in the OPEN position.	On panel 110VU: - make sure that the TRANSF. VALVE OPEN indicator light comes on.
3. On panel 110VU: - Monitor the fuel transfer on the FUEL QTY indicator and the TRIM TK HIGH LEVEL indicator light.	

ACTION	RESULT
4. When the trim tank high level sensors become wet:	On panel 110VU: - the TRIM TK HIGH LEVEL indicator light comes on - the fuel transfer is stopped by the closure of the trim tank refuel/defuel valve in zone 148 and the trim tank refuel/transfer valve in zone 319.
5. On panel 430VU: - release (out) the L and R CTR TK PUMP P/BSW's	On panel 430VU: - the L and R CTR TK PUMP P/BSW OFF legends, come on - the pumps stop

R (m)Put personnel in position at:
1 The trim tank refuel/defuel valve in zone 148.
2 The trim tank refuel/transfer valve in zone 319.
3 The refuel/defuel panel 110VU.

R (n)Establish a line of communication between the persons at:
1 The trim tank refuel/defuel valve.
2 The trim tank refuel transfer valve.
3 The refuel/defuel panel 110VU.

R (p)Test

CAUTION : MONITOR THE TRIM-TANK OVERFLOW-WARNING LIGHT ON PANEL 110VU, WHEN YOU TRANSFER FUEL INTO THE TRIM TANK. THE MANUAL PLUNGER ON THE TRIM TANK REFUEL/DEFUEL VALVE MUST BE MANUALLY RELEASED IMMEDIATELY THE TRIM-TANK OVERFLOW-WARNING LIGHT COMES ON.

: THE TRIM TANK IS ALREADY AT THE HIGH-LEVEL CUT-OFF POSITION. MONITOR THE FUEL TRANSFER ON THE TRIM-TANK OVERFLOW-WARNING LIGHT ON PANEL 110VU. THE LIGHT SHOULD COME ON AFTER YOU HAVE TRANSFERRED A SMALL AMOUNT OF FUEL INTO THE TRIM TANK BECAUSE THE FUEL WILL SPILL OVER INTO THE VENT SURGE TANK AND WET THE OVERFLOW LEVEL SENSOR.
THE MAXIMUM FUEL CAPACITY OF THE VENT SURGE TANK IS 160 LITRES (42 US GALS) OR APPROXIMATELY 128 KG (282 LBS). YOU MUST NOT TRANSFER MORE THAN THIS AMOUNT INTO THE TRIM TANK/VENT SURGE. IF THE OVERFLOW WARNING LIGHT HAS NOT COME ON BEFORE THE MAXIMUM QUANTITY OF FUEL HAS BEEN TRANSFERRED, STOP THE TRANSFER IMMEDIATELY OR FUEL WILL SPILL OUT OF THE VENT-TANK NACA INTAKE.

ACTION	RESULT
1. Tell the persons to push (in) the manual plungers on the trim tank refuel/defuel valve and the trim tank refuel/transfer valve.	In zones 148 and 319: - the trim tank refuel/defuel valve opens - the trim tank refuel/transfer valve opens.
2. On panel 430VU: - push (in) the L and R CTR TK PUMP P/BSW's.	On panel 430VU: - the L and R CTR TK PUMP P/BSW OFF legends go off - the pumps run. - fuel is transfered from the center tank to the trim tank.
3. On panel 110VU: - monitor the TRIM TK OVERFLOW light - immediately the OVERFLOW light comes on, tell the person in zone 148 to release (out) the manual plunger on the trim tank refuel/defuel valve	In the trim tank vent tank: - the overflow sensor is wet with fuel In the zone 148: - the trim tank refuel/defuel valve is closed.
4. Wait at least five seconds, then, tell the person in zone 319 to release the manual plunger on the trim tank refuel/transfer valve.	In zone 319: - the trim tank refuel/transfer valve is closed.

ACTION	RESULT
5. On panel 430VU: - release (out) the L and R CTR TK P/BSW's.	On panel 430VU: - make sure that the L and R CTR TK PUMP P/BSW OFF legends, come on and the pumps stop.

R (q)If more testing is not required, continue with the close-up procedure (Ref. Paragraph 1.D.).

(12)High level and overflow sensor test

NOTE : This procedure tests the high level and overflow sensors without
R fuel and can be used as an alternative to the
R 'trim tank high level sensor test with fuel' (Ref. Para. 1.C.(10))
R and the
R 'trim tank overflow sensor test with fuel' (Ref. Para. 1.C.(11)).

(a)Energize the aircraft electrical network from an external power source (Ref. 24-41-00, P. Block 301).
(b)Make sure that the access door 144DR is closed (fuel panel de-energized).
(c)Make sure that the fuel quantity in each tank is below high level (Ref. 28-25-00, P. Block 301).
(d)Make sure that these circuit breakers are closed:

	PANEL	SERVICE	IDENT.	LOCATION
R	132VU	FUEL/FUELLING/CTL & REFUEL VALVES	1QU	321/P56
R	132VU	FUEL/FUELLING/OVERFLOW & CAL	5QJ	321/P58
R	132VU	FUEL/FUELLING/HI LVL	6QJ	321/P57

(e)Do the high level and overflow warning test (Ref. Para. 1.C.(3)).

NOTE : The high level and overflow warning test procedure checks that the lights and the circuit function correctly.

(f)Test

ACTION	RESULT
1. On panel 132VU: - open circuit breakers 5QJ and R 6QJ for at least three minutes.	
R 2. At the access door 144DR: R - three minutes after you open R the circuit breakers, open R the access door.	On panel 110VU: - the fuel panel is energized.
R 3. On panel 132VU:	(Second person to confirm)

ACTION	RESULT
R - close the circuit breakers 5QJ and 6QJ.	- all the HIGH LEVEL lights and the OVERFLOW lights come on steady for a few seconds and then go off. This shows that all the high level sensors and overflow sensors are serviceable.

R 4. If some of the high level and overflow lights flicker on and off, then do the test again. Extend the time that the circuit breakers 5QJ and 6QJ are open to five minutes.

(g)If more testing is not required, continue with the close-up procedure (Ref. Para. 1.D.).

**ON A/C 001-100,

D. Close-Up
(1)Transfer the fuel from the trim tank into the center tank (Ref. 28-25-00, P. Block 301).
(2)On panel 110VU:
(a)Put the FUEL QTY switch in the CTR & TT position.

**ON A/C 101-200,

D. Close-Up
(1)Transfer the fuel from the trim tank into the center tank (Ref. 28-25-00, P. Block 301).
(2)On panel 110VU:
(a)Put the FQI DISPLAY switch in the CTR & AUX & TT position.

**ON A/C 101-200,

Post SB 28-2108 For A/C 101-200,

D. Close-Up
(1)Transfer the fuel from the trim tank into the center tank (Ref. 28-25-00, P. Block 301).
(2)On panel 110VU:
(a)Put the FQI DISPLAY switch in the CTR-TT & ACT position.

**ON A/C ALL

(b)Put the TRANSF. VALVE switch in the CLOSED position and lower the guard. Make sure that the OPEN indicator light goes off.
(c)Put all the REFUEL-DEFUEL-VALVES switches in the NORM position and lower the guards.
(d)Put the MODE SELECT/SELECTOR switch in the NORM position and lower the guard.
(3)Not applicable.
(4)Close the access door 144DR.

(5)On panel 430VU, release (out) the X FEED P/BSW. Make sure that the in-line flowbar goes off and the crossline flowbar comes on.
(6)De-energize the aircraft electrical network (Ref. 24-41-00, P. Block 301).
(7)Make a check of the trim tank refuel/transfer valve access panel seal (4) for the correct condition. If necessary, discard and replace the seal.
(8)Make a check of the trim tank refuel/transfer valve access panel sealing washers (2) for the correct condition. If necessary, discard and replace the sealing washers.
(9)Install the access panel (3) and the seal (4) in the refuel/transfer valve cover on the trim tank front spar. Install the bolts (1) and the sealing washers (2) and tighten the bolts (1) in a symmetrical diagonal pattern.
(10)Do the leak test of the refuel/transfer valve cover on the front spar of the trim tank (Ref. 28-13-00, P. Block 501 Paragraph 2.E.).
(11)Make sure that the work area is clean and clear of tools and miscellaneous items of equipment.
(12)Close the access door 312AR.
(13)Remove the 6 m (19.6 ft) access platform.
(14)Remove the 2.5 m (8 ft) access platform and close the RH main landing gear bay door (Ref. 32-12-11, P. Block 301).
(15)Put the THS and vertical stabilizer back to the normal operating condition (Ref. 55-00-00, P. Block 301).

**ON A/C 001-100,

2. Functional Test - With Test Set (PN 722131)

NOTE : For Functional Test - With Test Set (PN 722370) refer to Para 3.

A. Reason for the Job

**ON A/C 101-200,

2. Functional Test - With Test Set (PN 722131)

NOTE : For Functional Test - With Test Set (PN 722370) refer to Para 3:
for Functional Test - with Test Set (PN 722427) refer to Para 4.

A. Reason for the Job

**ON A/C 001-100,

(1)To test the following level sensors:
- overflow sensors in outer, and trim tanks
- high level sensors in outer, inner, center and trim tanks
- underfull sensors in outer tanks
- low level sensors in outer, inner and center tanks.

(2)To test the following level sensor amplifiers:
- overflow sensor amplifiers for outer and trim tanks
- high level sensor amplifiers for outer, inner, center and trim tanks
- underfull sensor amplifiers in outer tanks
- low level sensor amplifiers for outer, inner and center tanks.

**ON A/C 101-200,

(1)To test the following level sensors:
- overflow sensors in outer, and trim tanks
- high level sensors in outer, inner, center and trim tanks
- low level sensors in outer, inner and center tanks.

(2)To test the following level sensor amplifiers:
- overflow sensor amplifiers for outer and trim tanks
- high level sensor amplifiers for outer, inner, center and trim tanks
- low level sensor amplifiers for outer, inner and center tanks.

**ON A/C ALL

(3)To test calibration sensors and trim tank low level sensor.
To test calibration sensors in inner, center and trim tanks and (or) trim tank low level sensor, carry out CGCS availability test (Ref. 31-46-00, P. Block 1).

B. Equipment and Materials

ITEM	DESIGNATION
A. 722131	Test Set
B. 722328	Cable
C. 722325	Cable
D. 790065	Cable
E.	Access Platform 2.6 m (8 ft)
Referenced Procedures	
- 24-41-00, P. Block 301	AC External Power Control
- 28-42-38, P. Block 501	Fuel Quantity Computer (15QT)
- 28-46-23, P. Block 401	Fuel Level Amplifier
- 31-46-00, P. Block 1	Center of Gravity Control System

C. Procedure
(Ref. Fig. 502)

(1)Job Set-Up
(a)Position access platform.
(b)Open access doors 121BL and 144DR.
(c)In the forward equipment bay on electronics rack 96VU, remove fuel level sensing amplifier (8QJ) (Ref. 28-46-23, P. Block 401).

(2)Test Level Sensors

NOTE : The test connects each level sensing unit in the fuel tanks to an amplifier in the test set.

(a)Connect the test set PN 722131 to rack connector (8QJ-AB) using cable PN 722328.
(b)Connect a 28V electrical supply to the test set POWER SUPPLY 3-pin socket, using cable PN 790065.
(c)Energize the aircraft electrical network (Ref. 24-41-00, P. Block 301).
(d)On test set, make certain selector switch S1 is in OFF position.
(e)Place test set POWER SUPPLY switch to ON position. Make certain SUPPLY 28V indicator light comes on.
(f)Press (in) LAMP TEST pushbutton and make certain that indicator light comes on.
(g)Release (out) LAMP TEST pushbutton, indicator light goes off.
(h)Perform the following:

ACTION	RESULT
1. On test set under TEST DETECTORS: - place selector switch S1 in position 1.	On test set under TEST DETECTORS: - FUEL or AIR light comes on, to indicate sensor is immersed, or in air.
2. If FUEL light is on: - press (in) TEST pushbutton switch.	- FUEL light goes off, AIR light comes on.
- release (out) TEST pushbutton switch	- AIR light goes off, FUEL

ACTION	RESULT
	light comes on
3. If AIR light is on: - place POWER SUPPLY switch in OFF position	- AIR light goes off
- place POWER SUPPLY switch in ON position	- FUEL light comes on, then goes off AIR light comes on
Repeat previous steps for each position on selector switch S1	
- place selector switch S1 in OFF position.	- FUEL or AIR light goes off.

(j)Place the test set POWER SUPPLY switch to the OFF position.
(k)De-energize the aircraft electrical network (Ref. 24-41-00, P. Block 301).
(l)Remove cables PN 722328 and PN 790065 from test set and rack connector.

(3)Test Amplifiers
(a)Connect the test set to rack connector (8QJ-AB) and to amplifier box (8QJ), using cable PN 722325.
(b)Make sure that the following circuit breakers are closed:

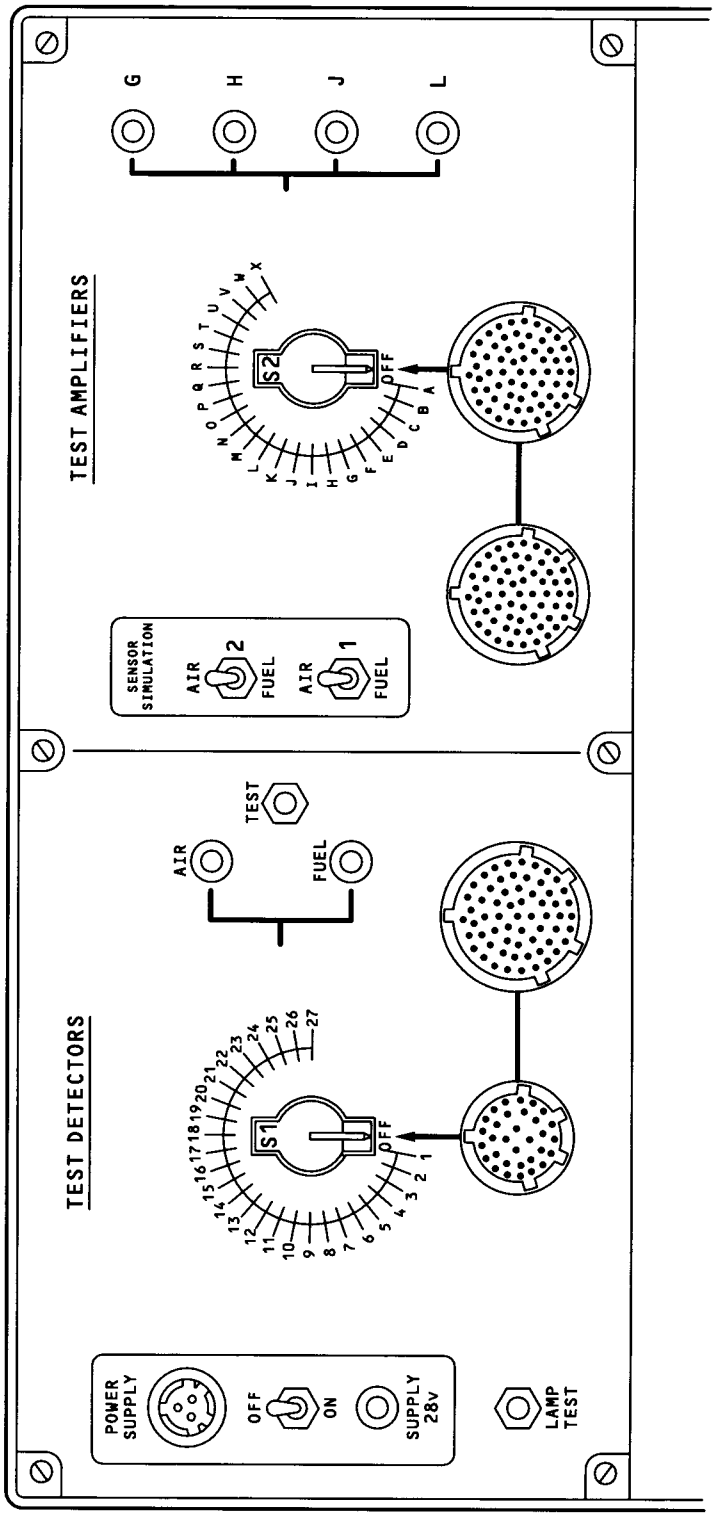
PANEL	SERVICE	IDENT.	LOCATION
22VU	FUEL TK LO LVL AND CAL/L OUTR AND R INR AND CTR R	1QJ	208/B26
22VU	FUEL TK LO LVL AND CAL/R OUTR AND L INR AND CTR L	2QJ	208/B27
132VU	FUEL/FUELLING		Line 321

(c)Energize the aircraft electrical network (Ref. 24-41-00, P. Block 301).

NOTE : Amplifiers are supplied by the aircraft power supplies which must be on.

**ON A/C 001-100,

(d)On panel 472VU, put the ANN LT switch in the TEST position. Make sure that the U/FULL CHAN TEST annunciator L and R legends come on, then put the ANN LT switch in the READ position.
(e)On panel 472VU, put the FUEL LO LEVEL TEST switch in the L then the R position.
(f)On panel 430VU, FUEL QTY indicator, make sure that the LO LVL lights



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Test Set (PN 722-131)
Figure 502

come on.
(g) Release the switch to the center position.
(h) Do a functional test of the Fuel Quantity Computer (Ref. 28-42-38, P. Block 501).
(j) On the test set, make sure that the selector switch S2 is in the OFF position, and the SENSOR SIMULATION switches 1 and 2 are in the AIR position.
(k) Do the test that follows for the wing and center tanks:

ACTION	RESULT
1. On test set under TEST AMPLIFIERS: - place selector switch S2 in left (right) overflow position A (T)	On panel 110VU: - OVERFLOW L (R) indicator light is off
- place SENSOR SIMULATION switch 1 in FUEL position	- OVERFLOW L (R) indicator light comes on
- place selector switch S2 in left (right) outer high level position B (S)	- OVERFLOW L (R) indicator light goes off
- make the following selections on SENSOR SIMULATION switches: Switch 1 / Switch 2 FUEL / AIR AIR / AIR AIR / FUEL FUEL / FUEL	- HIGH LEVEL L (R) OUTER TK indicator light condition: off off off on
- place selector switch S2 in left (right) outer underfull 1 position C (R)	- HIGH LEVEL L (R) OUTER TK indicator light goes off On panel 472VU: - U/FULL CHAN TEST annunciator L (R) legend is off On test set under TEST AMPLIFIERS: - indicator light G (L) is off
- place SENSOR SIMULATION switch 1 in AIR position	- indicator light G (L) comes on On panel 472VU: - U/FULL CHAN TEST annunciator L (R) legend comes on
- place selector switch S2 in left (right) outer underfull 2 position D (Q)	- U/FULL CHAN TEST annunciator L (R) legend remains on

ACTION	RESULT
	On test set under **TEST AMPLIFIERS:** - indicator light **G (L)** goes off - indicator light **H (J)** comes on
- place **SENSOR SIMULATION** switch 1 in **FUEL** position	- indication light **H (J)** goes off
	On panel **472VU:** - **U/FULL CHAN TEST** annunciator **L (R)** legend goes off
	On panel **430VU:**
- place selector switch **S2** in left (right) outer low level position **E (P)**	- **FUEL QTY** indicator left (right) **LO LVL** light is off
- place **SENSOR SIMULATION** switch 1 in **AIR** position	- **FUEL QTY** indicator left (right) **LO LVL** light comes on
- place selector switch **S2** in left (right) inner high level position **F (O)**	- **FUEL QTY** indicator left (right) **LO LVL** light goes off On panel **110VU:** - **HIGH LEVEL L (R) INNER TK** indicator light is off
- place **SENSOR SIMULATION** switch 1 in **FUEL** position	- **HIGH LEVEL L (R) INNER TK** indicator light comes on
- place selector switch **S2** in left (right) inner low level position **G (M)**	- **HIGH LEVEL L (R) INNER TK** indicator light goes off On test set under **TEST AMPLIFIERS:** - indicator light **G (L)** is off
- place **SENSOR SIMULATION** switch 1 in **AIR** position	- indicator light **G (L)** comes on
- place selector switch **S2** in left (right) center low level position **I (K)**	- indicator light **G (L)** goes off - indicator light **H (J)** comes on
- place **SENSOR SIMULATION** switch 1 in **FUEL** position	- indication light **H (J)** goes off
	On panel **110VU:**

ACTION	RESULT
- place selector switch S2 in center high level position J	- HIGH LEVEL CTR TK indicator light is on
- place SENSOR SIMULATION switch 1 in AIR position	- HIGH LEVEL CTR TK indicator light goes off.
- place selector switch S2 in OFF position - make certain SENSOR SIMULATION switches are in AIR position.	

2. On panel 472VU:
   - place ANN LT switch in OFF position

(l)Do the test that follows for the trim tank:

ACTION	RESULT
1. On test set under TEST AMPLIFIERS: - place selector switch S2 in trim tank high level position W	On panel 110VU: - HIGH LEVEL TRIM TK indicator light is off
- make the following selections on SENSOR SIMULATION switches: Switch 1 / Switch 2 AIR / AIR AIR / FUEL FUEL / AIR FUEL / FUEL	- HIGH LEVEL TRIM TK indicator light condition: off off off on
- place selector switch S2 in trim tank overflow position X	- HIGH LEVEL TRIM TK indicator light goes off - OVERFLOW TT indicator light comes on
- place SENSOR SIMULATION switch 1 in AIR position	- OVERFLOW TT indicator light goes off
- place selector switch S2 in OFF position - make certain SENSOR SIMULATION switches are in AIR position	

(4)Close-Up
(a)De-energize the aircraft electrical network (Ref. 24-41-00, P. Block 301).
(b)Remove the cable PN 722325.
(c)Remove the test set.
(d)Install fuel-level sensing amplifier (8QJ) in electronic rack (Ref. 28-46-23, P. Block 401).
(e)Make sure that the work area is clean and clear of tools and miscellaneous items of equipment.
(f)Close the access doors 121BL and 144DR.
(g)Remove the access platform.

**ON A/C 101-200,

(d)On panel 472VU, put the FUEL LO LEVEL TEST switch in the L and then the R position.
(e)On panel 430VU, FUEL QTY indicator make sure that the LO LVL lights come on.
(f)Release the switch to the center position.
(g)Do a functional test of Fuel Quantity Computer (Ref. 25-42-38, P. Block 501).
(h)On the test set, make sure that the selector switch S2 is in the OFF position, and the SENSOR SIMULATION switches 1 and 2 in the AIR position.
(j)Do the test that follows for the wing and center tanks:

ACTION	RESULT
1. On test set under TEST AMPLIFIERS: - place selector switch S2 in left (right) overflow position A (T)	On panel 110VU: - OVERFLOW L (R) indicator light is off
- place SENSOR SIMULATION switch 1 in FUEL position	- OVERFLOW L (R) indicator light comes on
- place selector switch S2 in left (right) outer high level position B (S)	- OVERFLOW L (R) indicator light goes off
- make the following selections on SENSOR SIMULATION switches: Switch 1 / Switch 2 FUEL / AIR AIR / AIR AIR / FUEL FUEL / FUEL	- HIGH LEVEL L (R) OUTER TK indicator light condition: off off off on
- place selector switch S2 in left (right) outer low level position E (P)	- HIGH LEVEL L (R) OUTER TK indicator light goes off On panel 430VU: - FUEL QTY indicator

ACTION	RESULT
	left (right) LO LVL light is off
- place **SENSOR SIMULATION** switch 1 in **AIR** position	- **FUEL QTY** indicator left (right) LO LVL light comes on
- place selector switch **S2** in left (right) inner high level position **F (O)**	- **FUEL QTY** indicator left (right) LO LVL light goes off On panel 110VU: - **HIGH LEVEL L(R) INNER TK** indicator light is off
- place **SENSOR SIMULATION** switch 1 in **FUEL** position	- **HIGH LEVEL L (R) INNER TK** indicator light comes on
- place selector switch **S2** in left (right) inner low level position **G (M)**	- **HIGH LEVEL L(R) INNER TK** indicator light goes off On test set under **TEST AMPLIFIERS:** - indicator light **G (L)** is off
- place **SENSOR SIMULATION** switch 1 in **AIR** position	- indicator light **G (L)** comes on
- place selector switch **S2** in left (right) center low level position **I (K)**	- indicator light **G (L)** goes off - indicator light **H (J)** comes on
- place **SENSOR SIMULATION** switch 1 in **FUEL** position	- indication light **H (J)** goes off
- place selector switch **S2** in center high level position **J**	On panel 110VU: - **HIGH LEVEL CTR TK** indicator light is on
- place **SENSOR SIMULATION** switch 1 in **AIR** position	- **HIGH LEVEL CTR TK** indicator light goes off.
- place selector switch **S2** in **OFF** position - make certain **SENSOR SIMULATION** switches are in **AIR** position.	

(k)Do the test that follows for the trim tank:

ACTION	RESULT
1. On test set under **TEST AMPLIFIERS:** - place selector switch S2 in trim tank high level position **W**	On panel 110VU: - **HIGH LEVEL TRIM TK** indicator light is off
- make the following selections on **SENSOR SIMULATION** switches: **Switch 1** / **Switch 2** **AIR** / **AIR** **AIR** / **FUEL** **FUEL** / **AIR** **FUEL** / **FUEL**	- **HIGH LEVEL TRIM TK** indicator light condition: off off off on
- place selector switch S2 in trim tank overflow position X	- **HIGH LEVEL TRIM TK** indicator light goes off - **OVERFLOW TT** indicator light comes on
- place **SENSOR SIMULATION** switch 1 in **AIR** position	- **OVERFLOW TT** indicator light goes off
- place selector switch S2 in **OFF** position - make certain **SENSOR SIMULATION** switches are in **AIR** position	

(4)Close-Up
(a)De-energize the aircraft electrical network (Ref. 24-41-00, P. Block 301).
(b)Remove cable PN 722325.
(c)Remove test set.
(d)Install fuel level sensing amplifier (8QJ) in electronic rack (Ref. 28-46-23, P. Block 401).
(e)Make sure that the working area is clean and clear of tools and miscellaneous items of equipment.
(f)Close access doors 121BL and 144DR.
(g)Remove access platform.

**ON A/C ALL

3. Functional Test - With Test Set (PN 722370)

A. Reason for the Job

**ON A/C 001-100,

(1)To test the following sensors:
- overflow sensors in outer and trim tanks
- high level sensors in outer, inner, center and trim tanks
- underfull sensors in outer tanks
- low level sensors in outer, inner, center and trim tanks
- calibration sensors in inner, center and trim tanks.

(2)To test the following level sensor amplifiers:
- overflow sensor amplifiers for outer and trim tanks
- high level sensor amplifiers for outer, inner, center and trim tanks
- underfull sensor amplifiers for outer tanks
- low level sensor amplifiers for outer, inner, center and trim tanks
- calibration sensor amplifiers for inner, center and trim tanks.

**ON A/C 101-200,

(1)To test the following level sensors:
- overflow sensors in outer and trim tanks
- high level sensors in outer, inner, center and trim tanks
- low level sensors in outer, inner, center and trim tanks
- calibration sensors in inner, center and trim tanks.

(2)To test the following level sensor amplifiers:
- overflow sensor amplifiers for outer and trim tanks
- high level sensor amplifiers for outer, inner, center and trim tanks
- low level sensor amplifiers for outer, inner, center and trim tanks
- calibration sensor amplifiers for inner, center and trim tanks.

(3)To test the following ACT level sensors (if ACT installed):
- ACT high level sensors
- ACT low level sensor
- ACT calibration sensor.

(4)To test the following ACT level sensor amplifiers (if ACT installed):
- ACT high level sensor amplifiers
- ACT low level sensor amplifier
- ACT calibration sensor amplifier.

**ON A/C ALL

B. Equipment and Materials

ITEM		DESIGNATION
A.	722370	Test Set
B.	722371	Cable
C.	722372	Cable
D.	790065	Cable
E.		Access Platform 2.6m (8ft)
Referenced Procedures		
- 24-41-00, P. Block 301		AC External Power Control
- 28-42-38, P. Block 501		Fuel Quantity Computer (15QT)
- 28-46-23, P. Block 401		Fuel Level Amplifier

C. Procedure
(Ref. Fig. 503)

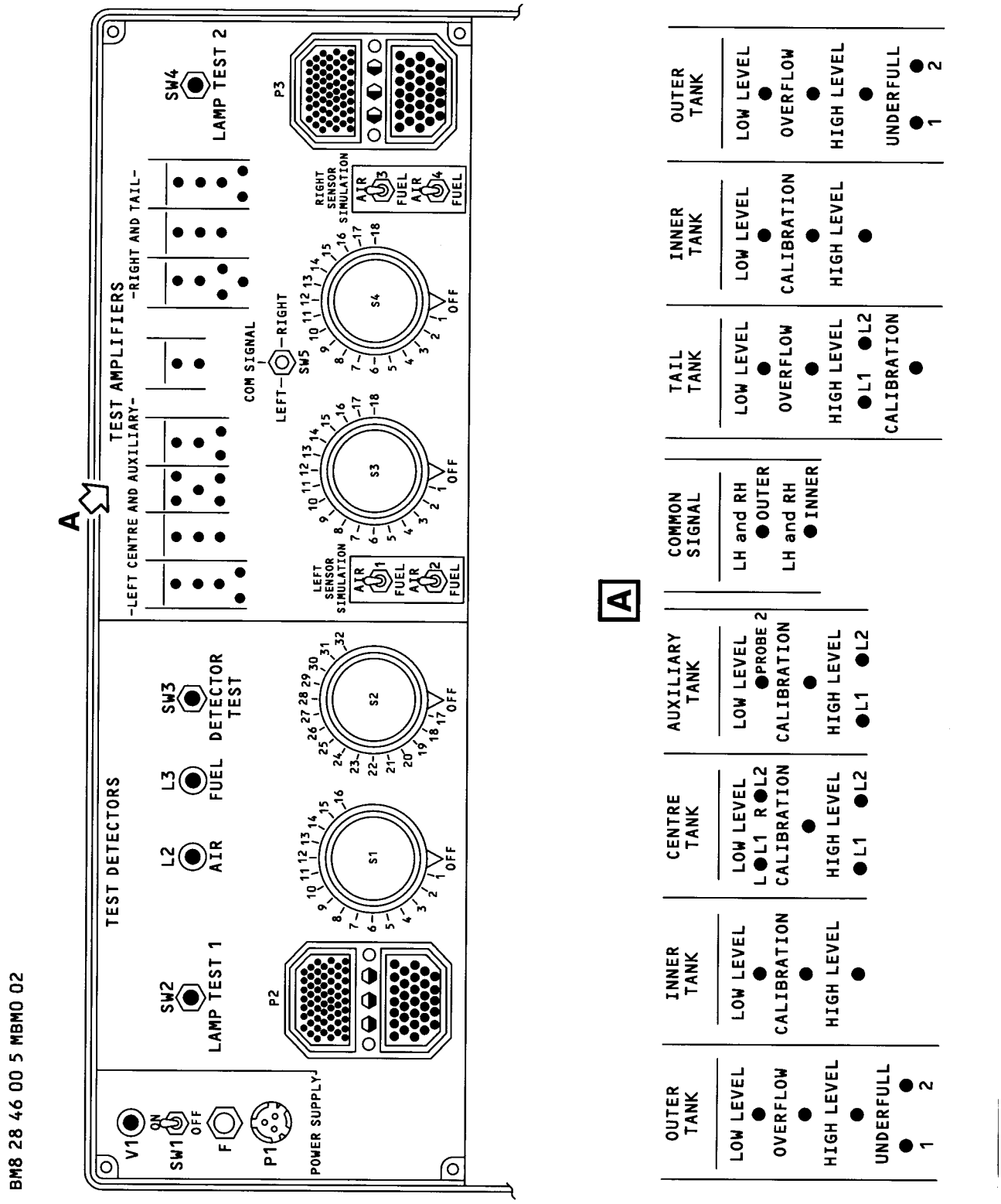
(1)Job Set-Up
(a)Position access platform.
(b)Open access doors 121BL and 144DR.
(c)In forward equipment bay, on electronics rack 96VU, remove fuel level sensing amplifier (8QJ) (Ref. 28-46-23, P. Block 401).

(2)Test Level Sensors

NOTE : The test connects each level sensing unit in fuel tanks to an amplifier in the test set.

(a)Connect the test set to rack connector (8QJ-AB) using cable PN 722371.
(b)Connect a 28V electrical supply to the test set POWER SUPPLY 3-pin socket (P1), using cable PN79065.
(c)Energize the aircraft electrical network (Ref. 24-41-00, P. Block 301).
(d)On test set, make certain selector switches S1 and S2 are in OFF position.
(e)Place test set POWER SUPPLY switch (SW1) to ON position.
(f)Press (in) LAMP TEST 1 switch (SW2) and make certain indicator light (V1) comes on.
(g)Release (out) switch (SW2), indicator light (V1) goes out.

**ON A/C 001-100,



Test Set (PN 722-370)
Figure 503

(h)Do the test that follows:

ACTION	RESULT
1. On test set under TEST DETECTORS: - place selector switch S1 in position 1	On test set under TEST DETECTORS: - FUEL light (V3) or AIR light (V2) comes on to indicate sensor is immersed or in air
2. If FUEL light (V3) is on: - press (in) DETECTOR TEST pushbutton switch (SW3)	- FUEL light (V3) goes off, AIR light (V2) comes on
- release (out) DETECTOR TEST pushbutton switch (SW3)	- AIR light (V2) goes off FUEL light (V3) comes on
3. If AIR light (V2) is on: - place POWER SUPPLY switch (SW1) in OFF position	- AIR light (V2) goes off
- place POWER SUPPLY switch (SW1) in ON position	- FUEL light (V3) comes on, then goes off - AIR light (V2) comes on
4. Repeat previous steps for the following selector switch positions: - 2 thru 16 on selector switch S1 - 17 thru 27 on selector switch S2	
5. Place selector switches S1 and S2 in OFF position	- FUEL or AIR light goes off

(j)Put the test set POWER SUPPLY switch (SW1) to the OFF position.
(k)De-energize the aircraft electrical network (Ref. 24-41-00, P. Block 301).
(l)Remove the cables PN 722371 and PN 790065 from the test set and rack connector.

**ON A/C 101-200,

(h)Do the test that follows:

ACTION	RESULT
1. On test set under TEST DETECTORS: - place selector switch S1 in position 1	On test set under TEST DETECTORS: - FUEL light (V3) or AIR light (V2) comes on to indicate sensor is immersed or in air
2. If FUEL light (V3) is on: - press in DETECTOR TEST pushbutton switch (SW3)	- FUEL light (V3) goes off - AIR light (V2) comes on
- release (out) DETECTOR TEST pushbutton switch (SW3)	- AIR light (V2) goes off - FUEL light (V3) comes on
3. If AIR light (V2) is on: - place POWER SUPPLY switch (SW1) in OFF position	- AIR light (V2) goes off
- place POWER SUPPLY switch (SW1) in ON position	- FUEL light (V3) comes on, then goes off - AIR light (V2) comes on
4. Repeat previous steps for the following selector switch positions: - 2,3,6 thru 16 on selector switch S1 - 17, 20 thru 27,28 thru 31 (if ACT installed) on selector switch S2	
5. Place selector switches S1 and S2 in OFF position	- FUEL or AIR light goes off

(j)Put the test set POWER SUPPLY switch (SW1) to the OFF position.
(k)De-energize the aircraft electrical network (Ref. 24-41-00, P. Block 301).

(l)Remove the cables PN 722371 and PN 790065 from the test set and rack connector.

**ON A/C ALL

(3)Test amplifiers
(a)Connect the test set to the rack connector (8QJ-AB) and to the amplifier box (8QJ), using the cable PN 722372.
(b)Make sure that the circuit breakers that follow are closed:

**ON A/C 101-200,

Post SB 28-2105 For A/C 101-200,

Post SB 28-2108 For A/C 101-200,

PANEL	SERVICE	IDENT.	LOCATION
22VU	FUEL/TK LO LVL/L OUTR AND R INR AND CTR R	1QJ	208/B26
22VU	FUEL/TK LO LVL/R OUTR AND L INR AND CTR L	2QJ	208/B27
132VU	FUEL/FUELLING		Line 321

**ON A/C ALL

PANEL	SERVICE	IDENT.	LOCATION
22VU	FUEL/TK LO LVL AND CAL/L OUTR AND R INR AND CTR R	1QJ	208/B26
22VU	FUEL/TK LO LVL AND CAL/R OUTR AND L INR AND CTR L	2QJ	208/B27
132VU	FUEL/FUELLING		Line 321

(c)Energize the aircraft electrical network (Ref. 24-41-00, P. Block 301).

NOTE : Amplifiers are supplied by the aircraft power supplies which must be on.

**ON A/C 001-100,

(d)On panel 472VU:
1 Put the ANN LT switch in the TEST position. Make sure that the U/FULL CHAN TEST annunciator L and R legends come on.

2 Put the ANN LT switch in the READ position.
3 Put the FUEL LO LEVEL TEST switch in the L position and then the R position.

(e)On panel 430VU, FUEL QTY indicator, make sure that the LO LVL lights come on.
(f)On panel 472VU, release the ANN LT switch to the center position.
(g)Do a functional test of the Fuel Quantity Computer (Ref. 28-42-38, P. Block 501).
(h)On the test set:
1 Make sure that the selector switches S3 and S4 are in the OFF position and the SENSOR SIMULATION switches are in the AIR position.
2 Press (in) the LAMP TEST 2 switch (SW4) and make sure that all the TEST AMPLIFIER lights come on.
3 Release (out) the LAMP TEST 2 switch (SW4).
(j)Do the test that follows:

**ON A/C 101-200,

(d)On panel 472VU, put the LO LEVEL & ACT TEST switch in the L position and then the R position.
(e)On panel 430VU, FUEL QTY indicator, make sure that the LO LVL lights come on.
(f)On panel 472VU, put the LO LVL & ACT TEST switch in the center position.
(g)On the test set:
1 Make sure that the selector switches S3 and S4 are in the OFF position and the SENSOR SIMULATION switches are in the AIR position.
2 Press (in) the LAMP TEST 2 switch (SW4) and make sure that all the TEST AMPLIFIER lights come on.
3 Release (out) the LAMP TEST 2 switch (SW4).
(h)Do the test that follows:

**ON A/C 001-100,

ACTION	RESULT
1. On test set under TEST AMPLIFIERS: - place switch SW5 in LEFT position	
- place selector switch S3 in position 1	On test set under TEST AMPLIFIERS: - LEFT OUTER TANK OVERFLOW light is off
- place LEFT SENSOR SIMULATION switch 1 in FUEL position	- LEFT OUTER TANK OVERFLOW light comes on
- place selector	- LEFT OUTER TANK OVERFLOW

ACTION	RESULT
switch S3 in position 2	light goes off
- make the following selections on LEFT SENSOR SIMULATION switches: Switch 1 / Switch 2 FUEL / AIR AIR / AIR AIR / FUEL FUEL / FUEL	- LEFT OUTER TANK HIGH LEVEL light condition: on on on off
- place selector switch S3 in position 3	- LEFT OUTER TANK UNDERFULL light 1 is off
- place LEFT SENSOR SIMULATION switch 1 in AIR position	- LEFT OUTER TANK UNDERFULL light 1 comes on
- place selector switch S3 in position 4	- LEFT OUTER TANK UNDERFULL light 1 goes off - LEFT OUTER TANK UNDERFULL light 2 comes on
- place LEFT SENSOR SIMULATION switch 1 in FUEL position	- LEFT OUTER TANK UNDERFULL light 2 goes off
- place selector switch S3 in position 5	- LEFT OUTER TANK LOW LEVEL light is off
- place LEFT SENSOR SIMULATION switch 1 in AIR position	- LEFT OUTER TANK LOW LEVEL light comes on
- place selector switch S3 in position 6	- LEFT OUTER TANK LOW LEVEL light goes off - LEFT INNER TANK HIGH LEVEL light is on
- place LEFT SENSOR SIMULATION switch 1 in FUEL position	- LEFT INNER TANK HIGH LEVEL light goes off
- place selector switch S3 in	- LEFT INNER TANK CALIBRATION light goes off

ACTION	RESULT
position 7	
- place LEFT SENSOR SIMULATION switch 1 in AIR position	- LEFT INNER TANK CALIBRATION light comes on
- place selector switch S3 in position 8	- LEFT INNER TANK LOW LEVEL light comes on
- place LEFT SENSOR SIMULATION switch 1 in FUEL position	- LEFT INNER TANK LOW LEVEL light goes off
- place selector switch S3 in position 9	- CENTRE TANK LOW LEVEL light L is off
- place LEFT SENSOR SIMULATION switch 1 in AIR position	- CENTRE TANK LOW LEVEL light L comes on
- place selector switch S3 in position 10	- CENTRE TANK LOW LEVEL light L goes off - CENTRE TANK HIGH LEVEL lights are on
- place LEFT SENSOR SIMULATION switch 1 in FUEL position	- CENTRE TANK HIGH LEVEL lights go off
- place selector switch S3 in position 11	- CENTRE TANK LOW LEVEL light R is off
- place LEFT SENSOR SIMULATION switch 1 in AIR position	- CENTRE TANK LOW LEVEL light R comes on
- place selector switch S3 in position 12	- CENTRE TANK LOW LEVEL light R goes off - CENTRE TANK CALIBRATION light is on
- place LEFT SENSOR SIMULATION switch 1 in FUEL position	- CENTRE TANK CALIBRATION light goes off
- place LEFT SENSOR	- CENTRE TANK CALIBRATION

ACTION	RESULT
SIMULATION switch 1 in **AIR** position	light comes on
2. On test set under **TEST AMPLIFIERS:**	
- place selector switch **S3** in **OFF** position	
- make sure that the **LEFT SENSOR SIMULATION** switches 1 and 2 are in the **AIR** position	
- place switch **SW5** in right position	
	On test set under **TEST AMPLIFIERS:**
- place selector switch **S4** in position 1	- **RIGHT OUTER TANK LOW LEVEL** light comes on
- place **RIGHT SENSOR SIMULATION** switch **3** in **FUEL** position	- **RIGHT OUTER TANK LOW LEVEL** light goes off
- place selector switch **S4** in in position 2	- **RIGHT OUTER TANK UNDERFULL** light 2 is off
- place **RIGHT SENSOR SIMULATION** switch **3** in **AIR** position	- **RIGHT OUTER TANK UNDERFULL** light 2 comes on
- place selector switch **S4** in position **3**	- **RIGHT OUTER TANK UNDERFULL** light 2 goes off - **RIGHT OUTER TANK UNDERFULL** light 1 comes on
- place **RIGHT SENSOR SIMULATION** switch **3** in **FUEL** position	- **RIGHT OUTER TANK UNDERFULL** light 1 goes off
- place selector switch **S4** in position **4**	
- make the following selections on **RIGHT**	- **RIGHT OUTER TANK HIGH LEVEL** light condition:

ACTION	RESULT
SENSOR SIMULATION switches: Switch 3 Switch 4 FUEL AIR AIR AIR AIR FUEL FUEL FUEL	 on on on off
- place selector switch S4 in position 5	- RIGHT OUTER TANK OVERFLOW light comes on
- place RIGHT SENSOR SIMULATION switch 3 in AIR position	- RIGHT OUTER TANK OVERFLOW light goes off
3. On test set under TEST AMPLIFIERS:	On test set under TEST AMPLIFIERS:
- place selector switch S4 in position 6	- RIGHT INNER TANK LOW LEVEL light comes on
- place RIGHT SENSOR SIMULATION switch 3 in FUEL position	- RIGHT INNER TANK LOW LEVEL light goes off
- place selector switch S4 in position 7	- RIGHT INNER TANK CALIBRATION light goes off
- place RIGHT SENSOR SIMULATION switch 3 in AIR position	- RIGHT INNER TANK CALIBRATION light comes on
- place selector switch S4 in position 8	- RIGHT INNER TANK HIGH LEVEL light is on
- place RIGHT SENSOR SIMULATION switch 3 in FUEL position	- RIGHT INNER TANK HIGH LEVEL light goes off
- place selector switch S4 in position 9	- TAIL TANK LOW LEVEL light is off
- place RIGHT SENSOR SIMULATION switch 3 in AIR position	- TAIL TANK LOW LEVEL light comes on

ACTION	RESULT
- place selector switch S4 in position 10	- TAIL TANK LOW LEVEL light goes off - TAIL TANK CALIBRATION light is on
- place RIGHT SENSOR SIMULATION switch 3 in FUEL position	- TAIL TANK CALIBRATION light goes off
- place selector switch S4 in position 11	- TAIL TANK HIGH LEVEL lights come on
- place RIGHT SENSOR SIMULATION switch 3 in AIR position	- TAIL TANK HIGH LEVEL lights go off
- place selector switch S4 in position 12	- TAIL TANK OVERFLOW light is on
- place RIGHT SENSOR SIMULATION switch 3 in FUEL position	- TAIL TANK OVERFLOW light goes off
- place selector switch S4 in OFF position	
- make sure that the SENSOR SIMULATION switches are in the AIR position	
- place switch SW5 in COM SIGNAL position	
4. On panel 472VU: - place ANN LT switch in OFF position	

**ON A/C 101-200,

ACTION	RESULT
1. On test set under TEST AMPLIFIERS:	

ACTION	RESULT
- place switch **SW5** in **LEFT** position	
- place selector switch **S3** in position 1	On test set under **TEST AMPLIFIERS:** - **LEFT OUTER TANK OVERFLOW** light is off
- place **LEFT SENSOR SIMULATION** switch 1 in **FUEL** position	- **LEFT OUTER TANK OVERFLOW** light comes on
- place selector switch **S3** in position 2	- **LEFT OUTER TANK OVERFLOW** light goes off
- make the following selections on **LEFT SENSOR SIMULATION** switches: **Switch 1 Switch 2** **FUEL AIR** **AIR AIR** **AIR FUEL** **FUEL FUEL**	- **LEFT OUTER TANK HIGH LEVEL** light condition: on on on off
- place selector switch **S3** in position **5**	- **LEFT OUTER TANK LOW LEVEL** light is off
- place **LEFT SENSOR SIMULATION** switch 1 in **AIR** position	- **LEFT OUTER TANK LOW LEVEL** light comes on
- place selector switch **S3** in - position **6**	- **LEFT OUTER TANK LOW LEVEL** light goes off - **LEFT INNER TANK HIGH LEVEL** light is on
- place **LEFT SENSOR SIMULATION** switch 1 in **FUEL** position	- **LEFT INNER TANK HIGH LEVEL** light goes off
- place selector switch **S3** in position **7**	- **LEFT INNER TANK CALIBRATION** light goes off
- place **LEFT SENSOR SIMULATION** switch	- **LEFT INNER TANK CALIBRATION** light comes on

ACTION	RESULT
1 in **AIR** position	
- place selector switch **S3** in position 8	- **LEFT INNER TANK LOW LEVEL** light comes on
- place **LEFT SENSOR SIMULATION** switch 1 in **FUEL** position	- **LEFT INNER TANK LOW LEVEL** light goes off
- place selector switch **S3** in position 9	- **CENTRE TANK LOW LEVEL** light L is off
- place **LEFT SENSOR SIMULATION** switch 1 in **AIR** position	- **CENTRE TANK LOW LEVEL** light L comes on
- place selector switch **S3** in position 10	- **CENTRE TANK LOW LEVEL** light L goes off - **CENTRE TANK HIGH LEVEL** lights are on
- place **LEFT SENSOR SIMULATION** switch 1 in **FUEL** position	- **CENTRE TANK HIGH LEVEL** lights go off
- place selector switch **S3** in position 11	- **CENTRE TANK LOW LEVEL** light R is off
- place **LEFT SENSOR SIMULATION** switch 1 in **AIR** position	- **CENTRE TANK LOW LEVEL** light R comes on
- place selector switch **S3** in position 12	- **CENTRE TANK LOW LEVEL** light R goes off - **CENTRE TANK CALIBRATION** light is on
- place **LEFT SENSOR SIMULATION** switch 1 in **FUEL** position	- **CENTRE TANK CALIBRATION** light goes off
- place **LEFT SENSOR SIMULATION** switch 1 in **AIR** position	- **CENTRE TANK CALIBRATION** light comes on

ACTION	RESULT
2. On test set (if ACT installed) under TEST AMPLIFIERS:	On test set under TEST AMPLIFIERS:
- place selector switch S3 in position 13	- AUXILIARY TANK LOW LEVEL light comes on
- place LEFT SENSOR SIMULATION switch 1 in FUEL position	- AUXILIARY TANK LOW LEVEL light goes off
- place selector switch S3 in position 14	- AUXILIARY TANK CALIBRATION light comes on
- place LEFT SENSOR SIMULATION switch 1 in AIR position	- AUXILIARY TANK CALIBRATION light goes off
- place selector switch S3 in position 15	
- make the following selection on LEFT SENSOR SIMULATION switches: Switch 1 Switch 2 FUEL AIR AIR AIR AIR FUEL FUEL FUEL	- AUXILIARY TANK HIGH LEVEL lights condition: on on on off
3. On test set under TEST AMPLIFIERS:	
- place selector switch S3 in OFF position	
- make sure that the LEFT SENSOR SIMULATION switches 1 and 2 are in the AIR position	
- place switch SW5 in RIGHT position	
	On test set under TEST AMPLIFIERS:

ACTION	RESULT
- place selector switch S4 in position 1	- RIGHT OUTER TANK LOW LEVEL light comes on
- place RIGHT SENSOR SIMULATION switch 3 in FUEL position	- RIGHT OUTER TANK LOW LEVEL light goes off
- place selector switch S4 in in position 4	
- make the following selection on RIGHT SENSOR SIMULATION switches: Switch 3 Switch 4 FUEL AIR AIR AIR AIR FUEL FUEL FUEL	- RIGHT OUTER TANK HIGH LEVEL light condition: on on on off
- place selector switch S4 in position 5	- RIGHT OUTER TANK OVERFLOW light comes on
- place RIGHT SENSOR SIMULATION switch 3 in AIR position	- RIGHT OUTER TANK OVERFLOW light goes off
4. On test set under TEST AMPLIFIERS: - place selector switch S4 in position 6	On test set under TEST AMPLIFIERS: - RIGHT INNER TANK LOW LEVEL light comes on
- place RIGHT SENSOR SIMULATION switch 3 in FUEL position	- RIGHT INNER TANK LOW LEVEL light goes off
- place selector switch S4 in position 7	- RIGHT INNER TANK CALIBRATION light goes off
- place RIGHT SENSOR SIMULATION switch 3 in AIR position	- RIGHT INNER TANK CALIBRATION light comes on

ACTION	RESULT
- place selector switch S4 in position 8	- RIGHT INNER TANK HIGH LEVEL light is on
- place RIGHT SENSOR SIMULATION switch 3 in FUEL position	- RIGHT INNER TANK HIGH LEVEL light goes off
- place selector switch S4 in position 9	- TAIL TANK LOW LEVEL light is off
- place RIGHT SENSOR SIMULATION switch 3 in AIR position	- TAIL TANK LOW LEVEL light comes on
- place selector switch S4 in position 10	- TAIL TANK LOW LEVEL light goes off - TAIL TANK CALIBRATION light is on
- place RIGHT SENSOR SIMULATION switch 3 in FUEL position	- TAIL TANK CALIBRATION light goes off
- place selector switch S4 in position 11	- TAIL TANK HIGH LEVEL lights come on
- place RIGHT SENSOR SIMULATION switch 3 in AIR position	- TAIL TANK HIGH LEVEL lights go off
- place selector switch S4 in position 12	- TAIL TANK OVERFLOW light is on
- place RIGHT SENSOR SIMULATION switch 3 in FUEL position	- TAIL TANK OVERFLOW light goes off
- place selector switch S4 in OFF position	
- make sure that the SENSOR SIMULATION switches are in the AIR position	

ACTION	RESULT
- place switch SW5 in COM SIGNAL position	

**ON A/C ALL

(4)Close-Up
(a)De-energize the aircraft electrical network (Ref. 24-41-00, P. Block 301).
(b)Remove cable PN 722372.
(c)Remove test set.
(d)Install fuel level sensing amplifier (8QJ) in electronic rack (Ref. 28-46-23, P. Block 401).
(e)Make certain that working area is clean and clear of tools and miscellaneous items of equipment.
(f)Close access doors 121BL and 144DR.
(g)Remove access platform.

**ON A/C 101-200,

4. Functional Test - With Test Set (PN 722427)

A. Reason for the Job

(1)To test the following sensors:
- overflow sensors in outer and trim tanks
- high level sensors in outer, inner, center and trim tanks
- low level sensors in outer, inner, center and trim tanks
- calibration sensors in inner, center and trim tanks.

(2)To test the following level sensor amplifiers:
- overflow sensor amplifiers for outer and trim tanks
- high level sensor amplifiers for outer, inner, center and trim tanks
- low level sensor amplifiers for outer, inner, center and trim tanks
- calibration sensor amplifiers for inner, center and trim tanks.

(3)To test the following ACT level sensors (if ACT installed):
- ACT high level sensors
- ACT low level sensor
- ACT calibration sensor

(4)To test the following ACT level sensor amplifiers (if ACT installed):

- ACT high level sensor amplifiers
- ACT low level sensor amplifiers
- ACT calibration sensor amplifiers.

**ON A/C 101-200,

Post SB 28-2105 For A/C 101-200,

(3)To test the following ACT(s) level sensors (if ACT(s) installed):
- ACT 1 and 2 high level sensors
- ACT 1 and 2 low level sensors
- ACT 1 and 2 calibration sensors.

(4)To test the following ACT(s) level sensor amplifiers (if ACT(s) installed):
- ACT 1 and 2 high level sensor amplifiers
- ACT 1 and 2 low level sensor amplifiers
- ACT 1 and 2 calibration sensor amplifiers.

**ON A/C 101-200,

B. Equipment and Materials

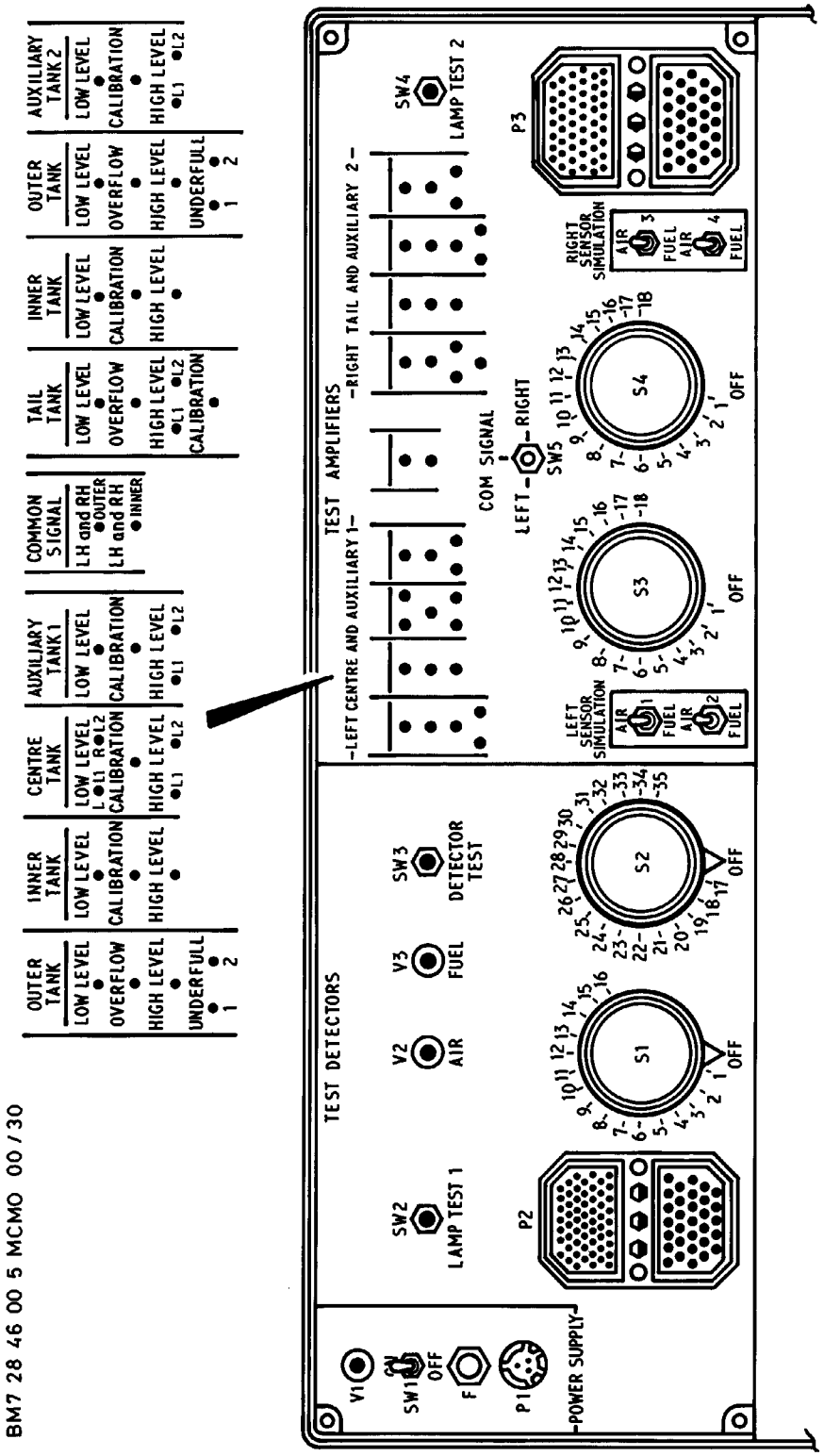
ITEM	DESIGNATION
A. 722427	Test Set
B. 722371	Cable
C. 722372	Cable
D. 790065	Cable
E.	Access Platform 2.6 m (8 ft)
Referenced Procedures	
- 24-41-00, P. Block 301	AC External Power Control
- 28-42-00, P. Block 501	Fuel Quantity Computer (15QT)
- 28-46-23, P. Block 401	Fuel Level Amplifier

C. Procedure
(Ref. Fig. 504)

(1)Job Set-Up
(a)Put the access platform in position.
(b)Open the access doors 121BL and 144DR.
(c)In the forward equipment bay, on electronics rack 96VU, remove the fuel-level sensing amplifier (8QJ) (Ref. 28-46-23, P. Block 401).

(2)Test level sensors

NOTE : The test connects each level sensing unit in the fuel tanks to an amplifier in the test set.



BM7 28 46 00 5 MCMO 00/30

Test Set
Figure 504

(a)Connect the test set PN 722427 to the rack connector (8QJ-AB) with the cable PN 722371.
(b)Connect a 28V electrical supply to the test set POWER SUPPLY 3-pin socket (P1), with the cable PN 790065.
(c)Energize the aircraft electrical network (Ref. 24-41-00, P. Block 301).
(d)On the test set, make sure that the selector switches S1 and S2 are in the OFF position.
(e)Put the test set POWER SUPPLY switch (SW1) to the ON position.
(f)Press (in) the LAMP TEST 1 switch (SW2) and make sure the indicator light (V1) comes on.
(g)Release (out) the switch (SW2), the indicator light (V1) goes out.
(h)Do the test that follows:

ACTION	RESULT
1. On test set under TEST DETECTORS: - place selector switch S1 in position 1	On test set under TEST DETECTORS - FUEL light (V3) or AIR light (V2) comes on to indicate sensor is immersed, or in air
2. If FUEL light (V3) is on : - press (in) DETECTOR TEST pushbutton switch (SW3)	- FUEL light (V3) goes off, AIR light (V2) comes on
- release (out) DETECTOR TEST pushbutton switch (SW3)	- AIR light (V2) goes off FUEL light (V3) comes on
3. If AIR light (V2) is on: - place POWER SUPPLY switch (SW1) in OFF position	- AIR light (V2) goes off
- place POWER SUPPLY switch (SW1) in ON position	- FUEL light (V3) comes on, then goes off - AIR light (V2) comes on
4. Repeat previous steps for the following selector switch positions: - 2, 3, 6 thru 16 on selector switch S1 - 17, 20 thru 27, 28 thru 31 (if ACT installed) on selector switch S2.	

ACTION	RESULT
**ON A/C 101-200, Post SB 28-2105 For A/C 101-200, - 2, thru 16 on selector switch S1 - 17 thru 27,28 thru 31 (if ACT 1 installed), 32 thru 35 (if ACT 2 installed) on selector switch S2. **ON A/C 101-200,	
5. Put the selector switches S1 and S2 in the OFF position.	- FUEL or AIR light goes off.

(k)Put the test set POWER SUPPLY switch (SW1) to the OFF position.
(l)De-energize the aircraft electrical network (Ref. 24-41-00, P. Block 301).
(m)Remove the cables PN 722371 and PN 790065 from the test set, the rack test set and the rack connector.

(3)Test amplifiers
(a)Connect the test set to the rack connector (8QJ-AB) and to the amplifier box (8QJ), with cable PN 722372.
(b)Make sure that the circuit breakers that follow are closed:

PANEL	SERVICE	IDENT.	LOCATION
22VU	FUEL TK LO LVL AND CAL/L OUTR AND R INR AND CTR R	1QJ	208/B26
22VU	FUEL TK LO LVL AND CAL/R OUTR AND L INR AND CTR L	2QJ	208/B27
132VU	FUEL/FUELLING		Line 321

(c)Energize the aircraft electrical network (Ref. 24-41-00, P. Block 301).

NOTE : Amplifiers are supplied by the aircraft power supplies, which must be on.

(d)On panel 472VU, put the LO LEVEL & ACT TEST switch in the L position and then the R position.
(e)On panel 430VU, FUEL QTY indicator, make sure that the LO LVL lights

come on.

(f) On panel 472VU, put the LO LEVEL & ACT TEST switch in the center position.

(g) On the test set:

1 Make sure that the selector switches S3 and S4 are in the OFF position and the SENSOR SIMULATION switches are in the AIR position.

2 Press (in) the LAMP TEST 2 switch (SW4) and make sure that all the TEST AMPLIFIER lights come on.

3 Release (out) the LAMP TEST 2 switch (SW4).

(h) Do the test that follows:

ACTION	RESULT
1. On test set under TEST AMPLIFIERS: - Put the switch SW5 in the LEFT position.	On test set under TEST AMPLIFIERS:
- Put the selector switch S3 in position 1.	- LEFT OUTER TANK OVERFLOW light is off.
- Put the LEFT SENSOR SIMULATION switch 1 in the FUEL position	- LEFT OUTER TANK OVERFLOW light comes on.
- Put the selector switch S3 in position 2.	- LEFT OUTER TANK OVERFLOW light goes off.
- make the selections that follow on the LEFT SENSOR SIMULATION switches: Switch 1 Switch 2 FUEL AIR AIR AIR AIR FUEL FUEL FUEL	- LEFT OUTER TANK HIGH LEVEL light condition: off off off on
- Put the selector switch S3 in position 5.	- LEFT OUTER TANK HIGH LEVEL light goes off. - LEFT OUTER TANK LOW LEVEL light is off.
- Put the LEFT SENSOR SIMULATION switch 1 in AIR position.	- LEFT OUTER TANK LOW LEVEL light comes on.
- Put the selector switch S3 in position 6.	- LEFT OUTER TANK LOW LEVEL light goes off.

ACTION	RESULT
- Put the LEFT SENSOR SIMULATION switch 1 in the FUEL position.	- LEFT INNER TANK HIGH LEVEL light comes on.
- Put the selector switch S3 in position 7.	- LEFT INNER TANK HIGH LEVEL light goes off - LEFT INNER TANK CALIBRATION light comes on.
- Put the LEFT SENSOR SIMULATION switch 1 in the AIR position.	- LEFT INNER TANK CALIBRATION light goes off.
- Put the selector switch S3 in position 8.	- LEFT INNER TANK LOW LEVEL light comes on.
- Put the LEFT SENSOR SIMULATION switch 1 in the FUEL position.	- LEFT INNER TANK LOW LEVEL light goes off.
- Put the selector switch S3 in position 9.	- CENTRE TANK LOW LEVEL light L is off.
- Put the LEFT SENSOR SIMULATION switch in the AIR position.	- CENTRE TANK LOW LEVEL light L comes on.
- Put the selector switch S3 in position 10.	- CENTRE TANK LOW LEVEL light L goes off - CENTRE TANK HIGH LEVEL lights are off.
- Put the LEFT SENSOR SIMULATION switch 1 in the FUEL position.	- CENTRE TANK HIGH LEVEL lights come on.
- Put the selector switch S3 in position 11.	- CENTRE TANK HIGH LEVEL lights go off - CENTRE TANK LOW LEVEL light R is off.
- Put the LEFT SENSOR SIMULATION switch 1 in the AIR position.	- CENTRE TANK LOW LEVEL light R comes on.
- Put the selector switch S3 in	- CENTRE TANK LOW LEVEL light R goes off

ACTION	RESULT
position 12.	- CENTRE TANK CALIBRATION light is off.
- Put the LEFT SENSOR SIMULATION switch 1 in the FUEL position.	- CENTRE TANK CALIBRATION light comes on.
- place LEFT SENSOR SIMULATION switch 1 in the AIR position.	- CENTRE TANK CALIBRATION light goes off.
2. On the test set (if ACT installed) under TEST AMPLIFIERS:	On the test set under TEST AMPLIFIERS:
**ON A/C 101-200,	
Post SB 28-2105 For A/C 101-200,	
2. On the test set (if ACT 1 installed) under TEST AMPLIFIERS:	On the test set under TEST AMPLIFIERS:
**ON A/C 101-200,	
- Put the selector switch S3 in position 13.	- AUXILIARY TANK 1 LOW LEVEL light comes on.
- Put the LEFT SENSOR SIMULATION switch 1 in the FUEL position.	- AUXILIARY TANK 1 LOW LEVEL light goes off.
- Put the selector switch S3 in position 14.	- AUXILIARY TANK 1 CALIBRATION light comes on.
- Put the LEFT SENSOR SIMULATION switch 1 in the AIR position.	- AUXILIARY TANK 1 CALIBRATION light goes off.
- Put the selector switch S3 in position 15.	

ACTION	RESULT
- Make the selections that follow on the LEFT SENSOR SIMULATION switches: Switch 1 / Switch 2 FUEL / AIR AIR / AIR AIR / FUEL FUEL / FUEL	- AUXILIARY TANK 1 HIGH LEVEL lights condition: off off off on
3. On test set under TEST AMPLIFIERS: - Put the selector switch S3 in the OFF position.	
- Make sure that the LEFT SENSOR SIMULATION switches 1 and 2 are in the AIR position.	
- Put the switch SW5 in RIGHT position.	
	On the test set under TEST AMPLIFIERS:
- place selector switch S4 in position 1.	- RIGHT OUTER TANK LOW LEVEL light comes on.
- Put the RIGHT SENSOR SIMULATION switch 3 in the FUEL position.	- RIGHT OUTER TANK LOW LEVEL light goes off.
- Put the selector switch S4 in position 4.	
- make the selections that follow on the RIGHT SENSOR SIMULATION switches: Switch 3 / Swtich 4 FUEL / AIR AIR / AIR AIR / FUEL FUEL / FUEL	- RIGHT OUTER TANK HIGH LEVEL light condition: off off off on
- Put the selector	- RIGHT OUTER TANK HIGH

ACTION	RESULT
switch S4 in position 5.	LEVEL light goes off - RIGHT OUTER TANK OVERFLOW light comes on.
- place RIGHT SENSOR SIMULATION switch 3 in the AIR Position.	- RIGHT OUTER TANK OVERFLOW light goes off.
4. On the test set under TEST AMPLIFIERS: - Put the selector switch S4 in position 6.	On the test set under TEST AMPLIFIERS: - RIGHT INNER TANK LOW LEVEL light comes on.
- Put the RIGHT SENSOR SIMULATION switch 3 in the FUEL position.	- RIGHT INNER TANK LOW LEVEL light goes off.
- Put the selector switch S4 in position 7.	- RIGHT OUTER TANK CALIBRATION light comes on.
- Put the RIGHT SENSOR SIMULATION switch 3 in the AIR position.	- RIGHT INNER TANK CALIBRATION light goes off.
- Put the selector switch S4 in position 8.	- RIGHT INNER TANK HIGH LEVEL light is off.
- Put the RIGHT SENSOR SIMULATION switch 3 in the FUEL position.	- RIGHT INNER TANK HIGH LEVEL light comes on.
- Put the selector switch S4 in position 9.	- RIGHT INNER TANK HIGH LEVEL light goes off - TAIL TANK LOW LEVEL light is off.
- Put the RIGHT SENSOR SIMULATION switch 3 in the AIR position.	- TAIL TANK LOW LEVEL light comes on.
- Put the selector switch S4 in position 10.	- TAIL TANK LOW LEVEL light goes off - TAIL TANK CALIBRATION light is off.
- Put the RIGHT SENSOR	- TAIL TANK CALIBRATION

ACTION	RESULT
SIMULATION switch 3 in the FUEL position.	light comes on.
- Put the selector switch S4 in position 11.	- TAIL TANK CALIBRATION light goes off - TAIL TANK HIGH LEVEL lights come on.
- Put the RIGHT SENSOR SIMULATION switch 3 in the AIR position.	- TAIL TANK HIGH LEVEL lights go off.
- Put the selector switch S4 in position 12.	- TAIL TANK OVERFLOW light is off.
- Put the RIGHT SENSOR SIMULATION switch 3 in the FUEL position.	- TAIL TANK OVERFLOW light comes on.
- Put the selector switch S4 in the OFF position.	- TAIL TANK OVERFLOW light goes off.
- make sure that the SENSOR SIMULATION switches are in AIR position.	
- Put the switch SW5 in COM SIGNAL position.	

**ON A/C 101-200,

Post SB 28-2105 For A/C 101-200,

5. On test set (if ACT 2 installed) under TEST AMPLIFIERS:	On test set under TEST AMPLIFIERS:
- place selector switch S4 in position 13	- AUXILIARY TANK 2 LOW LEVEL light is off
- place RIGHT SENSOR SIMULATION switch	- AUXILIARY TANK 2 LOW LEVEL light comes on

ACTION	RESULT
3 in AIR position	
- place selector switch S4 in position 14	- AUXILIARY TANK 2 LOW LEVEL light goes off - AUXILIARY TANK 2 CALIBRATION light is off
- place RIGHT SENSOR SIMULATION switch 3 in FUEL position	- AUXILIARY TANK 2 CALIBRATION light comes on
- place selector switch S4 in position 15	- AUXILIARY TANK 2 CALIBRATION light goes off
- make the following selections on RIGHT SENSOR SIMULATION switches: Switch 3 / Switch 4 FUEL / AIR AIR / AIR AIR / FUEL FUEL / FUEL	- AUXILIARY TANK 2 HIGH LEVEL light condition: off off off on

**ON A/C 101-200,

(4)Close-Up
(a)De-energize the aircraft electrical network (Ref. 24-41-00, P. Block 301).
(b)Remove cable PN 722372.
(c)Remove test set.
(d)Install fuel level sensing amplifier (8QJ) in electronic rack (Ref. 28-46-23, P. Block 401).
(e)Make certain that working area is clean and clear of tools and miscellaneous items of equipment.
(f)Close access doors 121BL and 144DR.
(g)Remove access platform.

FUEL LEVEL SENSORS HIGH AND LOW - REMOVAL/INSTALLATION

WARNING : THIS PROCEDURE USES A FUEL SYSTEM ITEM THAT IS IN A CATEGORY KNOWN AS A CRITICAL DESIGN CONFIGURATION CONTROL LIMITATION (CDCCL). CDCCL IDENTIFIES AN ITEM THAT CAN BE THE SOURCE OF A POSSIBLE FUEL TANK IGNITION. YOU MUST KEEP ALL CDCCL ITEMS IN THE APPROVED CONFIGURATION. DAMAGE, WEAR OR CHANGES TO A CDCCL ITEM CAN CAUSE A POSSIBLE FUEL TANK EXPLOSION.

LANDING GEAR - MAKE SURE THAT THE GROUND SAFETIES AND CHOCKS ARE IN POSITION.

FLIGHT CONTROLS - MAKE SURE THAT THE GROUND SAFETIES AND NOTICES ARE IN POSITION.

FLIGHT CONTROLS - MAKE SURE THAT THE TRAVEL RANGES OF THE CONTROL SURFACES ARE CLEAR.

OBSERVE THE SAFETY PRECAUTIONS IN 28-00-00, P. BLOCK 301 AND 28-10-00, P. BLOCK 301.

MAKE SURE THAT THE FIRE FIGHTING EQUIPMENT IS AVAILABLE AND IS ADEQUATE.

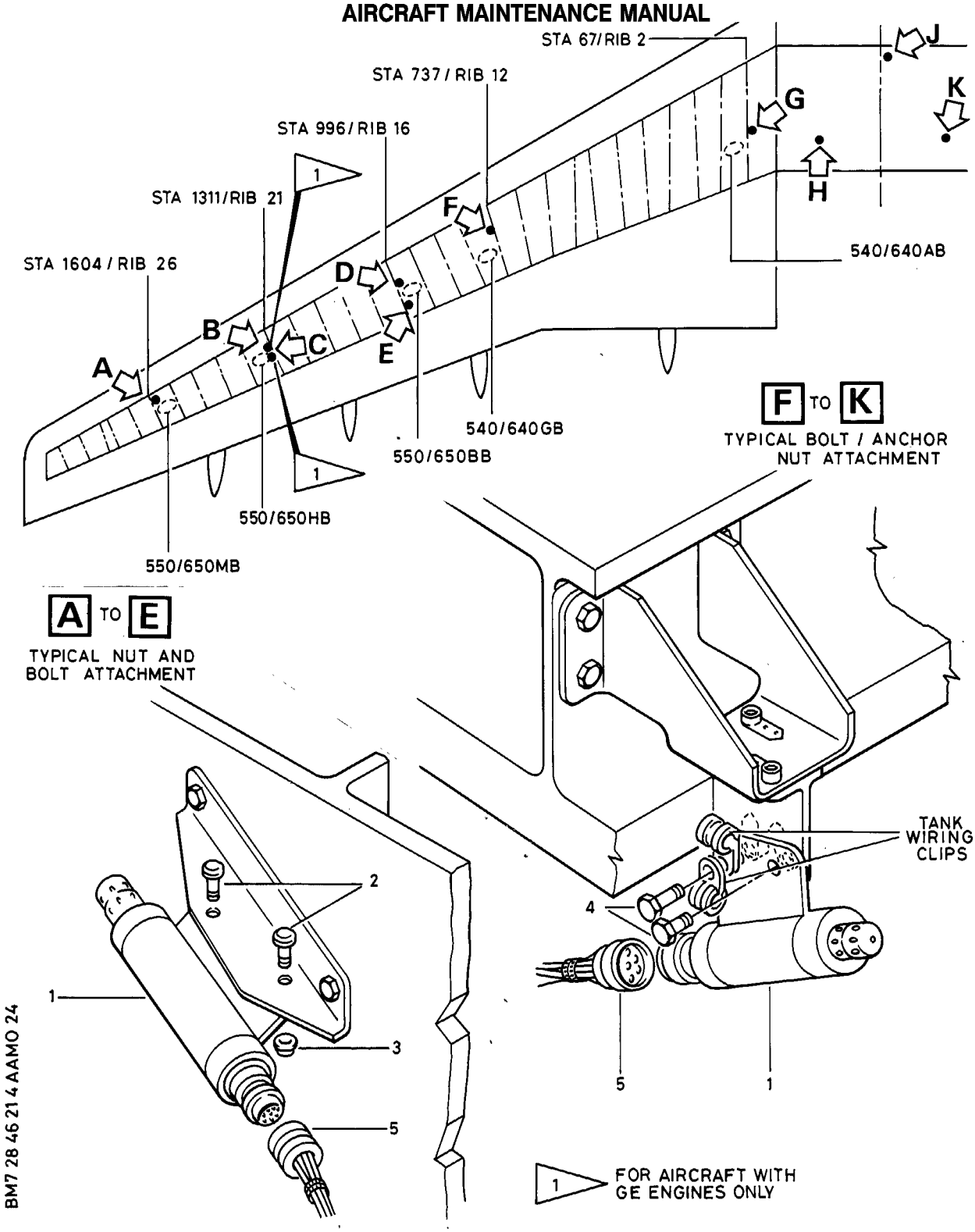
MAKE SURE THAT YOU ISOLATE THE ELECTRICAL CIRCUITS UPON WHICH WORK IS IN PROGRESS.

1. Equipment and Materials

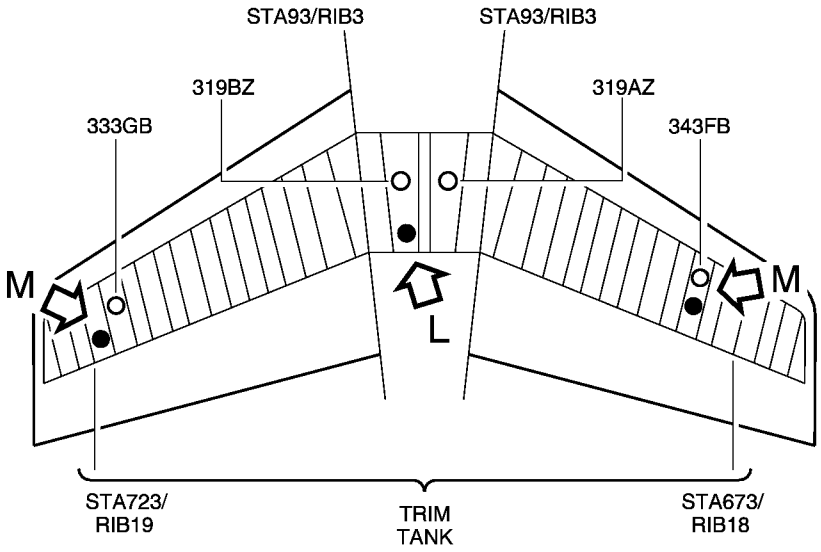
ITEM	DESIGNATION
A.	Access Platform 2 to 6 m (6 to 19 ft)
B.	Blanking Caps/Plugs
C.	Circuit Breaker Safety Clips and Tags
D.	Warning Notices Prohibiting Movement of Trimmable Horizontal Stabilizer Controls
Referenced Procedures	
- 20-28-11, P. Block 1	Electrical Bonding
- 28-00-00, P. Block 301	Fuel General
- 28-10-00, P. Block 301	Storage
- 28-11-22, P. Block 401	Manhole Cover (Wings)
R - 28-11-29, P. Block 401	Center Tank Manhole Cover
R - 28-11-33, P. Block 401	Trim Tank Manhole Cover
R - 28-46-00, P. Block 501	Tank Level Warning
R - 55-00-00, P. Block 301	Stabilizers - Standard Warnings and
R	Procedures

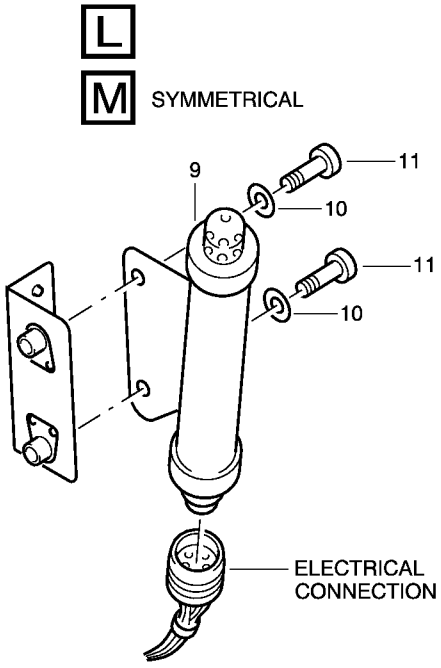
2. Procedure

(Ref. Fig. 401)
(Ref. Fig. 402)



Fuel Level Sensors - High and Low - Installation
Figure 401





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Trim Tank Fuel Level Sensors - Installation
Figure 402

R

A. Job Set-Up

CAUTION: HORIZONTAL STABILIZER DEFLECTION SPEED MUST NOT EXCEED 0.5 DEGREES PER SECOND.

(1)For trim tank low level sensor:
(a)Trim the trimmable horizontal stabilizer (THS) pitch trim manual control wheel to NOSE DOWN.
(2)Make horizontal and vertical stabilizer safe (Ref. 55-00-00, P. Block 301).
(3)Open safety and tag the following circuit breakers:

PANEL	SERVICE	IDENT.	LOCATION
22VU	FUEL/TK LO LVL AND CAL/L OUTR & R INR & CTR R	1QJ	208/B26
22VU	FUEL/TK LO LVL AND CAL/R OUTR & L INR & CTR L	2QJ	208/B27
132VU	FUEL/FUELLING/CTL & REFUEL VALVE	1QU	321/P56
132VU	FUEL/FUELLING/HI LVL	6QJ	321/P57

(4)Position access platform.
(5)Remove appropriate manhole cover, (Ref. 28-11-22, P. Block 401, 28-11-29, P. Block 401, 28-11-33, P. Block 401.

B. Removal
(1)Disconnect electrical connector from sensor. Cap electrical connector and sensor receptacle.
(2)Remove nuts (3) and bolts (2), or bolts (4) as applicable, and remove sensor (1).
(3)Center tank hi-level sensor: Remove tank wiring clips from bolt (4).
(4)Trim tank sensors: Remove bolts (11), washers (10) and remove sensor (9).

C. Installation
(1)Position sensor (1) on mounting bracket:

KEY	SENSOR	DIRECTION OF SENSOR	ATTACHING PARTS
A	OUTER TANK HI LEVEL	UP	2, 3
B	OUTER TANK UNDERFULL	UP	2, 3
C	OUTER TANK UNDERFULL	UP	2, 3
D	OUTER TANK HI LEVEL	UP	2, 3
E	OUTER TANK LO LEVEL	UP	2, 3
F	INNER TANK HI LEVEL	UP	4
G	INNER TANK LO LEVEL	DOWN	4
H	CENTER TANK LO LEVEL	DOWN	4
J	CENTER TANK HI LEVEL	UP	4
K	CENTER TANK LO LEVEL	DOWN	4
L	TRIM TANK LO LEVEL	DOWN	10,11
M	TRIM TANK HI LEVEL	UP	10,11

(2)Center tank hi-level sensor: Install tank wiring clips onto bolt (4).

(3)Secure sensor (1) to mounting bracket with bolts (2) and nuts (3), or bolts (4) as applicable.
(4)Trim tank sensors: secure sensor (9) to mounting bracket with washers (10) and bolts (11).
(5)Remove caps from electrical connector and sensor receptacle.
(6)Connect electrical connector to sensor (1).

D. Test
(1)Do the Operational Test of the Tank Level Warning System (Ref. 28-46-00, P. Block 501).

E. Close-Up
(1)Make sure that the working area is clean and clear of tools and all other items of equipment.
(2)Install the relevant manhole covers.
(3)Make certain safety clips and tags are removed and circuit breakers 1QU, 1QJ, 2QJ and 6QJ are closed.
(4)Remove access platform.
(5)Remove all ground handling and maintenance equipment, standard and special tools, together with ground power and replenish equipment, all access equipment and miscellaneous items.

OVERFLOW SENSOR - REMOVAL/INSTALLATION

WARNING : LANDING GEAR - MAKE CERTAIN GROUND SAFETIES AND CHOCKS ARE IN POSITION.

FLIGHT CONTROLS - MAKE CERTAIN GROUND SAFETIES AND NOTICES ARE IN POSITION.

OBSERVE THE SAFETY PRECAUTIONS IN 28-00-00, P. BLOCK 301 AND 28-10-00, P. BLOCK 301.

MAKE CERTAIN THAT FIRE FIGHTING EQUIPMENT IS AVAILABLE AND ADEQUATE.

1. Equipment and Materials

ITEM	DESIGNATION
R A.	Access Platform 2 m to 6 m (6 to 19 ft)
B.	Protective Caps
C.	O-ring Seal
D. Material No. 01-001	Fuels (Ref. 20-31-00)
E. Material No. 09-017	Sealants (Ref. 20-31-00)
F.	Circuit Breaker Safety Clip and Tag
Referenced Procedures	
- 28-00-00, P. Block 301	Fuel - General
- 28-10-00, P. Block 301	Storage
- 28-11-22, P. Block 401	Manhole Covers (Wings)
- 28-46-00, P. Block 501	Tank Level Warning

2. Procedure
(Ref. Fig. 401)

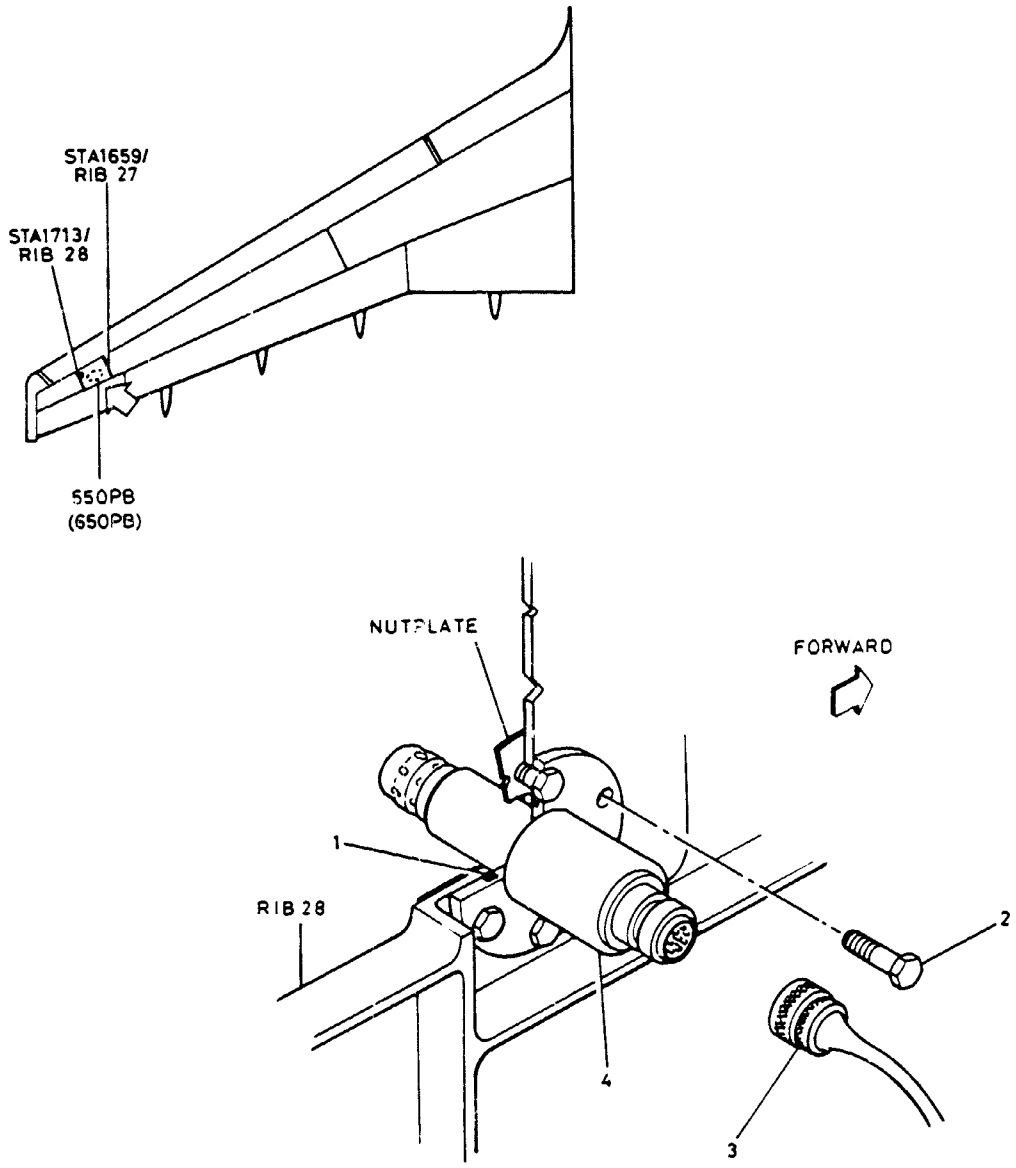
A. Job Set-Up
(1)Open, safety and tag the following circuit breaker:

PANEL	SERVICE	IDENT.	LOCATION
132VU	FUEL/FUELLING/OVERFLOW & CAL	5QJ	321/P58

(2)Position access platform.
(3)Remove manhole cover 550(650)PB (Ref. 28-11-22, P. Block 401).

B. Removal
(1)Disconnect electrical connector (3) from sensor (4). Cap electrical connector and sensor receptacle.
(2)Remove bolts (2) and withdraw sensor (4) from rib. Discard O-ring seal (1).

C. Installation
(1)Lubricate new seal (1) with fuel (Material No.01-001) and install on sensor (4).



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Overflow Sensors - Installation
Figure 401

(2)Make certain interfaces of rib and sensor (4) are clean and in correct condition.
(3)Insert sensor (4) into rib 28.
(4)Install bolts (2) and tighten to secure sensor (4).
(5)Uncap electrical connector (3) and sensor receptacle and connect electrical connector (3) to sensor (4).
(6)Seal the heads of bolts (2) with sealant (Material No.09-017).
(7)Remove safety clip and tag and close circuit breaker 5QJ.

D. Test
(1)Refer to 28-46-00, P. Block 501 Tank High Level and Overflow Warning Operational Test.

E. Close-Up
(1)Make certain that working area is clean and clear of tools and miscellaneous items of equipment.
(2)Install manhole cover 550(650)PB (Ref. 28-11-22, P. Block 401).
(3)Remove access platform.

FUEL LEVEL AMPLIFIER - REMOVAL/INSTALLATION

WARNING: LANDING GEAR - MAKE CERTAIN GROUND SAFETIES AND CHOCKS ARE IN POSITION.

FLIGHT CONTROLS - MAKE CERTAIN GROUND SAFETIES AND NOTICES ARE IN POSITION.

OBSERVE THE SAFETY PRECAUTIONS IN 28-00-00, P. BLOCK 301.

MAKE CERTAIN THAT FIRE FIGHTING EQUIPMENT IS AVAILABLE AND ADEQUATE.

BEFORE POWER IS SUPPLIED TO THE AIRCRAFT
MAKE CERTAIN THAT ELECTRICAL
CIRCUITS UPON WHICH WORK IS IN PROGRESS ARE ISOLATED.

1. Equipment and Materials

ITEM	DESIGNATION
A.	Blanking Caps/Plugs
B.	Circuit Breaker Safety Clips and Tags
C.	Access Platform 2 m (6.6 ft)
Referenced Procedures	
- 28-00-00, P. Block 301	Fuel - General
- 28-10-00, P. Block 301	Storage
R - 28-42, P. Block 1	TSM - Fuel Level Sensing
- 28-46-00, P. Block 501	Tank Level Warning

2. Procedure

(Ref. Fig. 401)

A. Job Set-Up

(1)Open, safety and tag the following circuit breakers:

PANEL	SERVICE	IDENT.	LOCATION
22VU	FUEL/TK LO LVL AND CAL/L OUTR & R INR & CTR R	1QJ	208/B26
22VU	FUEL/TK LO LVL AND CAL/R OUTR & L INR & CTR L	2QJ	208/B27
132VU	FUEL/FUELLING/OVERFLOW AND CAL	5QJ	321/P58
132VU	FUEL/FUELLING/HI/LVL	6QJ	321/P57

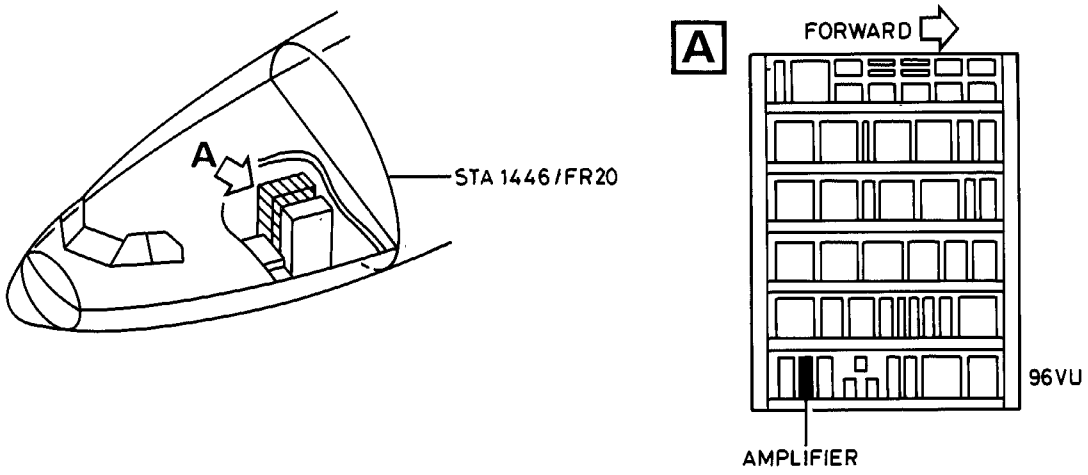
(2)Position access platform in zone 122.

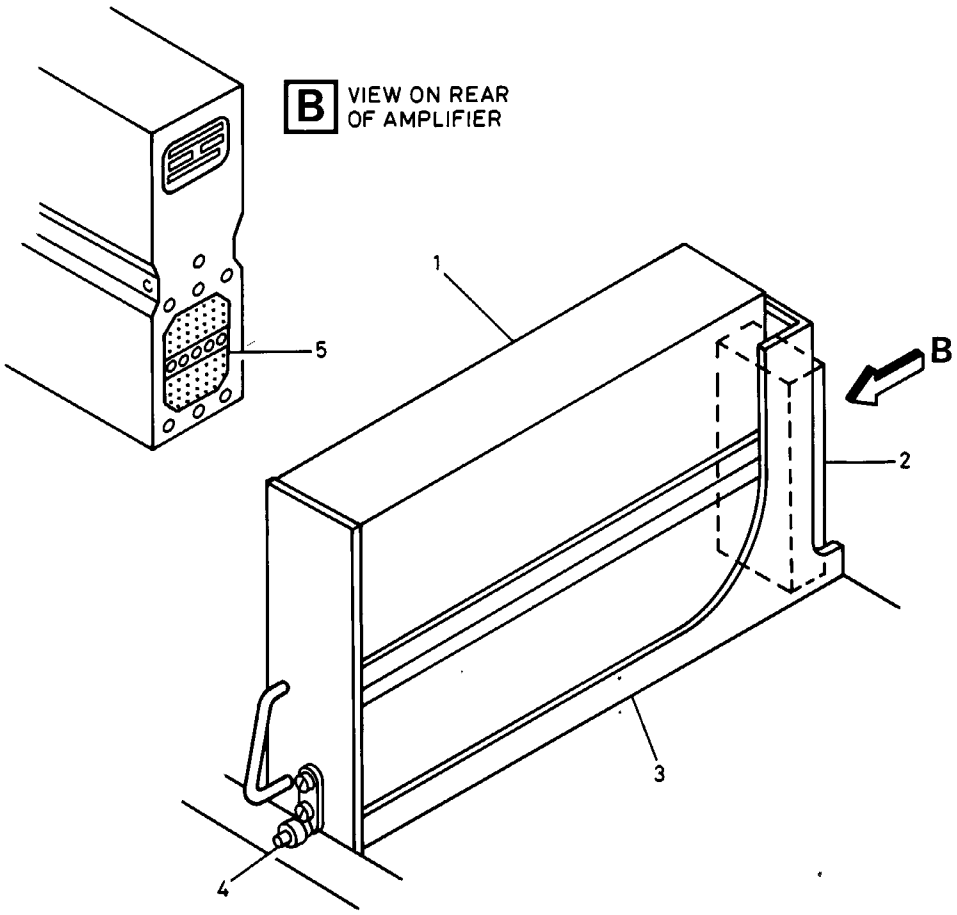
(3)Gain access to the electronics racks in zone 122 by opening Avionics compartment door 121BL.

B. Removal (Ref. Fig. 401)

(1)Unscrew nut (4) and withdraw amplifier (1) from mounting tray (3).

(2)Cap electrical connectors (5 and 2).





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Fuel Level Amplifier - Installation
Figure 401

C. Installation

(1)Remove caps from electrical connector (5) on amplifier (1) and electrical connector (2) on mounting tray (3). Check for condition.

(2)Slide amplifier (1) onto mounting tray (3). Make certain the electrical connectors (5 and 2) are fully engaged.

(3)Secure amplifier (1) to mounting tray (3) with nut (4).

D. Test

R (1)Do these Operational Tests:

R - outer tank low level sensor test with fuel

R - trim tank high level sensors test with fuel

R (Ref. 28-46-00, P. Block 501).

R NOTE : If the Operational Tests are unsatisfactory, the Functional Test with Test Set can be done, together with the Trouble Shooting Manual, (Ref. TSM 28-42, P. Block 1) to find the problem.

E. Close-Up

(1)Remove the safety clips and tags and close the circuit breakers 1QJ, 2QJ, 5QJ and 6QJ.

(2)Make sure that the work area is clean and clear of tools and miscellaneous items of equipment.

(3)Close and lock the avionics compartment door 121BL.

(4)Remove all the ground handling and maintenance equipment, standard and special tools, (together with the ground power and replenish equipment), all access equipment, and miscellaneous items.

FUEL CALIBRATION SENSORS INNER & CENTER TANKS - REMOVAL/INSTALLATION

WARNING : LANDING GEAR - MAKE CERTAIN GROUND SAFETIES AND CHOCKS ARE IN POSITION.

FLIGHT CONTROLS - MAKE CERTAIN GROUND SAFETIES AND NOTICES ARE IN POSITION.

OBSERVE SAFETY PRECAUTIONS IN 28-00-00, P. BLOCK 301 AND 28-10-00, P. BLOCK 301.

MAKE CERTAIN FIRE FIGHTING EQUIPMENT IS AVAILABLE AND ADEQUATE.

BEFORE POWER IS SUPPLIED TO THE AIRCRAFT MAKE CERTAIN ELECTRICAL CIRCUITS UPON WHICH WORK IS IN PROGRESS ARE ISOLATED.

1. Equipment and Materials

ITEM	DESIGNATION
A.	Access Platform 6 m (19 ft)
B.	Blanking Plug/Caps
C.	Circuit Breaker Safety Clips and Tags
D.	Spark Proof Lamp
Referenced Procedures	
- 12-11-28, P. Block 301	Replenishing of Fuel Tanks
- 27-40-00, P. Block 501	Trimmable Horizontal Stabilizer
- 28-00-00, P. Block 301	Fuel - General
- 28-10-00, P. Block 301	Storage
- 28-11-22, P. Block 401	Manhole Covers (Wings)
- 28-11-29, P. Block 401	Center Tank Manhole Cover
- 28-25-00, P. Block 301	Refuel/Defuel System
- 31-46-00, P. Block 501	Center of Gravity Control System
- 32-12-11, P. Block 301	Main Gear Main Door

2. Procedure

R
R

A. Job Set-Up
(1)Center tank
(a)Defuel the center tank (Ref. 28-25-00, P. Block 301).
(b)Open, safety and tag the circuit breakers that follow:

PANEL	SERVICE	IDENT.	LOCATION
22VU	FUEL/TK LO LVL AND CAL/L OUTR & R INR & CTR R	1QJ	321/B26
22VU	FUEL/TK LO LVL AND CAL/R OUTR & L INR & CTR L	2QJ	321/B27
132VU	FUEL/FUELLING HI LVL	6QJ	321/P57

PANEL	SERVICE	IDENT.	LOCATION
132VU	FUEL/FUELLING OVERFLOW AND CAL	5QJ	321/P58

R **ON A/C 001-100,

(c)Open main gear door (Ref. 32-12-11, P. Block 301).
(d)Position access platform.
(e)Remove center tank manhole cover 147AZ/148AZ (Ref. 28-11-29, P. Block 401).
(f)Gain access to center tank and observe prescribed safety precautions (Ref. 28-00-00, P. Block 301 and 28-10-00, P. Block 301).

(2)Inner tank.
(a)Transfer fuel from tank or defuel tank (Ref. 28-25-00, P. Block 301) as appropriate.
(b)Open, safety and tag the following circuit breakers:

R **ON A/C 101-200,

(c)Open the main-landing-gear bay door (Ref. 32-12-11, P. Block 301).
(d)Position the access platform.
(e)Remove the center tank manhole cover 147AZ (Ref. 28-11-29, P. Block 401).
(f)Gain access to the center tank and observe the prescribed safety precautions (Ref. 28-00-00 and 28-10-00, P. Block 301).

(2)Inner tank.
(a)Transfer the fuel from the tank or defuel the tank (Ref. 28-25-00, P. Block 301) as appropriate.
(b)Open, safety and tag the following circuit breakers:

R **ON A/C ALL

PANEL	SERVICE	IDENT.	LOCATION
22VU	FUEL/TK LO LVL AND CAL/L OUTR & R INR & CTR R	1QJ	321/B26
22VU	FUEL/TK LO LVL AND CAL/R OUTR & L INR & CTR L	2QJ	321/B27
132VU	FUEL/FUELLING HI LVL	6QJ	321/P57
132VU	FUEL/FUELLING OVERFLOW AND CAL	5QJ	321/P58

R **ON A/C 001-100,

(c)Position the access platform.

(d)Remove the appropriate manhole cover 540AB(640AB) (Ref. 28-11-22, P. Block 401).
(e)Gain access to the inner tank and observe the prescribed safety precautions (Ref. 28-00-00, P. Block 301 and 28-10-00, P. Block 301).

TABLE 1

DETAIL (FIGURE 401)	SENSOR IDENT.	CIRCUIT COVER	MANHOLE
A	INNER TANK CALIBRATION	86QJ1(86QJ2)	540(640)AB
B	CENTER TANK CALIBRATION	89QJ	147AZ/148AZ

NOTE: Use Table 1 in conjunction with the following operations, as correct sensor orientation must be maintained.

B. Removal

R **ON A/C 101-200,

(c)Position the access platform.
(d)Remove the appropriate manhole cover 540AB(640AB) (Ref. 28-11-22, P. Block 401).
(e)Gain access to the inner tank and observe the prescribed safety precautions (Ref. 28-00-00, P. Block 301 and 28-10-00, P. Block 301).

TABLE 1

DETAIL (FIGURE 401)	SENSOR IDENT.	CIRCUIT COVER	MANHOLE
A	INNER TANK CALIBRATION	86QJ1(86QJ2)	540(640)AB
B	CENTER TANK CALIBRATION	89QJ	147AZ

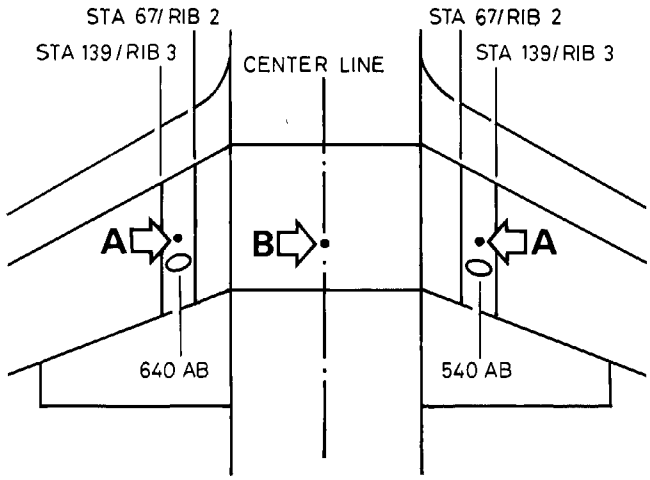
NOTE: Use Table 1 in conjunction with the following operations, as the correct sensor orientation must be maintained.

B. Removal

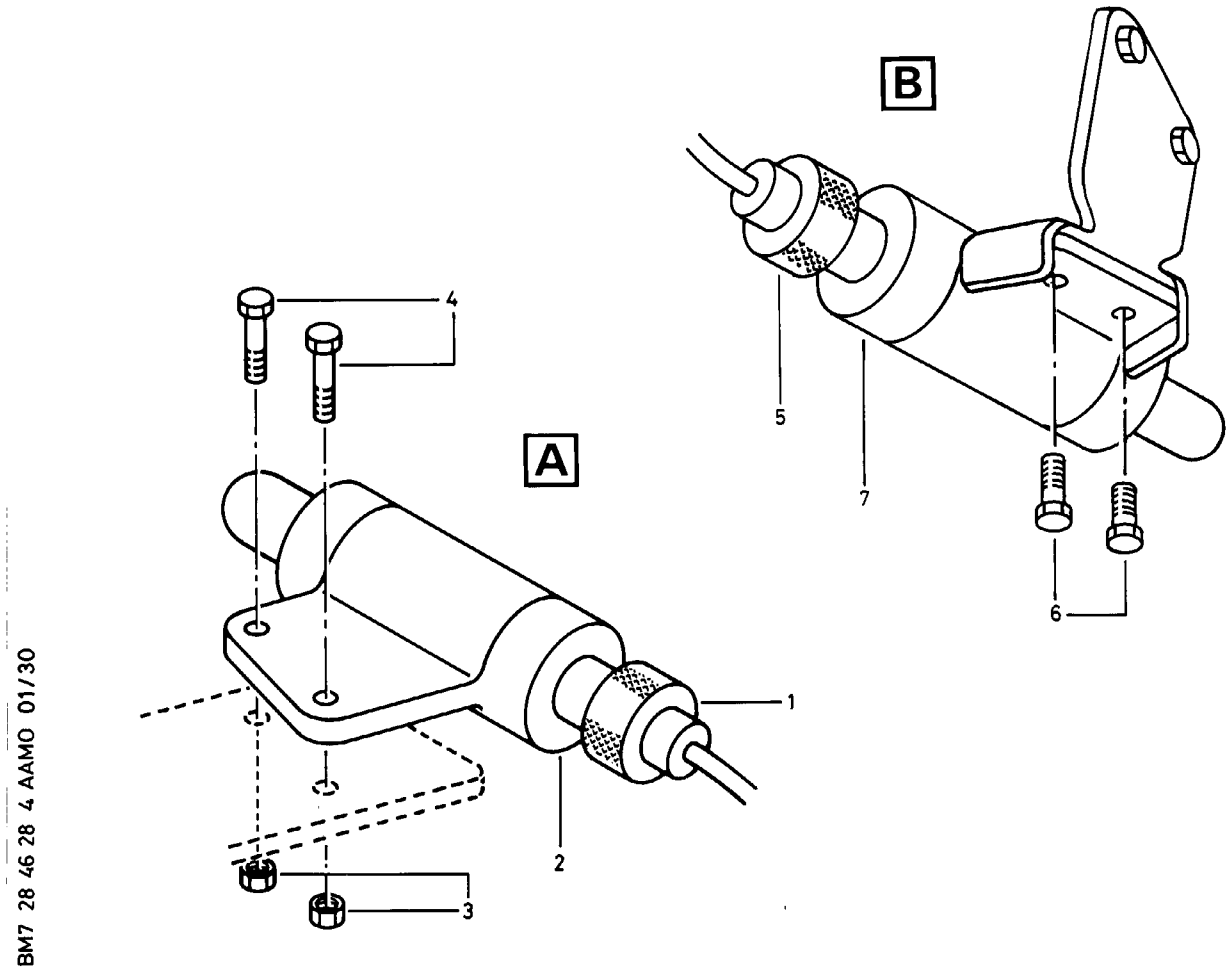
R **ON A/C ALL

(Ref. Fig. 401)

(1)Center tank calibration sensor.
(a)Disconnect the electrical connector (5) from the sensor receptacle and cap the electrical connector and the sensor receptacle.
(b)Remove the bolts (6) and remove the sensor (7).



VIEW ON UNDERSURFACE



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Fuel Calibration Sensor - Installation
Figure 401

(2)Inner tank calibration sensor.
(a)Disconnect the electrical connector (1) from the sensor (2) and cap the electrical connector and the sensor receptacle.
(b)Remove the nuts (3) and the bolts (4) and remove the sensor (2).

C. Installation

(1)Center tank calibration sensor.
(a)Secure the sensor (7) to the mounting bracket with the bolts (6).
(b)Remove the caps from the electrical connector (5) and the sensor receptacle and connect the electrical connector (5) to the sensor (7).
(c)Install the applicable manhole cover (Ref. 28-11-29, P. Block 401).

(2)Inner tank calibration sensor.
(a)Secure the sensor (2) to the mounting bracket with the nuts (3) and the bolts (4).
(b)Remove the caps from the electrical connector (1) and the sensor receptacle and connect the electrical connector (1) to the sensor (2).
(c)Install the manhole cover 540/640AB (Ref. 28-11-22, P. Block 401).

D. Preparation for Test
(1)Make sure that the Trimmable Horizontal Stabilizer is set to an angle of 0 degrees (Ref. 27-40-00, P. Block 501).
(2)Remove the safety clips and tags and close the circuit breakers 1QJ, 2QJ, 5QJ and 6QJ.
(3)Manually refuel the aircraft with the system energized (Ref. 12-11-28, P. Block 301) to achieve the following minimum fuel states:

TABLE 2

L INR TK	CENTER	R INR TK	TRIM TK
1100 Kg	3000 Kg	1100 Kg	870 Kg

E. Test
(1)Do the Bite test of the Center of Gravity Control System (Ref. 31-46-00, P. Block 501).

F. Close-Up
(1)Transfer all the trim tank fuel into the center tank (Ref. 28-25-00, P. Block 301).
(2)Refuel or defuel the aircraft to the required fuel load (Ref. 12-11-28 or 28-25-00, P. Block 301).
(3)Remove the access platform.
(4)Make sure that the work area is clean and clear of tools and miscellaneous items of equipment.

WARNING : LANDING GEAR-MAKE CERTAIN THAT GROUND SAFETIES AND CHOCKS ARE IN POSITION.
FLIGHT CONTROLS-MAKE CERTAIN THAT GROUND SAFETIES AND NOTICES ARE IN POSITION.
OBSERVE THE SAFETY PRECAUTIONS IN 28-00-00, P.BLOCK 301, AND 28-10-00, P.BLOCK 301.
MAKE CERTAIN THAT FIRE FIGHTING EQUIPMENT IS AVAILABLE AND ADEQUATE.

BEFORE POWER IS SUPPLIED TO THE AIRCRAFT MAKE CERTAIN THAT ELECTRICAL CIRCUITS UPON WHICH WORK IS IN PROGRESS ARE ISOLATED.

1. Equipment and Materials

ITEM	DESIGNATION
A.	Access Platform 2 m to 6 m (6 ft to 19 ft)
B.	Blanking Caps/Plugs
C.	Circuit Breaker Safety Clips and Tags.
D.	Warning Notices Prohibiting Movement of Trimmable Horizontal Stabilizer Contols.
Referenced Procedures	
- 28-00-00, P. Block 301	Fuel - General
- 28-11-33, P. Block 401	Manhole Covers - Trim Tank
- 28-25-00, P. Block 301	Refuel/Defuel System
- 31-46-00, P. Block 501	Center of Gravity Control System
- 55-00-00, P. Block 301	Stabilizers General-Standard Warnings and Procedures

2. Procedure

A. Job Set-Up
(1)Remove fuel and drain Trim Tank (Ref. 28-25-00, P.Block 301).
CAUTION : HORIZONTAL STABILIZER DEFLECTION SPEED MUST NOT EXCEED 0.5 DEGREES PER SECOND.
(2)Turn Trimmable Horizontal Stabilizer (THS) pitch trim manual control wheel to NOSE DOWN.
(3)Make horizontal stabilizer safe (Ref. 55-00-00, P.Block 301).
(4)Open, safety and tag the following circuit breakers :

PANEL	SERVICE	IDENT.	LOCATION
22VU	FUEL/TK LO LVL/L OUTR & R INR & CTR R	1QJ	208/B26
22VU	FUEL/TK LO LVL/R OUTR & L INR & CTR L	2QJ	208/B27
128VU	FUEL/FUELING/OVERFLOW	5QJ	L36
132VU	FUEL/FUELING/CTL & REFUEL VALVE	1QU	321/P56
132VU	FUEL/FUELING/HI LVL	6QJ	321/P57

(5)Put access platform in position and remove access doors 312 AR and 313 AL
(6)Remove manhole 319 AZ/BZ (Ref. 28-11-33).
(7)Install manhole seal, protection ring.
(8)Display warning notices prohibiting operation of THS.

B. Removal (Ref. Fig. 401)
(1)Disconnect electrical connector (1) from sensor (2).
(2)Install blanking cap/plug to connector and sensor.
(3)Hold sensor (2) and remove bolts (3) and washers (4) attaching sensor (2) to mounting bracket (5)
(4)Remove sensor (2).

C. Preparation for Installation (Ref. Fig. 401)
(1)Clean installation area, bolts, washers and mounting bracket (Mat 11-003)

D. Installation (Ref. Fig. 401)

(1)Put the sensor (2) onto its mounting bracket (5) with the sensor pointing down.
(2)Install the sensor (2) with bolts (3) and washers (4).
(3) Remove blanking cap/plugs from sensor (2) and connector (1).
(4)Install connector (1) to sensor (2).

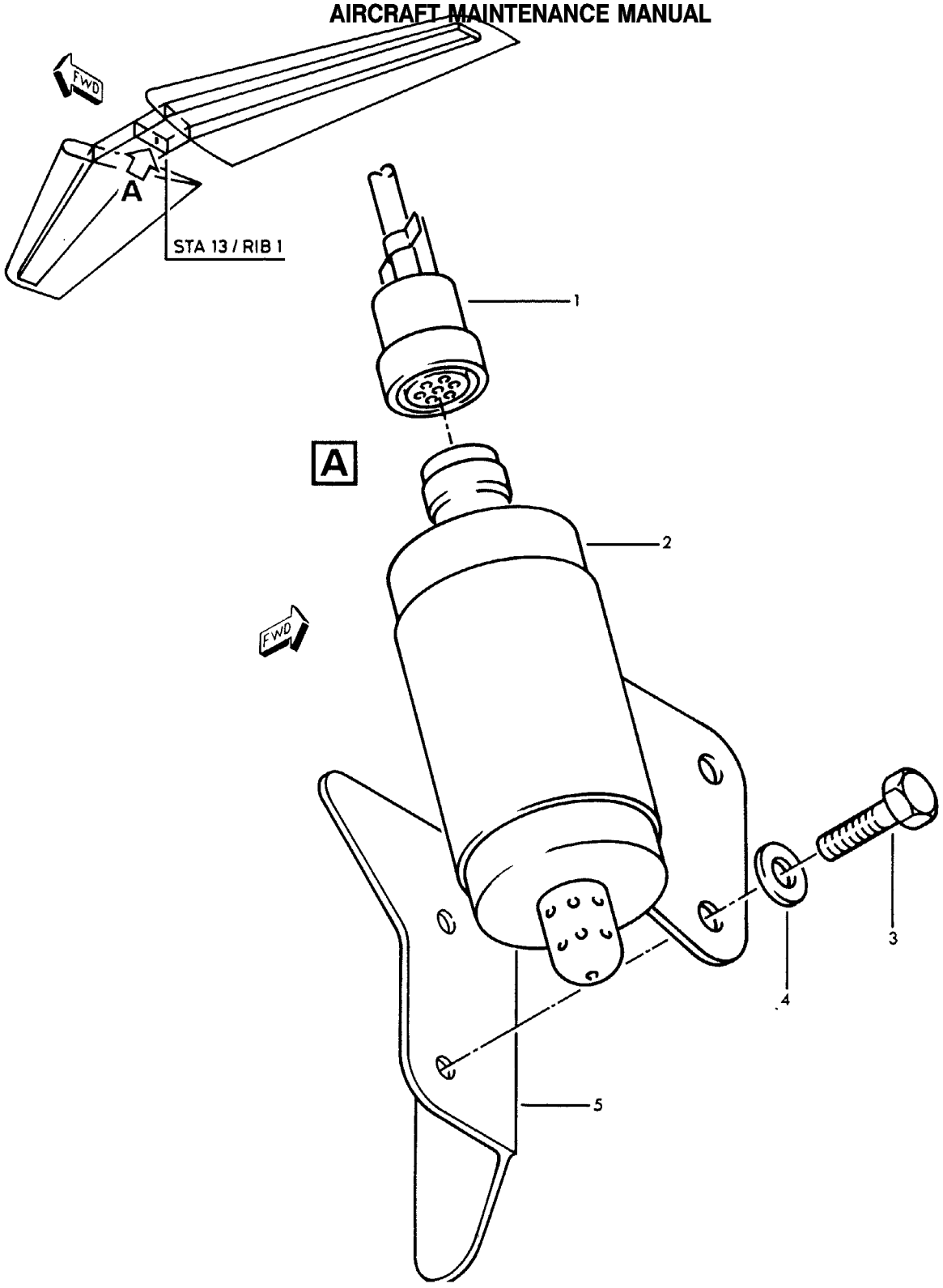
E. Test

(1)Do an operational test of the CGCS level sensing system (Ref. 31-46-00, P.Block 501)

F. Close-Up

(1)Make certain that the working area is clean and clear of tools and

miscellanous items of equipment.
(2)Install manhole covers 319AZ/BZ (Ref. 28-11-33 P.Block 401).
(3)Remove safety clips and tags and close circuit breakers;
1QJ, 2QJ, 5QJ, 6QJ and 1QU.
(4)Return Stabilizers to Operating Condition
(Ref. 55-00-00, P. Block 310).
(5)Remove access platform.
(6)Remove warning notices.



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Calibration Sensor
Figure 401

FUEL LEVEL SENSORS 81QJ, 82QJ, 85QJ REMOVAL/INSTALLATION

WARNING: LANDING GEAR -MAKE SURE THAT THE GROUND SAFETIES AND NOTICES ARE IN POSITION.
FLIGHT CONTROS -MAKE SURE THAT THE GROUND SAFETIES AND NOTICES ARE IN POSITION.
OBSERVE SAFETY PRECAUTIONS IN FUEL CHAPTER 28-00-00 P.BLOCK 301.
BEFORE POWER IS SUPPLIED TO THE AIRCRAFT MAKE SURE THAT THE ELECTRICAL CIRCUITS UPON WHICH WORK IS IN PROGRESS ARE ISOLATED.

R 1. Equipment and Materials

ITEM	DESIGNATION
A.	Access Platform 2 mm to 6 mm (6 ft to 19 ft)
B.	Blanking Caps/Plugs
C.	Circuit-Breaker Safety Clips and Tags
D.	Manhole Seal Protection Ring
E.	Warning Notices Prohibiting Movement of THS Controls
F. Material No. 11-003	Cleaning Agents (Ref. 20-31-00)
Referenced Procedures:	
- 28-00-00 P.Block 301	Fuel General
- 28-11-33 P.Block 401	Covers Manhole Trim Tank
- 28-25-00 P.Block 301	Refuel/Defuel System
- 28-46-00 P.Block 501	Tank level warning
- 55-00-00 P.Block 301	Stabilizers General-Standard Warnings and Procedures.

2. Procedure

A. Job Set-Up

(1) Remove fuel and drain Trim Tank (Ref. 28-25-00 P.Block 301)

CAUTION: HORIZONTAL STABILIZER DEFLECTION SPEED MUST NOT EXCEED 0.5 DEGREES PER SECOND.

(2) Turn Trimmable Horizontal Stabilizer (THS) pitch trim manual control wheel to **NOSE DOWN.**

(3) Make THS safe (Refer. 55-00-00 P.Block 301).

(4) Open, safety and tag the following circuit breakers:

PANEL	SERVICE	IDENT	LOCATION
22VU	FUEL/TK LO LVL/L OUTR and R INR and CTR R	1QJ	208/B26
22VU	FUEL/TK LO LVL/L OUTR and L INR and CTR L	2QJ	208/B27
128VU	FUEL/FUELING/OVERFLOW	5QJ	L36
132VU	FUEL/FUELING/CTL AND REFUEL VALVE	1QU	321/P56
132VU	FUEL/FUELING/HI LVL	6QJ	321/P57

(5) Put access platform in position and remove applicable manhole cover (Ref 28-11-33 P.Block 401)
(6) Install manhole seal protection ring.
(7) Display warning notices prohibiting operation of THS

B. Removal (Ref. Fig. 401)
(Ref. Fig.) *
(1) As applicable disconnect electrical connector (1), (8) or (11) from sensor (2), (7) or (15).
(2) Install blanking caps/plugs to connector and sensor.
(3) Hold sensor (2), (7) or (15) and remove bolts (3), (9) or (12) and washers (4), (10) or (13) attaching sensor to mounting bracket (5), (6) or (14).
(4) Remove applicable sensor (2), (7) or (15).

C. Preparation for Installation (Ref. Fig. 401)
(Ref. Fig.) *
(1) Clean installation area, bolts, washers and mounting bracket (Mat No. 11-003).

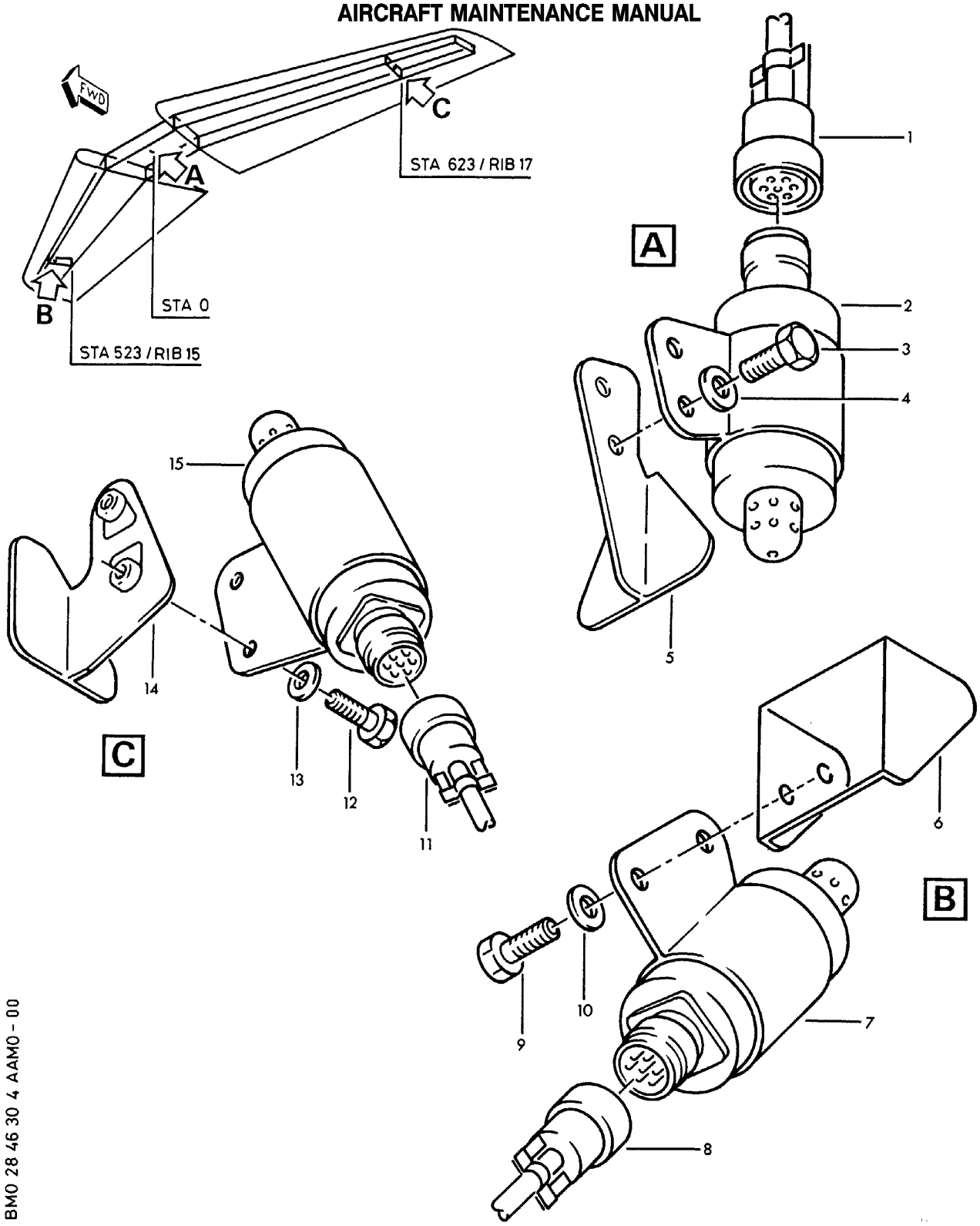
D. Installation (Ref. Fig. 401)
(Ref. Fig.) *
(1) Put applicable sensor (2), (7) or (15) onto its mounting bracket (5), (6) or (14).

NOTE: High level sensors point up, low level sensor point down.

(2) Install the sensor (2), (7) or (15) with bolts (3), (9) or (12) and washers (4), (10) or (13).
(3) Remove blanking caps/plugs from sensor (2) (7) or (15) and connector (1), (8) or (11).
(4) Install connector to sensor.

E. Test
(1) Do an operational test of the fuel level sensing system (Ref. 28-46-00 P.Block 501).

F. Close-Up
(1) Make sure that the work area is clean and clear of tools and other items.
(2) Remove manhole seal protection ring and install manhole cover (Ref 28-11-33 P.Block 401)
(3) Remove safety clips and tags and close circuit breakers 1QJ, 2QJ, 5QJ, 6QJ and 1QU.
(4) Return Stabilizer to Operating Condition (Ref. 55-00-00 P.Block 301).
(5) Remove access platform.
(6) Remove warning notices.



Fuel Level Sensors
Figure 401

OVERFLOW SENSOR 83QJ-REMOVAL/INSTALLATION

WARNING : LANDING GEAR-MAKE CERTAIN THAT GROUND SAFETIES AND NOTICES ARE IN POSITION.
FLIGHT CONTROLS-MAKE CERTAIN THAT GROUND SAFETIES AND NOTICES ARE IN POSITION.
OBSERVE THE SAFETY PRECAUTIONS IN FUEL CHAPTER 28-00-00, P. BLOCK 301, AND 28-10-00, P.BLOCK 301.

BEFORE POWER IS SUPPLIED TO THE AIRCRAFT MAKE CERTAIN THAT ELECTRICAL CIRCUITS UPON WHICH WORK IS IN PROGRESS ARE ISOLATED.

1. Equipment and Materials

ITEM	DESIGNATION
A.	Access Platform 2 m to 6 m (6 ft to 19 ft)
B.	Blanking Caps/Plugs
C.	Circuit Breaker Safety Clips and Tags.
D.	Manhole Seal Protecting Ring
E.	Warning Notices Prohibition Movement of Trimmable Horizontal Stabilizer Contols.
F.	O. Ring Seal.
G. Material No. 09-001/2	Sealants (Ref. 20-31-00)
H. Material No. 11-003	Cleaning Agents (Ref. 20-31-00)
J. Material No. 01-003	Lubricant (Ref. 20-31-00).
Referenced Procedures	
- 28-00-00, P. Block 301	Fuel General
- 28-11-33, P. Block 401	Manhole Covers - Trim Tank
- 28-25-00, P. Block 301	Fuel Tank Defueling
- 28-46-00, P. Block 501	Fuel Level Warning
- 55-00-00, P. Block 301	Stabilizers General _ Standard Warning and Procedures

2. Procedure

A. Job Set-Up
(1)Remove fuel and drain Trim Tank (Ref. 28-25-00, P.Block 301).
CAUTION : HORIZONTAL STABILIZER DEFLECTION SPEED MUST NOT EXCEED 0.5 DEGREES PER SECOND.
(2)Turn Trimmable Horizontal Stabilizer (THS) pitch trim manual control wheel to NOSE DOWN.
(3)Make horizontal stabilizer safe (Ref. 55-00-00, P.Block 301).
(4)Open, safety and tag the following circuit breakers :

PANEL	SERVICE	IDENT.	LOCATION
22VU	FUEL/TK LO LVL/L OUTR & R INR & CTR R	1QJ	208/B26
22VU	FUEL/TK LO LVL/R OUTR & L INR & CTR L	2QJ	208/B27
128VU	FUEL/FUELING/OVERFLOW	5QJ	L36
132VU	FUEL/FUELING/CTL & REFUEL VALVE	1QU	321/P56
132VU	FUEL/FUELING/HI LVL	6QJ	321/P57

(5)Display warning notices prohibiting operation of THS.
(6)Put access platform in position.
(7)Remove manhole /343 GB (Ref. 28-11-33 P. Block 401) and install manhole seal protection ring.

B. Removal (Ref. Fig. 401)
(1)Disconnect electrical connector (3) from sensor (4).
(2)Install blanking cap/plug connector (3) and sensor (4).
(3)Remove bolts (2) and washers (1), remove sensor 84) from rib structure (6)
(4)Discard O-ring seal (5)

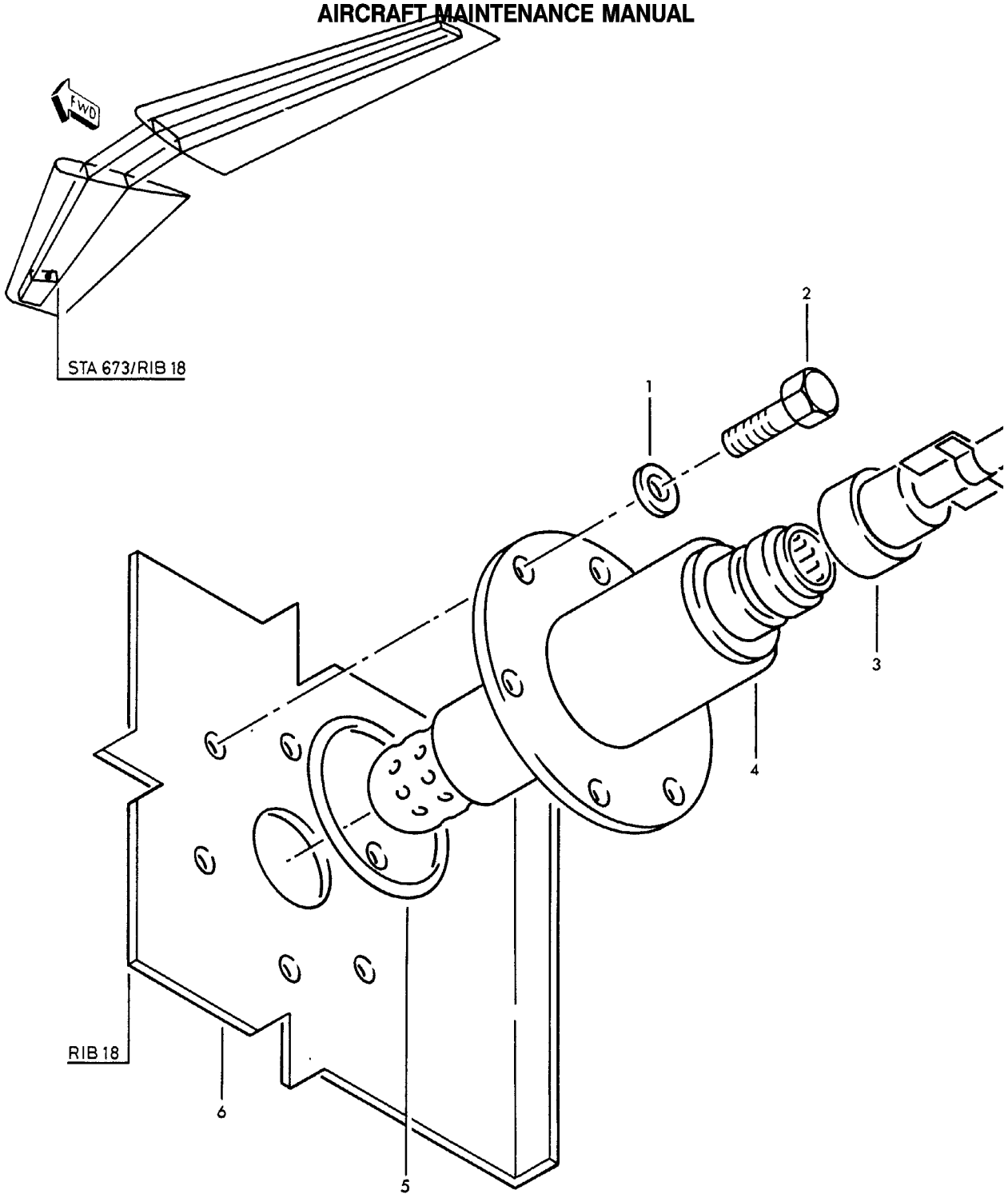
C. Preparation for Installation (Ref. Fig. 401)
(1)Make certain that mating surfaces of the rib (6) and sensor (4) and clean and in correct condition.
(2)Make certain that anchor nuts on rib (6) are not damaged renew as necessary.
(3)Lubricate new O-ring seal (5) with material No. 01-003 and install on sensor (4).

D. Installation (Ref. Fig. 401)
(1)Install sensor (4) onto rib structure (6)
(2)Install the bolts (2) and washers (1), tighten bolts (2). to secure sensor (4) and seal bolts heads with Material 09-001/2.
(3)Remove blanking cap/plugs from connector (3) and sensor (4).
(4)Connect electrical connector (3) to sensor (4).

E. Test
(1)Do an operational test of the fuel level sensing system (Ref. 28-46-00, P.Block 501)

F. Close-Up

(1)Make certain that the working area is clean and clear of tools and miscellanous items of equipment.
(2)Remove manhole seal protection ring and install manhole cover 343 GB (Ref. 28-11-33).
(3)Remove safety clips and tags and close circuit breakers; 1QJ, 2QJ, 5QJ, 6QJ and 1QU.
(4)Return Stabilizers to Operating Condition (Ref. 55-00-00, P. Block 310).
(5)Remove access platform.
(6)Remove warning notices.



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Overflow Sensor
Figure 401

TEMPERATURE SENSOR, FUEL (1QR) - REMOVAL/INSTALLATION

WARNING: LANDING GEAR. MAKE CERTAIN GROUND SAFETIES AND CHOCKS ARE IN POSITION.

FLIGHT CONTROLS - MAKE CERTAIN GROUND SAFETIES AND NOTICES ARE IN POSITION.

OBSERVE THE SAFETY PRECAUTIONS IN 28-00-00, P. BLOCK 301.

MAKE CERTAIN THAT FIRE FIGHTING EQUIPMENT IS AVAILABLE AND ADEQUATE.

BEFORE POWER IS SUPPLIED TO THE AIRCRAFT MAKE CERTAIN THAT ELECTRICAL CIRCUITS UPON WHICH WORK IS IN PROGRESS ARE ISOLATED.

1. Equipment and Materials

ITEM	DESIGNATION
A.	Access Platform 4 m (13 ft)
B.	Protective Caps
C.	Circuit Breaker Safety Clips and Tags
D.	Lockwire, Corrosion Resistant Steel 0.8 mm (0.32 in) dia.
E.	Gasket
Referenced Procedures	
- 12-11-28, P. Block 301	Fuel Tank Replenishing
- 24-41-00, P. Block 301	AC External Power Control
- 27-50-00, P. Block 301	Flaps
- 28-00-00, P. Block 301	Fuel - General
- 28-25-00, P. Block 301	Refuel/Defuel System

2. Procedure

(Ref. Fig. 401)

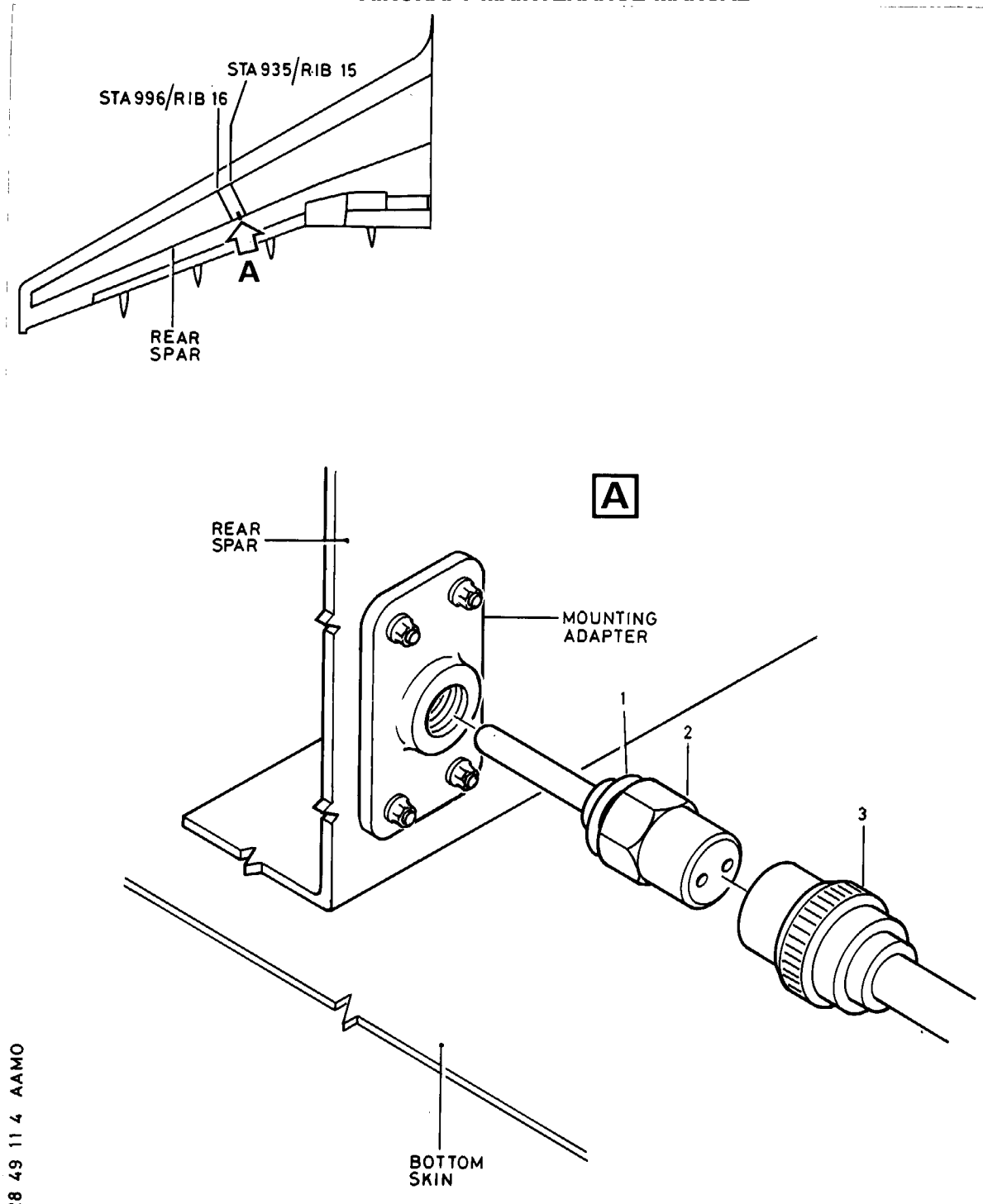
A. Job Set-up

(1) Defuel or transfer fuel from LH outer-wing tank (Ref. 28-25-00, P. Block 301).

(2) Fully extend flaps (Ref. 27-50-00, P. Block 301).

(3) Open, safety and tag the following circuit breakers:

PANEL	SERVICE	IDENT.	LOCATION
21VU	ECAM/SDAC/PWR SUPPLY	6WV	109/A05
133VU	FLT CTL/FLAPS/SYS 1/26 VAC	1CV	335/R61
133VU	FLT CTL/SFCC/LAND RECOVERY SUPPLY FLAPS/SYS 1	10CV	335/R67
133VU	FLT CTL/SFCC/NORM SUPPLY/FLAPS/SYS 1	5CV	332/U61
133VU	FLT CTL/SFCC/NORM SUPPLY/FLAPS/SYS 2	6CV	331/V61
133VU	FLT CTL/FLAPS/SYS 2/26 VAC	2CV	334/S62
132VU	FUEL/ISOL VALVE/L OUTR TK/SUPPLY	1QB	324/L53



Temperature Sensor - Installation
Figure 401

(4)Position access platform.
(5)Open access door 581 CB.

B. Removal
(1)Cut and remove lockwire from sensor (2) and mounting adapter.
(2)Disconnect electrical connection (3) and install protective caps.
(3)Remove sensor (2) and gasket (1).

C. Installation
(1)Install sensor (2) and gasket (1) on mounting adapter.
(2)Safety sensor (2) and mounting adapter together with lockwire.
(3)Remove protective caps, examine electrical connections for correct condition and reconnect electrical connection (3) to sensor (2).

D. Preparation for Test
(1)Energize the aircraft electrical network and make certain electronics racks are ventilated (Ref. 24-41-00, P. Block 301).
(2)Remove safety clips and tags, and close circuit breakers 6WV and 1QB.

E. Test

ACTION	RESULT
1. On flight compartment center console ECAM CONTROL:	
- press ECAM SG1 and SG2 pushbutton switches	- OFF legend goes off
- turn LEFT display rotary switch clockwise	- MEMO page displayed on LH ECAM CRT - ambient fuel tank temperature displayed
2. Transfer fuel into, or refuel LH outer wing tank (Ref. 12-11-28, P. Block 301 or 28-25-00, P. Block 301). Make certain temperature sensor does not leak	- TANK FUEL TEMPERATURE displayed on LH ECAM CRT, MEMO page.
3. On flight compartment center console ECAM CONTROL:	
- turn LEFT display rotary switch counterclockwise to OFF	- MEMO page goes off and display on LH ECAM CRT ceases.
- release ECAM SG1 and SG2 pushbutton switches	- OFF legend comes on

F. Close-Up

(1)Make certain that working area is clean and clear of tools and miscellaneous items of equipment.
(2)Close access door 581CB.
(3)Remove access platform.
(4)Remove safety clips and tags, and close circuit breakers 1CV, 2CV, 5CV, 6CV and 10CV.
(5)Fully retract flaps (Ref. 27-50-00, P. Block 301).
(6)De-energize the aircraft electrical network (Ref. 24-41-00, P. Block 301).